Some Factors Related to Educational Attainment in Indonesian Primary Schools

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ABSTRACT

As a part of the research tradition on school effectiveness in a developing country, this study focusses on cognitive aspects of educational attainment in Indonesian urban state primary schools. The main aim of this thesis is to identify factors at pupil, classroom and school level associated with pupil academic attainment and progress.

Stratified random sampling was used to obtain a sample of 5118 pupils from 60 primary schools. In each school three upper grades (4-6) were selected, with their 180 class teachers and 60 headteachers. As a longitudinal survey, data were collected through questionnaires and school archives. Taking pupil prior year attainment as baseline, multilevel statistical techniques were used on assessments at the end of the school year to examine factors related to pupil, classroom and school levels which were related to pupils' attainment a year later.

The results of this study showed some similarities and differences of predictive factors at different levels of analyses and variations across the grades. The proportion of total variance in pupil attainment for language at the school level ranged from 14 to nearly 23 per cent. In mathematics the school influence was larger (range 20 to 29 per cent of the variance was explained by the school). Pupil's gender and age, father's occupation, teacher's age, and the frequency of school meetings appeared to be significant negative predictors for certain attainment and grades. However, father's and mother's education, home language, books and newspapers at home, teacher's gender, in-service training in mathematics, teacher-gender proportion were significant positive predictors for certain attainments and grades. The most and least effective schools for each subject and grade in terms of residual estimates from the multilevel analysis were also identified. The issue of consistency in effects was examined both in relation to the two subjects and across grades. The findings contribute to current knowledge of Indonesian primary school effectiveness.

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PREFACE

Quantity and quality are the two major competing themes in policies for educational development, especially in developing countries. The policies regarding quantity are often pronounced in terms of equity by using indicators such as participation, promotion, retention, dropout, and wastage rates. The quantification related to raising the participation and promotion rate of school age children, reducing the repetition, dropout or wastage rate, and providing a number of resources are dominant in such policies (Kelabora, 1981; Aarons, 1989; Govinda & Varghese, 1993). The policies can be relatively easy to control and to prove through educational expansion (Cummings, 1990; Nielson & Chan, 1990)

However, countries which focus much attention quantity tend to suffer from the lower priority accorded to quality aspects. Problems on quality may become a major concern of education policy makers in developing countries (Psacharopoulos, 1992; Fuller, 1994; Carron & Chau, 1996), including Indonesia (Beeby, 1979; Setijadi, 1992; Semiawan, 1993). The World Conference on "Education for All" in Jomtien - Thailand 1990 attracted much attention. It concluded that the deterioration of quality in primary education in developing countries in Latin America, Africa, Asia and the Arab States required capable strategies for reversing it (Fordham, 1992; Little, 1994). In the Indonesian context, from a national perspective, a decline in quality (e.g attainment) has begun to offset the long-sought increase in quantity (e.g enrollment) (Kelabora, 1981; Aarons, 1989). Improving the quality of education is not an easy task. There is a high degree of uncertainty about the nature of educational problems and their solutions (Stoll, 1996; Stoll & Fink, 1996; Creemers & Reezigt, 1997). Despite extensive research there is still little clarity about what makes effective schooling in different cultural context (Reynolds & Teddlie, forthcoming).

Another set of factors which makes reform difficult in Indonesian education relates to fundamental differences of opinion over the definition of educational quality. These differences are seldom explicit but they implicitly influence approaches to improvement and so complicate the process of educational change (Kelabora, 1981; Shaeffer, 1990).

There is considerable confusion and uncertainty in Indonesia concerning educational quality because different actors inside and outside the education system have different perceptions concerning what is "good" education; because these perceptions are seldom made explicit in concrete statements of preference or bias; and because the public rhetoric is often quite different for different audiences (see the discussions by Silver, 1994; Gray & Wilcox, 1995). *Parents* believe good education leads to high marks, more years of education, and good jobs; *teachers and headteachers*, sharing much of this opinion, believe that good education is the achievement of curricular targets; *bureaucrats*, especially those at higher levels, believe good education means solidly built, visible schools in every community and textbooks in the hand of every pupil; *politicians* believe it to be the creation of a modern, democratic society; and *academics* feel it means a flexible and motivating learning experience (Shaeffer, 1990; Leigh, 1991; Salim, 1991; Parker, 1992a).

Uncertainty over the definition of good education leads to uncertainty over what teachers can do and should be expected to do. Believers in the input-output model, which assumes that good facilities and materials will lead to good results, see teachers as mechanics or technicians, putting the necessary pieces together to get the desired output. This view suggests that teachers require relatively little training in the curricula of the primary school (Andrews, Housego, & Thomas, 1990; Nielson & Chan, 1990). Since it is assumed that the basic skills of such teachers are limited, curricular materials are made teacher-proof. The innovation's method, let alone its underlying assumptions, is usually not deeply internalised by the teachers (Fuller, 1994).

If we agree that quality implies a form of excellence or something that rises above mediocrity, then its distinction with equity by Strike (1985) is sensible. He argued that quality is perceived as selective or "elitist" while equity is "populist". In operationalising the concept of quality, ideas can be adopted from higher education: they are the mystical view, the reputational view, the resources view, the outcomes view, and the value-added view (Astin, 1980; Baumgart & Kaluge, 1987; Lindsay, 1994). The last view is the striking one in the last decade as an alternative for assessing school quality in primary and secondary levels under the label of school effectiveness research (SER) (Silver, 1994; Gray, 1995b). SER produces school performance indicators which show that schools make a difference in terms of adding value to pupil learning and development. It is

argued that this kind of indicator can tell something about the quality of the school system and enable measures to be taken for improvement (Creemers, 1995).

SER in developed countries like UK, USA, the Netherlands, Australia and Canada has progressed far beyond the current state of play in developing countries. Methodological advances in the computer software have led to a growing use of SER as one useful way to measure school quality. The updated technique includes controlling for pupil initial attainments at intake and measuring outcomes under the label of *'value-added' approach*; then expanded by including some explanatory variables and simulating some possible operations (Mortimore, Sammons, Stoll, Lewis, & Ecob, 1988; Thomas, Sammons & Mortimore, 1995; Thomas, 1995; Goldstein, 1995, 1997; Fitz-Gibbon, 1996; Thomas & Mortimore, 1996; Thomas, Sammons, & Street, 1997). Such approaches, as demonstrated by Creemers (1994b), explicitly link the concepts of quality and equity in an accessible format.

This study adopted the value-added approach with two major purposes. First, it was designed to contribute to an educational policy dialogue on how to improve pupil attainment in primary schools by identifying factors that explain statistically the variation in grade 4-6 pupils' scores. Second, it was designed to identify a sample of schools that were outliers in terms of pupil attainment, i.e they performed better or worse than what would be expected given pupils' prior attainment and other intake characteristics including school factors such as location, size, and resources.

The organisation of six chapters which comprise this thesis is as follows. Chapter One presents an historical background to education in Indonesia. The educational expansion and perceived problems during the era when the study was carried out are also summarised. Chapter Two discusses the background of different methodologies employed and then conceptualises a practical model for an Indonesian study based on previous research in developing countries. Chapter Three describes the research methods in terms of the design, instruments to be used, and the procedures in research planning up to data analysis. Chapter Four provides a preliminary data analysis which explores the characteristics and relationships of variables in order to facilitate the subsequent multilevel analysis. Chapter Five presents the progression of models for each subject across the grades and the identification of effective schools in each grade on both subjects and in each subject across the grades. Chapter Six discusses the findings, the limitations,

and the implications for future research and for education in Indonesia in relation to current theoretical models of educational effectiveness and in terms of the two competing themes which influence educational policy in Indonesia - quality and quantity.

CHAPTER ONE
PRIMARY EDUCATION IN INDONESIA: PAST AND PRESENT

Indonesia is a Southeast Asian country, located between Asia and Australia, linking the Indian and Pacific Oceans. The country comprises 27 provinces, 324 districts, with a population of over 200 million. There are approximately 300 ethnic groups, speaking in 25 different local languages and more than 200 dialects (Napitupulu, 1990; BPS, 1995; Kopong, 1995; Ajisuksmo, 1996). For a better insight into primary education in this country, its educational history will be traced from the past to the present condition. Three past epochs were the pre-colonial, colonial, and post-colonial periods before the current regime. The present situation is known as the New Order period. All the periods are presented in chronological order to highlight the existing problems relating to this primary education study.

A. Education in the Pre-Colonial Period

Education in the pre-colonial era did not have a specific policy but set certain values that became major cultural ingredients for educational practices in the subsequent periods. The values came from the predominant religions such as Hinduism, Buddhism, and Islam which are discussed in this section.

1. Hindu and Buddhist Influence

From the first century until 1500 A.D., during Hindu and Buddhist Kingdoms particularly in Java and Sumatra, trade relations with India and China were accompanied not only by the introduction of Buddhist and Hindu religions but also their educational ideas and practices. It was not clear which one came first, because the Indonesian historiography always mentioned both altogether. The historical records show that in the 7th century the Capital of Sriwijaya Kingdom in South Sumatra became a flourishing centre of Buddhist Theology and Philosophy and the well-known religious educational institution was called Nalanda (Palmier, 1965; Poesponegoro & Notosusanto, 1984).

In earlier times, transmission of knowledge and culture from one generation to the next was the responsibility of the family. This involved education in values, norms and customs, and training in skills. When youngsters in the old Indonesian societies were

considered to have completed their education within their family context, an initiation ceremony was held, usually to test their ability to bear the burdens and responsibilities of adulthood (Geertz, 1963; 1965).

In the old Indonesian societies, particularly the Javanese society, educational institutions outside the family have been in existence since the eight century, because of the Hindu and Buddhist influences (Schnitger, 1964). In large temple complexes and religious centres, usually secluded near forest, small settlements called *asrama* (boarding) were formed. The asrama was inhabited by a *guru* or *resi* (religious teacher), his family and his "cantrik" (pupils). At that time a type of formal education evolved for upper class boys, including princes and sons of the nobility. Education was designed to develop moral character through the study of the sacred books, customs, etiquette, and fine and martial arts (Koentjaraningrat, 1978, 1995).

Abdullah (1978) and Koentjaraningrat (1978) explain that the common method of teaching was a private tutorial arrangement under the direction of a guru who would accept a certain number of pupils into his asrama. Here they would serve him by cultivating his fields, herding his cattle and other domesticated animals, producing their own daily necessities, and processing their own food. They would also engage in academic studies in which great emphasis was put on oral work and memorisation. The close bond between teacher, pupils and parents was the key to the success of this type of education.

The most important contribution of the Hindu and Buddhist period was its influence on the Indonesian educational and cultural orientation. On one hand, the accommodating animistic village was able to assimilate elements of Hinduism and Buddhism without great difficulty. On the other hand, the sophistication of the distinct puritan culture remained an important ingredient in the Indonesian view of the world, particularly of the Javanese. Among the distinguishing features of this culture were the importance of birth in determining rank, the existence of a series of levels and grades within the hereditary aristocracy, and the accompanying elaboration of a complex etiquette to guide the relationship between inferior and superior (Legge, 1972; Peacock, 1973).

The pervasive influence of Hinduism and Buddhism on the present Indonesian educational system can be seen in desired socialisation outcome, i.e., respect (hormat) is

important in all social relationships involving possible social status differentials. It is marked by specified patterns of etiquette known as *alus* (meaning refined, civilised). These include proper language use, body movement, and gestures considered polite, such as use of the right hand for writing. The primary function of such apparent politeness is the maintenance of social harmony, which is important for communal cooperation and the individual's survival in the community (Geertz, 1963; Koentjaraningrat, 1994).

2. The Islamic Influence

After the decline of Sriwijaya in the fourteenth century, the even larger Hindu empire of Majapahit, based in East Java reunited the archipelago under the leadership of Gajah Mada. Majapahit held its influence until the early sixteenth century when the Islamic influence became pervasive. Before this, however, its power had been constantly threatened by the gradual penetration into the Indonesian archipelago of the external force of Islam. This was evidenced by the establishment in the early fifteenth century of the Malaccan Sultanate, which later became a centre for the spread of Islam through the islands. The development of the Malaccan Sultanate was not merely a matter of religious conversion but was also motivated politically, commercially, and culturally (van Niel, 1978; Tjandrasasmita, 1978).

Islamic places for learning were established in Java and other islands of Indonesia at the beginning of the fifteenth century when the Muslim religion was first introduced. Even then it was felt that the learning of Islamic knowledge and ritual required more than casual study. At first this study was carried out through instructions offered in the *kiyai's* (religious teacher's) house or in the *surau* (village mosque). Such instructions included recitation of the Alqur'an (Koran) and prayer. The model of the more formal Hindu-Buddhist-Javanese *asrama* (boarding) was adapted and became the *pondok pesantren*, the place of study for the Muslim pupils (Orr & Billah, 1977). Like the Hindu-Buddhist schools, the Islamic educational system also stressed close relationship of parents and pupils to the kiyai as a prerequisite to the pupil's success.

The goal of Islamic education is that of inculcation of moral self-control. A child must go to a religious school to learn about the religious prohibitions, because life without knowing religious prohibitions, will be dangerous, like a bicycle without brakes (Jay, 1963).

Another commonly expressed goal of Islamic education, especially for the *pondok*

pesantren, is social service and individual independence -- the willingness to teach others and to stand free of government employment or service. In these terms, religious education must be able to foster in a pupil the characteristics and attitudes of self-reliance, the ability to take the initiative, and the ability to understand and evaluate social reality in his surroundings (Sumardi, 1977).

The expansion of the school system, which began in the first decade of the twentieth century, was important for the modern Islamic movement (Abdullah, 1978). The "Kaum Muda" (Young Generations), as the Islamic reformists were usually called, modernised the existing religious schools by introducing a classical system, a new curriculum and new teaching methods. They also expanded their network of schools. To some extent these schools accommodated youngsters who were not allowed to enter colonial government school because of a strict admittance policy. Thus, individuals who could not aspire to be a part of the colonial school system had the opportunity to be educated (Abdullah, 1978).

The private Islamic schools helped to accelerate the pace of social mobility by championing education for the less privileged social class and those who chose to remain outside the colonial system. Graduates of colonial government schools were more or less prepared to adapt to the colonial system, although many of them did refuse to join, whereas graduates from private Islamic schools almost always stood in opposition to the colonial system. The social and political impacts of Islamic schools, therefore, were disproportionately greater than the number of persons they educated (Soegiyanto, 1984). These schools were instrumental in enlarging the educated group, and in paving the way for the spread of anti-colonial sentiment.

B. Education in the Colonial Period

In common with other newly independent countries Indonesia inherited a system of education based on a colonial pattern and designed principally to serve the needs of the colonial power. The Indonesian archipelago were colonised by the Portuguese (1511-1975), Dutch (1602-1942), British (1811 - 1816), and Japanese (1942-1945). With the exception of the British, who only occupied part of Sumatra and West Java, the other three colonisers influenced the practice of education in Indonesia.

1. The Portuguese and Dutch Occupation

The history of Western education in Indonesia began with the arrival of the Portuguese in the early part of the sixteenth century. Although the main purpose of the newcomers was trade, they brought with them the Christian gospel and established Christian religious schools. The Portuguese opened schools for teaching religion (to obtain converts to Christianity), reading and writing in Roman script and arithmetic. In 1538 the Portuguese military founded the first school in Ternate, then taken over by the Jesuits. Later Dominicans founded a college on the island of Solor for children of prominent persons (Kroeskamp, 1974).

From 1600 to 1800 when the powerful Dutch East-Indies Company (Vereenigde Oost-Indische Compagnie [VOC, 1602]) came to Indonesia, its representatives went directly to the Moluccas which were then a source of spices for the world market. By 1616 the VOC had absolute authority in most of Indonesia, and its officers began to administer commerce and social programmes directly (Penders, 1977). In the field of education, the Dutch not only took over the Portuguese educational institutions but also began a programme to build new schools for the Dutch children and a few sons of the Indonesian or local nobility. The companies established schools with the purposes of promoting Christianity and of training local employees for them. Little change occurred when the Dutch government took control in 1800, but in 1848 under the influence of more liberal ideas, schools for the native population were established offering a 3-year course in the local vernacular, reading, writing, and arithmetic. At that time no Indonesian female was allowed to go to school (Nasution, 1995).

During the second decade of the seventeenth century the Dutch began establishing church schools which were only for the children of Christian natives. For centuries these were very few in number. It was not until the mid-nineteenth century that the Dutch opened vocational schools which allowed pupils other than hereditary Indonesian elites to enter; almost all educational opportunities for Indonesians prior to that time had been strictly limited to children who by birthright could claim their places in schools designed to prepare native civil servants. Up to the end of 1852 there were 87 government schools (for 'native' Christians, briefly referred to as Malay schools) and 111 private schools (for 'native' Christians) (Nasution, 1995).

The provision of Western education for the native population received a

considerable boost under the aegis of the Netherlands Ethical Policy (Penders, 1977). Also, at that time a large number of the Dutch -- both in the colony and at home (the Netherlands) -- had begun to believe implicitly in the value of education, which in the typically liberal philosophical atmosphere of the time was considered to provide an effective cure for the inherent evils found in the indigenous inhabitants as well as to be a necessary condition for economic progress. A typical example of this reasoning was provided by a group of Dutch reformers, of whom Snouck Hurgronje, the noted Islamic expert and Adviser for Native Affairs, was probably the most brilliant representative (Penders, 1977). Hurgronje believed that only by yielding readily and at the right time to the growing demand for Western education, particularly on the part of the Indonesian upper class, could the Kingdom of the Netherlands retain the Indies. He argued that in associating the leading Indonesian class with Dutch culture, and by granting them an ever-increasing share in running colonial affairs and government, the Indonesians would be tied inextricably spiritually, intellectually, and politically to the ruling class in the Netherlands (Penders, 1977).

The Organic Law of 1854 acknowledged the colonial government's duty to provide schools for the native people. Concomitantly, the Department of Education for Dutch colonies was set up in 1867 and a number of state primary schools for Indonesians were established. One of the purposes of the schools establishment under the Dutch colonial rule was to "educate" the personnel needed for indirect rule; this "proved an excellent system for ensuring a peaceful colonial government" in Indonesia (Vlekke, 1945).

In the early years of the twentieth century the situation changed dramatically with the introduction of the Hollandsch-Inlandscheschool, a primary school for native Indonesians. In the "eerste klasse" (first class), the language of instruction was Dutch and the period of study was seven years. In addition to the eerste klasse native school there was the "tweede klasse" (second class) five year primary native school which was conducted in the various native languages. There was also a three year "volkschool" (village school) for the rural natives (Soegiyanto, 1984; Nasution, 1995).

By 1903 in primary and secondary education there were 190,000 pupils, in 1913 the number increased to 227,000, in 1923 the number tripled to 700,000, and in 1940 there were 2 million. However, this number was very small in comparison to the large

population in the archipelago (Palmier, 1965). Under the Dutch a system of elite education was also developed based on the metropolitan pattern and using Dutch as the medium of instruction.

The establishment of state schools in Indonesia was mainly to fulfill the needs of the colonial government. In other words, the purpose of education during the Dutch colonial rule was primarily to provide the colonial government with cheap labour. In this regard, evidence was provided to show that more than 83 per cent of the natives who experienced Western education became low-paid labourers and civil servants (Mestoko, 1983). Throughout the centuries, therefore, the educational opportunities provided for the indigenous population were extremely limited, and reflected the needs of the colonial power rather than the needs of the natives. The impact of the expanded educational opportunities for Indonesians was not evidenced in numbers enrolled; less than 20 per cent of the primary age cohort was enrolled by 1940.

However, since then people quickly identified education as a mobility channel for better socioeconomic conditions. Education has also prepared Indonesians to articulate their nationalist ambitions, organise themselves into groups, and share their respective visions of the nation's future. By the late 1920s concern was already being expressed by some Dutch administrators in the Indonesian colony that education had been too rapidly expanded and should be restricted, particularly at the secondary and tertiary levels (Kahin, 1970; Nasution, 1995). Similarly, in 1928 Colijn, a Dutch administrator, saw the quick growth of Western education for Indonesians as "a danger for the peaceful development of the course of affairs in Indonesia". Aware of the fact that the emerging Indonesian educated class was becoming increasingly dissatisfied as a result of the disparity between its own position and the superior position of the Europeans, Colijn suggested that education should be limited to the point where graduates could be absorbed by the indigenous economy itself (Kahin, 1970; Penders, 1977).

Only decades earlier Snouck Hurgronje, the Dutch educational reformer who had developed the native school system, had urged that the educated native population be brought into positions of significance in the government as soon as possible. He argued that the intelligentsia could be allied to the Dutch colonial administration rather than turned against it to pursue a nationalist line (van der Veur, 1969). However, it appears that education promoted the aspirations of young Indonesians and provided them a setting

in which to discuss Western political forms and ideas. As a function of the incongruence between the education received and the occupations open to educated Indonesians, a disenchanted educated elite was produced. It was this educated elite who eventually took up the mantle of nationalism and led the country to national independence.

2. The Japanese Occupation

Education in Indonesia during the three and a half years of Japanese occupation, from 1942 to 1945, was based on two main policies i.e erasing the western heritage and demobilising power for a great eastern wealth. As a result, education suffered serious setbacks. The number of primary schools decreased from 21,500 to 13,800, while the number of secondary schools decreased from 800 to 20 (Mestoko, 1983).

There were some essential benefits of the Japanese occupation, however. This was the dismantling of the Indonesian educational system, resulting in nullification of the particular racial or social classification previously required to enter schools. Consequently, the "kokumin gakko" (primary school), "cho gakko" (junior high school), and "koto gakko" (senior high school) were opened for all talented Indonesian youngsters regardless of their racial identity and socioeconomic origins. Another major change for Indonesians in the long run was the replacement of Dutch by Bahasa Indonesia (Indonesian Language) as the medium of instruction. Bahasa Indonesia developed rapidly and began to be spoken throughout the country (Soegiyanto, 1984; UKSW, 1993).

During Japanese occupation, the Japanese military government changed the names of schools and higher institutions. They also introduced war propaganda into the curriculum: the school assembly with flag ceremony, marching exercises, war songs, and the collective labour to grow crops for war needs. However, in reality the soul of education system was basically the inheritance of the previous Dutch system (UKSW, 1993).

C. Education in the Post-Colonial Period: The Beginning of Educational Expansion

With the Declaration of Independence on 17 August 1945 Indonesia had a largely illiterate population and only a handful of qualified personnel. Since then, a number of programmes have been embarked upon to accelerate literacy development because the government believed that a literate population would provide a concrete base for building a new nation. The commonly held assumption that education plays a key role in the

development process (Nasution, 1995) was embraced by the Indonesian leaders. As a result, schools and facilities for mass schooling were immediately provided and/or expanded.

By the end of the Dutch era only about two million Indonesian children were enrolled in the vernacular schools; most of these were in the three-year village schools which were poorly funded and poorly staffed (van der Veur, 1969; BP3K, 1976). There was great disparity between the likely future of these children and that of the few who attended the Dutch language schools and were assured of upward mobility. As a corollary, in the early years of independence, about 90 per cent of all Indonesians were illiterate. It is thus understandable that one of the major goals of the Indonesian revolutionary government was the extension and improvement of the educational system for every Indonesian citizen, regardless of social class, background, ethnicity, or other inherited attributes. Every citizen in independent Indonesia has a right to education, with the government providing a national education system to implement this right (Mestoko, 1983). The 1945 Constitution of the Republic of Indonesia states this clearly in Chapter XIII, article 31: "Every citizen shall have the right to obtain an education, and the government shall establish and conduct a national educational system which shall be regulated by statute" (BP3K, 1976). The constitutional status given to education indicates the importance it holds in Indonesia today. Education is viewed as a basic human right.

The Basic Education Law of 1945 states that the broad goal of Indonesian education is to develop competent, responsible and democratic citizens, responsive to community and national welfare (Dhirdjosaputro, 1991). The nation's commitment to education and its belief in the Pancasila[1], the guiding principles of Indonesian life, are intricately interrelated. In order to understand the contemporary Indonesian educational system -- particularly its objectives, its organisational forms, its curriculum, and the teaching-learning process -- one must keep in mind that there is a fundamental purpose to the educational endeavour, which is to develop Pancasila-minded citizens. This underlying purpose affects the educational system in many ways. Although these

[1] Pancasila (panca=five, sila=principles), the full official statement in English is: "Belief in One Supreme God; a just and civilised Humanity; Unity of Indonesia; Democracy wisely led by the wisdom of the Liberation among representatives; and Social Justice for the whole of the people of Indonesia" (cited from Beeby, 1979: 146).

principles might be elusive in the reality of day-to-day life and difficult to operationalise in various educational settings, the Pancasila is both the symbol and substance of Indonesia's national independence and national identity. As modern education in Indonesia is designed to prepare youngsters to enter society with a specific set of values and identity, the Pancasila is closely linked with these educational efforts (Beeby, 1979; BP3K, 1976).

In a sense, Indonesia's efforts to expand its educational system rapidly and relate it to the national ideology can be seen as a consequence of the nation's history. Its colonial experience extended over a period of three and a half centuries in which education was viewed very differently from how it is today. Under Dutch colonial rule, education was not designed to promote the ambitions of Indonesians or to serve the purpose of facilitating the creation of an independent Indonesian nation. Neither was the colonial educational system especially concerned with educating the masses (BP3K, 1976; Thomas, 1992).

Beginning in 1950, Indonesia initiated an extensive campaign to reform the educational system inherited from the Dutch and Japanese colonizers. At that time approximately 39 per cent of the primary school age group (UNESCO, 1969) and less than 5 per cent of the secondary school age group were enrolled in schools (UNESCO, 1961). The country also inherited an organisational structure of formal education which in certain aspects has been retained intact except for the aspects of social and racial inequality.

There had been an eight-year plan in 1961-1968. The principal goals of the plan, related to primary education, was to reduce illiteracy. It was predicted that illiteracy would be eradicated within the first four years. However this was not borne out as in 1961 population census reported that 44.5 per cent of the population over age 13 as illiterate and by the end of 1964 it was 55.5 per cent. It was really an ill-fated plan, according to Thomas (1992), because it was ill-conceived and badly executed as an effect of political and economic crisis. The plan collapsed when the social revolution took place in 1965 leading to the beginning of New Order regime.

In summary, the goals and functions of education in independent Indonesia were the following (Thomas, 1992; BP3K, 1976): (a) to transmit knowledge and skills appropriate to individual and national development; (b) to inculcate the values and

attitudes of godliness, democracy, responsibility, patriotism, and creativity; (c) to mobilise citizens to existing or potential work roles relevant to national development and individual well-being; and (d) to overcome the inequitable access to quality education that emerged historically in Indonesia.

D. New Order Period: The Current Educational Expansion

The most significant changes in Indonesian educational development during the past three decades have been in terms of its expansion. This period is known as New Order Regime, when Soeharto came into power in 1968, with a systematic national development plan. With the assumption that education is closely linked to the development of both the individual and the nation, the Indonesian government has expanded its educational system at a rapid pace. The development is arranged into 25 year period considered as a "long-term-development" (PJP) . This consists of five "five-year-development" (Pelita) periods[2] (Pusat Perbukuan, 1990). The first PJP started on 1 April 1969/70 and ended on 31 March 1993/94, and then followed by the second PJP (1994/95 - 2018/19). This section is limited to cover the PJP-I.

The current Indonesian educational system is illustrated in Figure 1 (Moegiadi and Jiyono, 1994), where primary school has six grades with children from age 7-12 years old. As an effect of family planning programmes run by government to reduce the family size, since the beginning of 1990s, the policy for intake age has been lowered to 6 years of age where school resources allowed.

Four major features of New Order Period were the provision of school resources under presidential decree, the teachers, participation rate, and student flow. The expansion was quite conspicuous compared with the other previous epochs.

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[2] (RE)PELITA = Five-year development (plan)
(Re)Pelita I, 1969/70-1973/74; (Re)Pelita II, 1974/75-1978/79;
(Re)Pelita III, 1979/80-1983/84;(Re)Pelita IV, 1984/85-1988/89;
(Re)Pelita V, 1989/90-1993/94; (Re)Pelita VI, 1994/95-1998/99; etc)

↑	↑	**Higher education**
18 17 16	12 11 10	**Upper secondary school**
15 14 13	9 8 7	**Lower secondary school**
12 11 10 9 8 7	6 5 4 3 2 1	**Primary school**
<7	0	**Preschool**
Age	Grade	

Figure 1.The system of Indonesian formal education
(Adapted from Moegiadi & Jiyono, 1994)

1. Budget and Resources under Presidential Decree

Formal education is supported by many aspects. Financial support is one of the major problems that affects educational resources and facilities. In Pelita I government allocated a national development of budget about Rp 1.2 trillion, and at the end of Pelita V (PJP-I) the same budget became 80 trillion. For the whole PJP-I, there was Rp 173 trillion. In Pelita I Rp 83.8 billion was allocated for education and then increased to Rp 9 trillion at the end of Pelita V. For the whole PJP-I education had Rp 20 trillion. It was a large increase. As a proportion of the whole budget, the sector of education budget grew from 6.8 per cent in Pelita I to 11.5 per cent in Pelita V (Tilaar, 1995). From this amount, Rp 5.5 trillion was used for primary school level, as shown in Appendix A.1 under the authority of a special presidential decree - INPRES. The budget allocation for primary schools was the biggest in Pelita II to IV. In these three Pelitas, equal opportunity to enter primary schools was the first priority in building up the whole nation.

As a result, primary school buildings, teachers, and textbooks were provided. Appendix A.2 shows that in twenty years (1973-1994), 148,945 new state schools were built, 1.001.604 teachers were appointed, 310.1 million books were published. These figures had a great impact especially on pupils' participation rate which is discussed later

in this chapter.

The other effect of INPRES is that in the index of primary school trend[3] shown in Appendix A.3. In a decade, 1983/84-1991/92, the index of schools became 114. The more progressive provinces were East Timor, Bengkulu, East Borneo, Lampung, South Sumatra, and Riau. The less progressive were Bali, Central Java, Yogyakarta, East Java, North Sumatra, and South Borneo.

2. Teachers

There were some aspects relating to teachers which need to be described. These aspects are educational qualification, gender proportion, and their index of trend. On educational qualification, Appendix A.4 showed that in 1991/92 the majority, 86.87 per cent of primary teachers were trained to senior secondary level, with only 5.73 per cent having undergone higher education level. There were 7 per cent from junior secondary level and there were still a tiny amount (0.09 per cent) from primary level. This last group, although of very low qualification (as shown in Appendix A.4 especially those with primary and secondary level only), worked in remote areas to compensate for the shortage of teachers. Since 1989, the government phased out teacher training schools at secondary level and upgraded them into tertiary level under the programme of Diploma for primary teacher training (D2 PGSD); the situation in 1994/95 also has been upgraded.

There has been a tendency for the proportion of male teachers to decrease and the proportion of female to increase in this last two decades. In 1972 two-thirds of the primary teachers were men (Beeby, 1979), but later in 1992 and 1995 the proportions of male and female teachers was almost equal.

Generally, the number of teachers increases from year to year (Appendix A.5). In the ten year period (1983/84-1991/92), there were 23 per cent more than before. This could have been because of the increase in the available budget to appoint them, the productivity of teacher training institutions, and the interests of graduates to enter teaching profession. The provinces of Irian Jaya, East Borneo, and East Timor had the

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[3] The index of trend is used to assess the progress from year to year through establishing whether the tendency is higher or lower than the base year. The formula for measuring the index is the real figure of base year divided by the current year and multiplied by 100 (for detail see Correa, 1969; UNESCO, 1979).

steepest rise (about 80-90 per cent), however East Java and Yogyakarta the increase tended to be modest (less than 10 per cent).

3. Pupil Participation Rate

The growth of the number of primary pupils during PJP-I is about 50 per cent per year. At the beginning of PJP-I, 64 per cent of primary aged children attended school; by the end of that period this figure had increased to 97 per cent. This rate increased dramatically because of the increasing number of schools (SD) under the INPRES programme. There were still a small number of disadvantaged children who did not attend school e.g handicapped, drop-outs, and those living in remote places. However, compared with the same level in other Asian countries and with other educational levels this was a major achievement.

Although the pupil participation rate (Appendices A.6a and A.6b) was increasing, the index of trend (Appendix A.7) was getting smaller and was quite different between provinces. Jakarta, South Sumatra, Bengkulu, South-east Celebes tended to have stable increases in a decade. On the other hand others i.e West Java, Aceh, North Sumatra, Riau, East Borneo, and Irian Jaya increased in the same period. The provinces which showed a decrease were Central Java, Yogyakarta, East Java, West Sumatra, Bengkulu, Lampung, West Borneo, Central Borneo, South Borneo, North Celebes, South Celebes, Moluccas, Bali, West Nusa Tenggara, East Nusa Tenggara, and East Timor. This declining trend was due to the fact that the number of children in the 7-12 age group decreased or remained steady. This condition was caused by the national family planning programme which stipulated two children only. But the index increased in the provinces which were the targets of domestic transmigration from the high density places. The provinces which show a 'steady' trend are those which have high demographic mobility so that the influx and exodus from these areas balance out.

4. Pupil Flow

Three aspects relating to pupil flow were drop-out rate, repetition rate, and transition rate of pupils. Appendix A.7 presents figures on these rates for each grade of primary schools. Overall school retention had generally improved over the period (1975-1992). Promotion rates had increased by an average of 3.2 percentage points over

the decade. Virtually all of this improvement came about through reduced dropout rates except in grade 5 and 6 in 1992 which actually increased between these periods (1976-1986-1992). By and large the three last grades had higher rates of drop-outs than that of the lower grades.

Table 1.1
Selected Demographic and Educational Characteristics in Indonesia

No.	Description	Figures
1.	Urban population	64,683,826
	Rural population	135,451,774
	Total Population - 1995	200,135,600
2.	Land area in square kilometres	1,948,732 km^2
3.	Religion composition	
	Muslim	87.6 per cent
	Christian Protestant	6.1 per cent
	Roman Catholic	3.6 per cent
	Hinduism	1.7 per cent
	Budhism	1 per cent
4.	Number of provinces	27
5.	Number of districts/municipals (kotamadya)	324
6.	Number of Primary School - 1995:	
	a. State	138,723
	b. Private	10,219
	Total	148,942
7.	Number of Primary School Pupils - 1995	
	a. State	24,391,342
	b. Private	1,928,510
	Total	26,319,852
8.	Number of Primary Teachers - 1995	
	a. State	1,088,358
	b. Private	84,165
	Total	1,172,523
9.	Number of Primary Graduates in 1995	
	a. State	3,210,691
	b. Private	260,702
	Total	3,471,393
10.	Educational Indicators - 1995	
	a. Participation rate	98.8 per cent
	b. Drop-out rate	7.2 per cent
	c. Repetition rate	1.56 per cent
	d. Promotion rate	91.24 per cent
	e. Pupil-Class ratio	28
	f. Pupil-Teacher ratio	23

Source: Ministry of Education and Culture (1996)

Repetition rates remained essentially constant, and quite high, particularly at the end of the first year of primary schools (16.7 per cent repetition in 1986).

Promotion rates increased by an average of 5.6 percentage points. Most of this improvement resulted from reduced dropout rates, but there were also significant reductions in repetition at each grade.

Generally, the current situation as shown in Table 1.1, was that from 1991/92 to 1994/95 no substantial change happened. However, apparently some persistent problems existed in facing the PJP-II.

E. Perceived Problems

Since beginning of 1970s, after a tremendous survey of PPNP (National Assessment of Education Project) was conducted, four major educational problems in Indonesia were recognised (Beeby, 1979). The problems were educational access, educational opportunity, internal efficiency, and educational quality. These four problems whether expressed directly or indirectly were discussed on many occasions in a wide range of educational fora (Beeby, 1979; Tangyong, Wahyudi, Gardner, & Hawes, 1989; Moegiadi & Jiyono, 1994; Tilaar, 1995)

Problems of educational access were considered as the extent to which the school age groups have gained access to the basic education system. This was usually measured in terms of participation rates, such as the percentage of 7-12 year old children who have gained access to the different types of basic education; in-school and out-of-school systems. Participation rates could be understood as the extent to which the government has succeeded in providing basic education for society. Generally, as mentioned before, the participation rate for basic education in Indonesia until 1995 was extraordinarily high compared with many developing countries (Lockheed & Vespoor, 1992; Lockheed & Levin, 1993). The schools at primary level in the early 1990s had absorbed over 90 per cent the population of the school aged children, whereas 57 per cent was the average in Asian countries (Tilaar, 1995).

The opportunity for basic education was considered as a problem in terms of whether the opportunity had been equitably provided comparing across population sub-groups, such as pupil age, gender, rural-urban location, and family socio-economic background. The proportion of 6-year-old or younger children who were in school varied

by school location and type. The proportion of 6-year-old or younger pupils in schools was higher in urban areas and private schools than in rural and state schools. Suryadi, Green, and Windham (1992), and Suryadi (1993) discovered that the private schools in urban areas were benefitting from the higher quality of pupil intake. In schools outside Java, especially in rural areas, the proportion of overage pupils (more than 12 years old) appeared to be substantial. This study pointed out that the number of late enrolling pupils was higher in those areas in which participation rates are lower. However, the problem had not been a substantial one for the whole country since this decade because of educational expansion was focussed in terms of buildings, resources, and personnel.

The problem of internal efficiency related to pupil flow. The primary education expansion programme in Indonesia which was begun in 1973 had successfully improved access to the school system and had enrollment to over 90 per cent in 1995. Access to school, measured in terms of participation rate, however may not necessarily reflect real opportunity to learn, but rather dropout and repetition rates inside the schools. Data since 1975 (Appendix A.8) revealed that dropout and repetition rates had not significantly declined, the dropout rate remained steady since 1985. As the consequence of the two indicators, the success rate when comparing enrollment and graduates was 70 per cent (Tilaar, 1995). This meant that 20 per cent of time spent in 6 primary years was wasted.[4] This problem was recognised in the average high cost of producing one graduate due to the inefficiency of the school system. This kind of wastage was closely related to the next problem, the quality.

The last central issue was the problem of quality in all aspects of education. This problem became a main agenda in entering the next millennium (Buchori, 1994; Moegiadi & Jiyono, 1994; Moegiadi, Tangyong, & Gardner, 1994; Tilaar, 1995). Generally, the success in quantitative aspects of education as related to the first three problems, did not guarantee improvement in quality. The problem of quality is related to the educational process and outcomes (APPEAL, 1991; Semiawan, 1991; Joni, 1993; Soedijarto, 1993). As an example, in Table 1.2, two surveys in 1976 and 1993 showed that scores on Indonesian Language and Mathematics which express 3R's were low, between 59 to 44 per cent. It could be interpreted that in a period of 8 years, the

[4] This 20% wastage rate was the result of access rate (90%) minus success rate (70%).

Indonesian Language tended to be 10 per cent higher but Mathematics about 10 per cent lower after 16 years without any clear reason. Until 1995, this problem was still regarded as serious. Discussions about the problem turned to assessment of the teaching-learning process. In order to improve classroom teaching-learning, many innovative efforts had been carried out without any last-long result. The innovations such as PPSP, ALPS, PEQIP, some curriculum changes (in 1975, 1986, 1994), preservice and inservice training were exciting for teachers and pupils but this had no lasting effect. In fact, as the project was over, the teachers changed their minds and practices to whatever they themselves felt comfortable with (Shaeffer, 1990; Leigh, 1991). On ALPS and PEQIP[5] the serious problems were related to school cultural values as have been there for centuries (Shaeffer, 1990; Parker, 1992b; Tilaar, 1995). The other reasons were not all key educational practitioners were involved in the innovation projects (Harber & Davies, 1997).

Table 1.2
A Comparative Results in Indonesian Language and Mathematics

Statistics	Indonesian Language	Mathematics
Suryadi (1993):		
1. Average	27.7	21.6
2. Standard deviation	7.9	8.7
3. Number of items	47.0	49.0
4. % correct answer	58.9	44.1
Moegiadi (1976):		
1. Average	35.0	33.0
2. Standard deviation	12.0	9.0
3. Number of items	60.0	60.0
4. % correct answer	49.0	55.0

(Source: Suryadi, 1993)

[5] PPSP = Projek Perintis Sekolah Pembangunan (Development School Pilot Project) located in eight university level institutes of education and teacher training since 1973.
ALPS = Active Learning through Professional Support in Cianjur-West Jawa, then replicated into 6 other provinces
PEQIP = Primary Education Quality Improvement Project in six provinces since 1994.

In Indonesian conditions, seemingly the educational planners and policy-makers had prepared the prescription without carefully diagnosing this educational quality disease. They agreed that the quality should be improved, but were not clear about what should be cured. Most of the fragmented studies carried out by the Department of Education and Culture suffered from some basic deficiencies. For instance, studies done by Balitbang (BP3K, 1976; BP3K, 1978) in grade 6 primary schools were applied to the whole schools. This was an over-generalisation because from grade 1 to 6, there was a wide range of typical characteristics. Basically this issue started from the quality of pupil attainment, and then to the quality of teachers and teaching, and school management.

As Silver (1994) stated that an effective school is only one version of a good school, or Mortimore (1995) expressed it a different way that school effectiveness is one reflection of the quality of the school; the present study focussed on the problem of educational quality in the light of school effectiveness. In addition, in line with the historical focus of school effectiveness research, the main regard of this thesis is on urban schools which are disadvantaged in terms of socio-economic aspects, and interest in their academic attainments taking into account equal opportunity (Sammons & Reynolds, 1997).

Compared with school effectiveness studies in Indonesia done by Setijadi, Moegiadi, Wiradinata, Elly (1978), and Suryadi (1993) to portray a better picture in terms of school effectiveness based on popular models in mid-1970 to mid-1980, the present study attempts to move further. These previous studies were typical using input-output model and so suffered from its deficiencies discussed in the next chapter. This study uses the current school effectiveness perspectives which are more integrated and applies multilevel techniques, aspects which were missing in the previous approaches. In this kind of model the pupil background and teacher or headteacher characteristics were involved as explanatory factors in the effectiveness of schools. This kind of school effectiveness research will provide indicators of educational quality through a 'value-added' approach. These concepts will be addressed more fully in Chapter 2.

CHAPTER TWO
SCHOOL EFFECTIVENESS RESEARCH

The major focus in the vast majority of school effectiveness research (SER) is to explain the nature and extent of school influences on educational attainment. Scheerens (1990, 1992), Scheerens and Bosker (1997), and Riddell (1995, 1997) reviewed the various types of school effectiveness to find that most research in the area uses student academic achievement as the main response variable. Another extensive review by Riddell (1995) found that some studies in developing countries had not designed appropriate measures of pupil's attainment. However she still considered them as part of the tradition of school effectiveness research. School effectiveness is the main focus of this chapter and it develops and explains the model for the present study.

A. Definitions of school effectiveness

There are a variety of definitions of school effectiveness. From the economic point of view, effectiveness can be described as "the extent to which the desired output is achieved" (Scheerens, 1992; Scheerens & Bosker, 1997). This view expresses the logical relationship between input and output, which most economists call the "production function" approach, where the desired output is some function of input. Hanushek (1994) suggests that this is one of the most appealing and useful approaches when considering the determinants of students' attainment. However, this definition can be criticised because it does not examine other important aspects of education.

If education is considered as a *process*, then the definition of school effectiveness proposed by Madaus, Airisian, and Kellaghan (1980: 22) is an appropriate one. They define it as "the extent that it (education) accomplishes what it sets out to do". Thus the emphasis is on the achievement of educational goals by considering the process. However, Townsend (1994) points out the limitation of this definition in that it does not say anything about the nature or the acceptability of the goals.

Placing the emphasis on progress, Mortimore (1991: 9) defines an effective school as "one in which pupils progress further than might be expected from

consideration of its intake". An effective school thus adds extra *value* to its pupils' outcomes in comparison with other schools serving similar intakes (Sammons, Hillman, & Mortimore, 1995a). This definition, which is typically known as a 'value-added' approach, implies that by controlling for differences between schools in their pupil intakes especially in terms of prior attainment comparisons of relative rates of progress by pupils in different schools can be made.

Scheerens (1993) indicates that in order to call a school 'effective', high achievement levels should persist over time (stability) and effectiveness judgments should not be based on the functioning of just a partial segment of the total organisation (scope). Relating to research, he (Scheerens 1990: 64) states that school effectiveness is aimed at discovering school characteristics that are positively associated with school output, usually defined by specific measures of pupils' achievement.

A strong feature of school effectiveness research in the last decade concerns the conceptualisation of the characteristics of organisational phenomena which consists of nested layers (pupil within class, class within school). Multilevel models, which enable the hierarchical nature of the school as an institution to be studied, have been adopted in the majority of recent studies of school effects on pupil outcomes (see Raudenbush & Bryk, 1986; Goldstein, 1995, 1997). This study adopts a multilevel approach to the study of school effectiveness by explaining both intake and process measures and their relationship to pupil attainment. Mortimore's (1991) definition was considered most suitable for this study because it could be interpreted hierarchically in terms of input, process, and output of schools. Such a definition requires the researcher to utilise the most appropriate (robust) statistical analysis. Through such an approach, the requirements for a satisfactory school effectiveness study as proposed by Scheerens (1993, 1997) would be fulfilled better.

B. Past and current models of SER

Generally, based on the experiences in developed countries, the school effectiveness studies can be classified in terms of three theoretical models pioneered by certain concepts and approaches. Riddell (1989), Aitkin and Zuzovsky (1994), Creemers (1994b), Creemers and Scheerens (1994), Scheerens (1997), Scheerens and Bosker (1997) grouped them into three classifications or waves that changed from simple input-

output models to the hierarchical models.

1. Input-output approach

The first model is input-output, also typically called the educational production function (EPF) paradigm applying economic terms to schools. The model examines pupil achievement across different schools as the effects of various inputs such as pupils, teachers, textbook and other school resources. The most popular formula for EPF (Alexander & Simmons, 1975; Hanushek, 1979) is

$$A_{it} = f(B_i^{(t)}, P_i^{(t)}, S_i^{(t)}, I_i)$$

where for *i*th pupil, A_{it} is achievement at time t, $B_i^{(t)}$ is the vector of family background influences cumulative to time t, $P_i^{(t)}$ is the vector of influences of peers cumulative to time t, $S_i^{(t)}$ is the vector of school inputs cumulative to time t, and I_i is the vector of innate abilities. The function could be linear or non-linear, consisting of main effects and interaction terms.

Major studies in 1960s, for example, The Plowden Report in Great Britain and Coleman report in the United States can be classified in this approach. The Plowden Report (1967) was based on a survey from 173 schools, 3349 pupils and 3092 parents and used a stratified two-stage random sampling frame. Several measures of cognitive achievement were regressed on a host of variables divided into five different headings and entered as blocks - the pupil's own characteristics, the pupil's family background, the peer group, the characteristics of the teacher and the school's characteristics. The conclusion was that the contributions of home background factors were greater than that of schools and teachers. Although this Plowden Report distinguished between traditional and progressive teaching and insisted that discovery learning is always the best; the ideal has never been fully implemented in Britain (Halsey & Sylva, 1987).

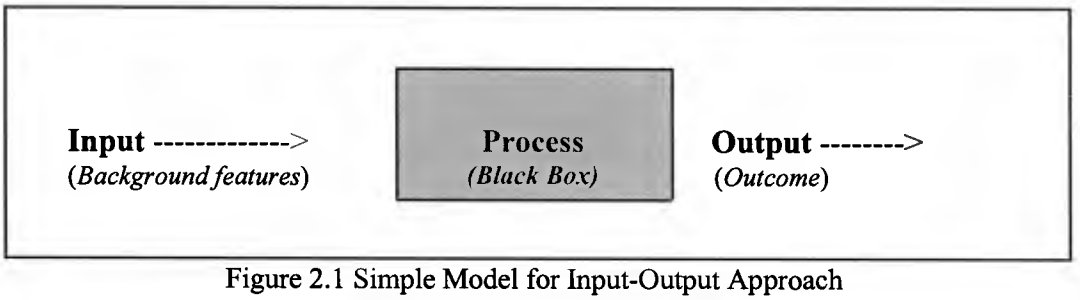

Figure 2.1 Simple Model for Input-Output Approach

Another study was carried out in USA. Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, and York (1966) collected data from 4081 principals, 66826 teachers, and 567743 pupils through stratified two-stage probability sampling. This examined the relationships of numerous input variables such as teacher salaries, type of curriculum, pupil expenditure, facilities and pupil home background and achievement outcome measures. It was found that there were relatively small differences between schools in terms of pupil achievement when background factors were taken into account. In other words, home background was more important than the school.

The great majority of studies which have used such approaches, as noted by Reynolds (1985) who suggested that family factors were the major determinants of pupil achievement. However, the major criticism of these studies which claimed that schools have little influence is that they used inappropriate measurement and did not touch the essence of schooling itself because they did not include information about relevant aspects of the school process which might be influential. These studies were strongly criticised on the basis of their conceptual and methodological deficiencies (Aitkin & Zuzovsky, 1994). First, conceptually the input-output framework ignores relevant processes taking place in schools, as shown by Good and Weinstein (1986), Gage and Needels (1989).

Second, as pointed out by Madaus, Kellaghan, Rakow, and King (1979), and Gray (1981) most of these studies did not use appropriate measures of pupil achievement. They used standardised ability or achievement tests as outcome measures. The problem is that standardised tests do not necessarily reflect the curriculum across schools because they are designed to measure general ability that is more dependent on extra-school influences such as home background than school specific learning processes. Madaus and his colleagues argued that traditionally, available standardised achievement tests are relatively **insensitive** to differences between schools because of their psychometric properties and content coverage. Madaus et al. (1980) then suggested it is appropriate to use outcome measures which clearly reflect what is taught in schools, such as summative examinations rather than standardised tests of general ability.

Third, most input-output studies were cross-sectional, looking at pupil attainment in schools at a single point in time. Because of this lack of a longitudinal framework, they

could not get data that properly reflected the prior attainment of the pupils. As a consequence, they failed to control adequately for the differences in intake to schools and thus could not isolate the effect of the school because comparisons were not made on an equal basis; schools served pupils with different levels of prior ability (Duignan, 1986). Longitudinal research is necessary in order that pupil attainment can be measured over specific time periods while controlling for baseline measures of prior attainment.

Fourth, studies grouped in this first model focussed on cognitive performance which is easy to measure and ignored to the non-cognitive outcomes of schools which are harder to assess (Duignan, 1986). More comprehensive outcomes measures are needed in order to capture a better complete picture of schools (Reynolds, Teddlie, Creemers, Cheng, Dundas, Green, Epp, Hauge, Schaffer, & Stringfield, 1994).

Fifth, the earlier studies used aggregated data to analyse school effects (the use of aggregate data for this purpose was criticised by Goldstein, 1979; Madaus et al., 1980). By aggregating data to school level, estimates of school effects are misspecified because, as Goldstein (1979) notes, relationships at the individual level may be quite different from the relationship which exists between the same variables measured at the school level and different results will be obtained when analyses are made at the individual than at the school level.

The most used statistical analysis in aggregated data is the ordinary least squares regression analysis (OLS). Criticism of the application of this analysis to research on school effectiveness was made by Cronbach (in 1976, cited in Bryk & Raudenbush, 1989). He notes the weakness of the findings from such research then he states that the studies of educational effects - whether classroom experiments, or evaluations of programmes or surveys - have collected and analysed data in ways that conceal more than they reveal. The use of aggregate methods have generated false conclusions in many studies.

Cuttance (1985) argued that this method of partitioning of variance explained, is inappropriate for estimating the relative contribution of school and non-school inputs. In addition, using this method is more likely to produce unreliable estimates of the impact of a fixed parameter (eg. for specific pupil characteristics). OLS regression models are thus not appropriate for analysing hierarchical data. As a consequence, OLS regression models are unable to isolate variation between pupils within schools because they do

consider how pupils are grouped within schools (Goldstein, 1995).

In spite of the criticisms, the input-output approach set an important direction for early SER. It provided a clear guidance on measuring certain basic educational aspects in schools, and was the springboard for the later development of the 'value-added' approaches.

2. Process-product approach

The second model emphasises the "process product framework" of education rather than physical inputs, under the label of 'instructional effectiveness'. This particular form was developed during the 1970s (Lockheed & Levin, 1993). Teaching and learning processes become key issues in this second approach. The Carroll model was claimed as a pioneer in considering the process aspects of education for instructional effectiveness (Creemers, 1994a; Scheerens & Bosker, 1997). The model consisted of 5 groups (Carroll 1963, 1985, 1989; Slavin, 1994), as seen in Table 2.1.

Table 2.1
Components of Carroll's Model

Components	Descriptions
1. Aptitude	Pupils' general abilities to learn
2. Opportunity to learn	The amount of time allowed for learning
3. Perseverance	The amount of time a pupil is willing to spend on learning the task or unit of instruction
4. Quality of instruction	When the quality of instruction is suboptimal, the time needed for learning is increased
5. Ability to understand instruction	e.g language comprehension, the learner's ability to figure out independently what the learning task is and how to go about learning it.

Following the Carroll model, Walberg (1991b) formulated a model in a rather different style, known as nine aspects for educational productivity (Table 2.2). A number

of developments have been made using the Carroll and Walberg models, e.g Creemer's model (Figure 2.2) which will be discussed later in the chapter.

Table 2.2
Walberg's Nine Factors

Component	Factor
* Pupil Aptitude	1. *Ability* or preferably prior achievement as measured by the usual achievement tests 2. *Development* as indexed by chronological age or stage of maturation 3. *Motivation* or self-concept as indicated by personality tests or the pupil's willingness to persevere intensively on learning tasks
* Instruction	4. The *amount* of time for which pupils engage in learning 5. The *quality* of instructional experience including method (psychological) and curricular (content) aspects
* Psychological Environments	6. The 'curriculum of the *home*' 7. The morale of *classroom* social group 8. The *peer group* outside school 9. Minimum leisure-time *television* viewing

(Walberg, 1991b: 94).

An important study occurred during the mid 1970s conducted by a group of British researchers, studying twelve secondary schools which sought to identify the more 'effective' ones (Rutter, Maughan, Mortimore & Ouston, 1979). This study observed students over time; studied their teachers, classrooms, and schools through direct observation; surveyed teachers, parents, and students; and evaluated the connections between school and home influences and student test scores. The authors concluded that there are a range of school practices that can elevate the performance of students, regardless of socioeconomic background.

The Fifteen Thousand Hours study of secondary schools, by Rutter and his colleagues elaborated their model into 5 clusters of variables: intake factors, ecological

influences, physical and administrative features, and school processes as explanatory factors, and school outcomes (attendance, good behaviour, academic attainment, and delinquency) as response variables. Even though the schools differed markedly in their student characteristics, they found that differences between schools were statistically significant after taking into account differences in their intakes. Schools which did better than average in terms of the children's behaviour in school also tended to do better on achievement and delinquency. Physical input did not seem to have an influence on the outcomes. The differences between schools in outcome were also found to be related to school characteristics or process such as degree of academic emphasis, teacher actions in class, rewards and punishments, etc. The characteristics of effective schools identified by the Fifteen Thousand Hours research were the following:

(a) positive group management in the classroom

(b) high expectations and standards

(c) positive teacher morale

(d) feedback on performance

(e) consistency of school values

(f) pupil acceptance of school norms.

This study was criticised in terms of its design, variables' elaboration, and conclusions (Goldstein, 1980; Plewis, 1980; Reynolds, 1982). On the other hand, the study was important for the development of the field because it attempted to take into account school process factors, although the analysis did not use multilevel approaches. And a valuable thing is that this study introduced a new method by controlling for intake variables in order to analyse the relationship of other explanatory variables with response variables.

In the United States, the first effective schools' studies were conducted as follows. With achievement test scores as the criteria, the first 'effective schools' studies were statistical analyses of schools that were supposed to be serving pupil populations that were similar in race and socioeconomic status. Statistical 'outlier' schools that seemed to be performing much better and much worse than the average were identified (Stringfield, 1994b). Next, the researchers studied the two groups of schools to find out how they differed. Although different researchers came out with slightly different lists of characteristics, the most commonly cited from these first studies is that compiled by

Edmonds (1979; later Ralph & Fenessey, 1983). Edmonds identified the following five characteristics of effective schools:

(a) strong leadership of the principal

(b) high expectation of pupil achievement

(c) emphasis on basic skills

(d) a safe and orderly climate

(e) frequent assessment of pupil progress.

Notably absent are differences in the material resources available to effective and ineffective schools.

What is unique about the effective schools strategy is its emphasis on transformation of the entire school, rather than on a specific aspect of the curriculum or instructional strategies, or school organization. The 'effective schools' approach argued that research demonstrated that effective schools for at-risk pupils are different in systematic ways from ineffective ones; and that the core characteristics of effective schools could be imparted to ineffective ones to increase their effectiveness through school-wide transformation rather than piecemeal reform (Lockheed & Levin, 1993).

Aitkin and Zuzovsky (1994) note several criticisms of the process-product model: on conceptual grounds from the organisational sociologists who felt that organisational structure of the school system was not adequate represented, while on methodological grounds criticism came from educational statisticians, and were directed at the general issue of the unit of analysis.

Furthermore Aitkin and Zuzovsky point out that the process variables examined in the analysis operate at the class or school level. However, the outcome variable was measured at the pupil level. This difference in level led to a serious debate over the proper "unit of analyses". Researchers still disagreed about the level of analysis to be used in determining the school effects, whether data should be analysed at the individual level or whether it should be aggregated to the school/class level.

3. Integrated or hierarchical approach

The third model is characterised by using a multilevel approach in school effectiveness research to integrate the previous approaches to effectiveness. Aitkin and Zuzovsky (1994) label this model "organisational framework" which consists of different

levels.

According to Aitkin and Zuzovsky, the concept of this model is based on the structural/functional paradigm discussed in sociology since 1950s e.g Merton in 1957 and Parsons in 1959. This paradigm considers the school as an organisation which is elaborated into different levels such as pupil level, classroom level, and school level. Recent development in statistical theory and the development of relevant computer packages make it possible to overcome many methodological weaknesses of earlier school effectiveness studies described earlier.

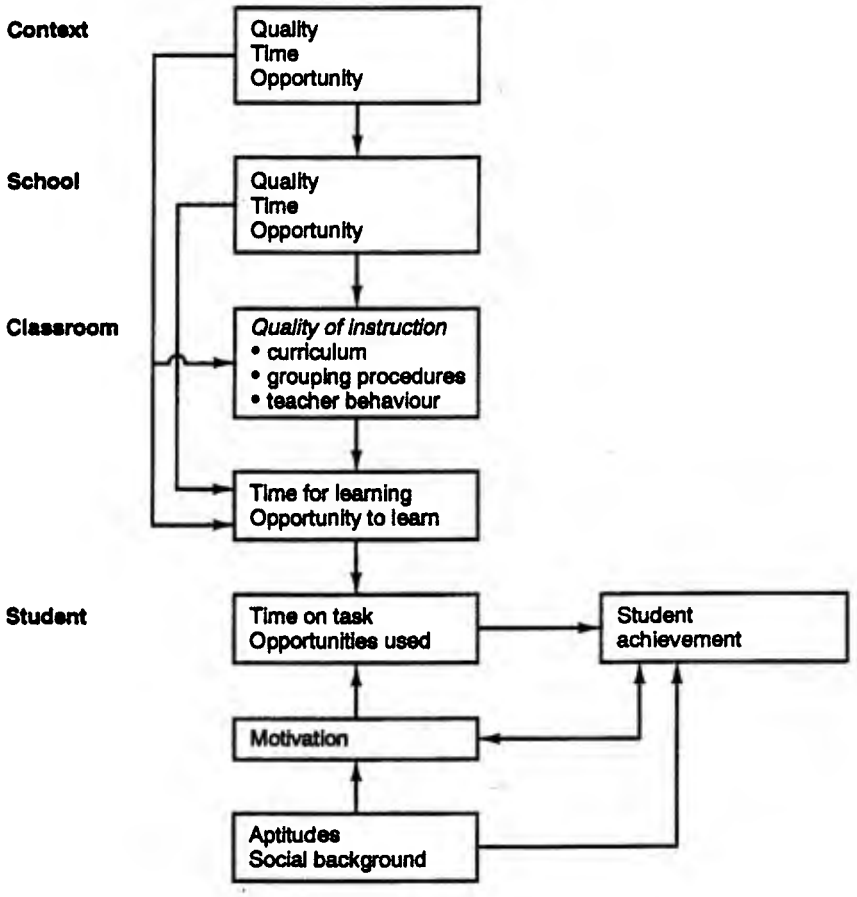

Figure 2.2 Creemers' Basic Model for Educational Effectiveness
(Creemers, 1994a: 27)

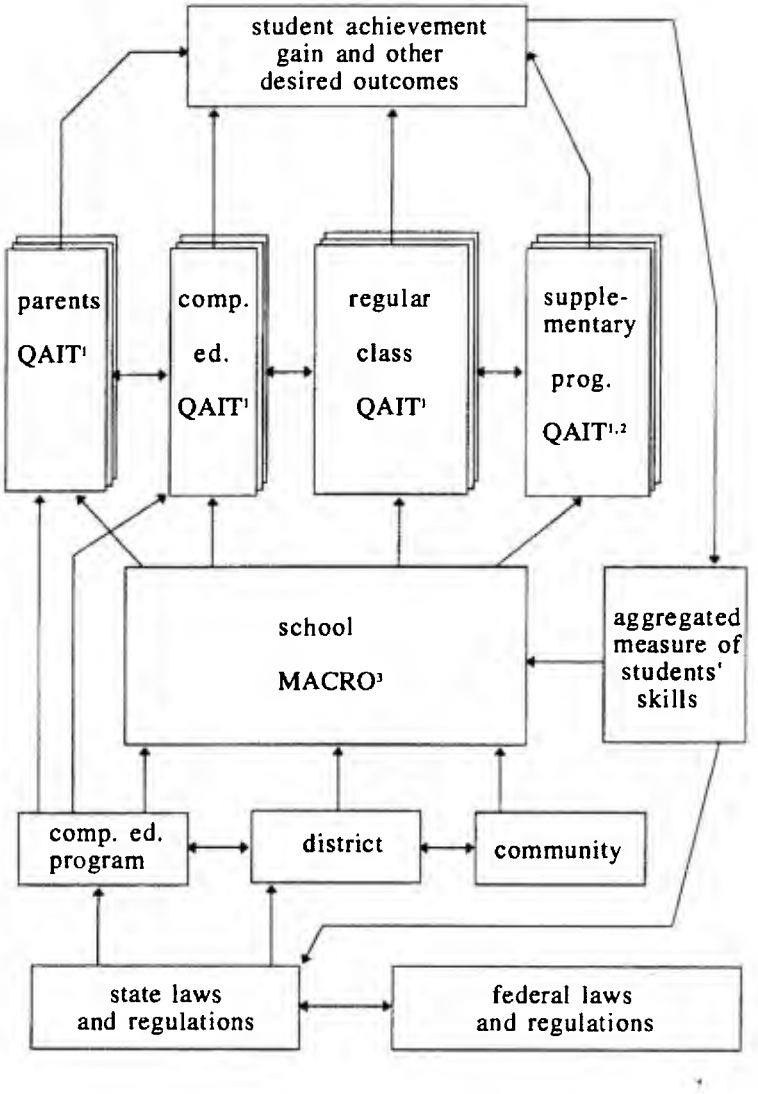

Figure 2.3 QAIT/MACRO Elementary Effects Model

(Stringfield & Slavin, 1992: 37)

Note:
1) QAIT: quality, appropriateness, incentive, time of instruction
2) Special education, bilingual education, etc.
3) MACRO: meaningful goals, attention to academic functions, coordination, recruitment and training, organisation.

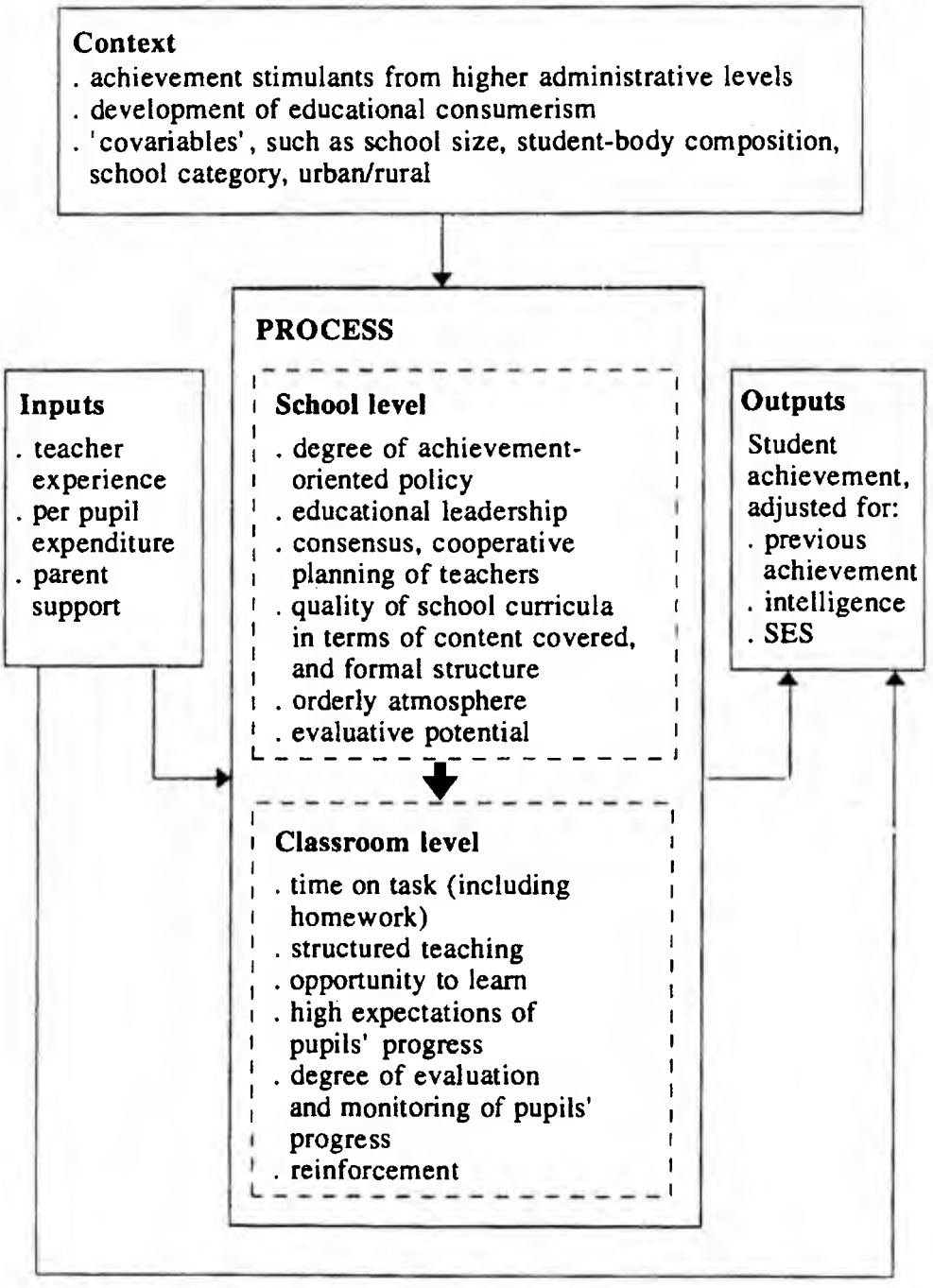

Figure 2.4 Scheerens' Integrated Model of School Effectiveness

(Scheerens, 1990:73)

Related to the conceptual development of the organisational framework was the methodological development of the multilevel model for the analysis of hierarchical levels such as pupil, class, school and so on. It enabled the simultaneous representation of variation at each level of the hierarchy in one model, and the identification of the important variables 'explaining' this variation at each level in terms of the magnitudes of their coefficients. Creemers (1994a) developed Carroll's model into a multilevel one as showed in Figure 2.2.

Slavin (1987, 1994) used the idea from Carroll's model and developed the QAIT[1] model under the assumption that pupils learn new information in relation to the Quality of the instruction, the Appropriateness of the difficulty of information to be learned, their level of Incentive to learn, and the Time they invest in the learning. The model is appropriate for multilevel research in primary schools, demonstrated by Stringfield and Slavin, which consists of four levels: pupil, (para) professional, school with headteachers, and the above-school/district levels (Slavin, 1989; Stringfield & Slavin, 1992; Stringfield, 1994a; Scheerens & Bosker, 1997). Stringfield and Teddlie (cited in Stringfield, 1994a) developed MACRO[2] in school level to explain school culture/ethos. The whole model is presented in Figure 2.3.

Scheerens (1990) elaborated another integrated model for this framework (Figure 2.4). He links *inputs* to the school and *outputs* from it with *processes* drawn from both classroom and school levels within a specified *context*. Context appears to be important; however in several theories and research studies there is no clear distinction between context and input. About the cross-level relationship, the general assumption is that higher level conditions somehow facilitate lower level conditions.

Almost a decade after the secondary school study by Rutter et al. (1979) was published, a primary school study by Mortimore and his colleagues (Mortimore et al., 1988) was reported. This study adapted the Rutter et al. (1979) design with improvements based on multilevel assumptions related to sample, variable elaboration, and method of analysis. Both these UK studies, Rutter et al. (1979) and Mortimore et al. (1988), asserted

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[1] QAIT = Quality, Appropriateness, Incentive, and Time of instruction.

[2] MACRO: Meaningful goals, Attention to academic function, Coordination, Recruitment and training, Organisation.

that schools with similar pupil intakes showed very different educational results and that these schools characteristics help explain the significant differences in effectiveness.

Table 2.3
Eleven Factors of Effective Schools

Factors	Description
1. Professional leadership	Firm and purposeful A participative approach The leading professional
2. Shared vision and goals	Unity of purpose Consistency of practice Collegiality and collaboration
3. A learning environment	An orderly atmosphere An attractive working environment
4. Concentration on teaching and learning	Maximisation of learning time Academic emphasis Focus on achievement
5. Purposeful teaching	Efficient organisation Clarity of purpose Structured lessons Adaptive practice
6. High expectations	High expectations all round Communicating expectations Providing intellectual challenge
7. Positive reinforcement	Clear and fair discipline Feedback
8. Monitoring progress	Monitoring pupil performance Evaluating school performance
9. Pupil rights and responsibilities	Raising pupil self-esteem Positions of responsibility Control of work
10. Home-school partnership	Parental involvement in their children's learning
11. A learning organisation	School-based stay development

(Sammons et al., 1995a)

This primary school study found twelve features of effective schools, later inspired ingredients for the key characteristics that guide many studies in school effectiveness. A later research review synthesised school effectiveness studies and pointed to eleven key characteristics (Table 2.3).

Relating to the third approach, there are some general features which characterise SER (Mortimore, 1991; Sammons et al., 1995a; Sammons, 1996; Sammons, Thomas, & Mortimore, 1997b). The first feature is measuring intake. As mentioned before, one important factor in the Rutter et al. (1979) *Fifteen Thousand Hours* study was introducing a method for taking into account the intake variables. Later, this method was demonstrated using multilevel techniques in the Mortimore et al. (1988) study of primary schools (*School Matters*). Under the label of value-added approach by taking into account the intake variables allows progress over time to be estimated (McPherson, 1992, 1997; Sammons, 1994; Harris, Jamieson, & Russ, 1996).

The second feature is the measurement of outcomes. As mentioned before, educational attainment as outcome is treated as a main response variable in most school effectiveness studies. This has raised concern (Purkey & Smith, 1983; Creemers & Reynolds, 1989; Levine & Lezotte, 1990; Levine, 1991; Creemers, 1997) because few studies have focussed on social outcomes. In Great Britain, for example, Rutter et al. (1979) investigated on social and academic outcomes as well. The Reynolds (1982) study likewise focussed on behaviour and attendance, the later Mortimore et al. (1988) research studied four social outcomes: attitudes, behaviour, self-concept and attendance in addition to academic outcomes in mathematics, reading, speaking skills and writing.

The third is measuring effect size. Uncertainties still exist and researchers spent much time attempting to understand more clearly the size of school effects (Cuttance, 1992), and their stability over time, across classes, departments or subjects (Bosker & Scheerens, 1989) and between different groups of pupils (Smith & Tomlinson, 1989).

The fourth is the use of a hierarchical/multilevel approach. Social data can basically be characterised as hierarchical phenomena. That is why an appropriate treatment is needed. From the mid 1980s SER started using multilevel modelling techniques (Aitkin & Longford, 1986; Goldstein, 1995, 1997) to assess differences between pupils, classes, and schools. As a consequence, it became important to sample a considerable number of schools, teachers, and pupils in SER studies.

The fifth is a longitudinal timeframe for taking one or more age cohorts over a period of time rather than cross sectionally. This is important because it allows the researcher to examine the issues of stability and consistency in schools' effects from year to year (Sammons, 1994; 1996).

The sixth, is outlier comparison. The statistical methods for identifying effective schools were also challenged, with different techniques identifying different outlier schools (Reynolds, 1982; Zirkel & Greenwood, 1987; Sammons, Nuttall, & Cuttance, 1993; Stringfield, 1994b). For example, outliers based on school mean achievement scores differed from those based on individual scores nested within schools; differences were also found when scores were adjusted for differences between pupils in terms of social class background and test scores upon intake rather than just prior attainment.

In recent years SER has been criticised from a variety of perspectives: philosophical, technical, and empirical. The criticisms are summarised below:

- Whether SER should be value-neutral in the light of Aristotelian practical reasoning (White, 1997). White stated that 'effectiveness' may not always be the value-neutral term it seemed at first glance. This statement influenced the scientific paradigm which posed questions to be answered by empirical investigation tied with mathematical analysis. As a consequence the value of School Effectiveness and School Improvement research is pulled in two opposite methodological direction known as Galilean (towards science) and Aristotelian (practical reasons). He still doubts whether SER makes sense in a scientific context.
- Ethnocentric and unconcerned with democracy (Hamilton, 1997). Hamilton regards it as an ethnocentric pseudo-science that serves merely to mystify anxious administrators and marginalise classroom practitioners.
- Simplistic use of league table based on value-added approach (Hamilton, 1997; Fielding, 1997). They argued that the absorption in sophisticated mathematical analysis is at the expense of larger political concerns. They also argued against its insensitivity to the nuances and particularities of everyday school life.
- Lack of hermeneutics information (Scott, 1997). Scott raised the problem related to the 'ontic fallacy' by arguing that performance is not always a good guide to

competence. SER also neglects curriculum factors among the factors promoting effective schools which might be studied better by non mathematical modelling or methods with a hermeneutical dimension.

- Lack of general theory, too practical and political impact on education (Elliot, 1996; Hamilton, 1997; Nixon, Martin, McKeown & Ranson, 1997; White, 1997; Winch, 1997). It is argued that the 'enduring truths' of school effectiveness research have failed to recognise the impact of social and economic disadvantage upon learning. The other alternative is to study schools effectiveness through localised community action research in order that schools can 'reclaim' their professional legitimacy and authority.

Such criticisms have been countered as partisan, demonstrating a lack of knowledge and historical base (Sammons & Reynolds, 1997; Mortimore & Sammons, 1997), and not well grounded in the methodology (Goldstein, 1997). It is argued that SER has contributed much which is opposite to the criticisms, e.g., focus on equity (Sammons, Mortimore, & Hillman, 1997a) and practical applications (Reynolds, 1997). One acknowledged problem in SER, however, is the lack of a well-developed theoretical basis (Mortimore, 1991; Creemers, 1992b; Scheerens, 1992). Aware of the problem, the following sections attempt to summarise the research in developing countries and then conceptualise a model for the Indonesian study which forms the base of this thesis.

C. SER in developing countries

1. SER in Non-Indonesian Settings

There are no similar large scale SER studies in developing countries comparable to those conducted in UK (e.g. Rutter et al., 1979; and Mortimore et al., 1988) and in the US (e.g Coleman et al., 1966; Jencks, Smith, Ackland, Bane, Cohen, Gintis, Heyns, & Micholson, 1972; Edmonds, 1979) which have yielded rich findings. Despite that minimal research which has been done in this area in the developing world, the studies seemed to reach consistent conclusions which differentiate education in developing countries from education in industrialised ones. However, this view is now being challenged as new studies using multilevel techniques have produced different results and as more sensitive measures of family background appropriate to developing countries have been used which have also produced different results (Lockheed, Fuller, &

Nyirongo, 1989; Lockheed & Longford, 1989; Hoppers & Little, 1994; Davies, 1997; Riddell, 1997). Therefore the following subsections comprise the typical features of single level studies in the 1980s and the multilevel studies conducted during the 1990s.

a. Typical features of single-level studies

Up to the mid 1980's most of the studies conducted in the developing countries came to the conclusion that schools exerted a more powerful influence on achievement than pupils' family background factors (Heyneman & Loxley, 1983; Fuller, 1987). This led to the optimistic inference that developing countries, schools were more effective than schools in industrialised countries, both in raising achievement and in producing a route for social mobility (Fuller, 1987). This conclusion has often been justified by the claim that the formal school is a novel institution in many developing countries, operating in communities where written literacy and numeracy is a recent phenomena, and that as a result, schools with a few material inputs and only a moderate quality nonetheless may have a significance influence on academic attainment.

Heyneman and Loxley (1983) examined the influence of family background and school factors on pupils' science achievement from 16 developing and 13 developed countries. The school factors studied were: teachers' school attainment and length of instructional programme, availability of textbooks and school libraries and pupils' social class factors including parental educational and occupational status.

They found that variation in school factors explained only small portions of variance in achievement in the developed countries. However, in developing countries the block of school factors explained significant portions of the variance in achievement. They also found a significant correlation between a nation's wealth (GNP per capita) and the amount of variance explained by the school factors and concluded that the lower the income of the country, the weaker the influence of pupils' social status on achievement. On this basis Heyneman and Loxley concluded that a different paradigm of school effectiveness exists in the developing countries where schools have a greater impact on achievement than home background factors.

Fuller (1987) carried a review of 60 studies on school effects in the developing countries and found that the majority of the studies found significant achievement effects from school factors, not the influence of pupils' social class background. However, critics

have pointed out that these studies suffer from severe methodological and conceptual weaknesses which can invalidate their results (Fuller, 1987; Riddell, 1989). Some of the weaknesses are the same as those which apply to studies done in the Western countries.

Fuller (1987) argued that one of the weaknesses of developing world studies was that they have mainly been designed to test whether Coleman's (Coleman et al. 1966) sceptical conclusion actually holds in developing countries. As a result these studies have continued to rely heavily on production function models borrowed from economics i.e. they have examined the influence of material factors in schools on achievement. In fact, a lot of these studies have consistently found that material factors in schools do exercise an impact, but this only holds for mathematics achievement, the results for reading achievement are not consistent (Fuller, 1987).

Another weaknesses of developing world studies is that they were usually cross-sectional in design and failed to take into account previous levels of achievement that tend to confound the effects of school and family characteristics.

Further these studies have continued to rely on single level models and have tended to use R^2 (the total variation explained) as a measure of importance by comparing the proportion explained by school factors and that explained by family background factors. But as Riddell (1989) pointed out R^2 is only a reflection of what one is able to measure, i.e variation that can be accounted for by the model fitted, it does not measure the relative importance of different variables.

SER researchers have started to address some of the criticisms and weaknesses of earlier research and have come up with quite different results from those obtained in earlier studies. For example Lockheed et al. (1989) carried out a study of family effects on achievement in Thailand and Malawi which aimed at using more culturally relevant family background measures and also included motivational variables. They found that in Thailand, family background and prior achievement affected pupils' educational experiences, perceptions of ability and effort, which in turn influenced later performance.

In Malawi they found that, after using country specific measures of family background (i.e. parents demand for labour, pupils work tasks and basic attributes of houses e.g radio), family background had a more significant influence on achievement than global Western proxies. Thus, they argue that the failure of earlier studies to find any significant effects of family background on pupils' achievement might have been due to

misspecification of these variables in developing countries. But these results should be treated cautiously. The Malawi study was cross-sectional and the sample consisted of only 103 pupils from 21 schools. Moreover the study did not control for prior attainments and since a single level model was used the study was not able to separate the variation due to the school.

b. Some multilevel studies

Studies now appearing in the developing countries which are using multilevel techniques to redress the fundamental methodological weaknesses of earlier studies. The following two studies (from African and Asian countries) are examples of the growing number of primary school effectiveness studies in developing countries.

1) Zimbabwean primary schools

Nyagura's (1991) study of primary schools in Zimbabwe is an example of using multilevel modelling in an African developing country. He used 3-level approach for investigating the effects of schools, classrooms and pupil characteristics on academic achievement in Zimbabwean primary schools. For mathematics, 26.2 per cent of the variance in achievement was between schools, 14.3 percent between classes, and 59.5 per cent between pupils. Unlike mathematics, for English he found that between-school variance accounted for 43.8 per cent, 7.8 per cent to class-level factors, and 48.4 per cent was attributable to pupil-level factors.

The significant factors on English were: pupil's age (negative), repetition years (negative), pupil absenteeism (negative), homework time (positive), family size (negative), father's education (positive), teacher's gender (positive for female teachers), class textbook (positive), teacher qualification (positive), headteacher's gender (positive for female heads), school gender (positive for single sex), school boarding status (positive for boarding), teacher pupil ratio (negative), percentage of African enrolment (negative), school textbooks (positive), and percentage of trained teachers in the school (positive).

For mathematics attainment, the significant factors were: pupil's age (negative), pre-school years (negative), repetition years (negative), pupil absenteeism (negative), teacher's gender (positive for female teachers), teacher qualification (positive), class textbooks (positive), headteacher's gender (positive for female heads), school gender (positive for single sex), school boarding status (positive for boarding), teacher-pupil

ratio (negative), percentage of African enrolment (negative), school textbooks (positive), percentage of trained teachers (positive).

In addition, in Nyagura's study the most and least effective schools from a sample of 86 primary schools, for English: pupil's age, repetition, homework time, family size, father's education, textbook availability in classes, school sex and percentage of trained teachers appeared to make a difference. However, for mathematics no effective school was found.

2) Thailand primary schools

In Southeast Asian Countries, the multilevel approach for primary school effectiveness has been carried out first in Thailand by Raudenbush, Kidchanapanish, and Kang (1991). They assessed the importance of preprimary experience on educational achievement. They assumed that preprimary schooling is not only conceived for improving the average level of pupil achievement but also for reducing social disparities in educational outcomes. This was based on studies conducted in Argentina, Guatemala, India, Kenya, and Thailand that preprimary programmes are found most often in urban areas to serve children of relatively high socioeconomic status. In addition, when disadvantaged children attended the schools, generally, their academic quality tended to be lower with less intensely academic curricula, larger child-staff ratios, and teachers with less training. For Thailand, it is assumed that most rural children received their preprimary schooling in rural areas and urban children received their preprimary experience in urban areas.

A multistage cluster sampling provided data from a sample of 399 schools, 11,442 pupils, 1,074 teachers, and 3,951 local residents. By using HLM (hierarchical linear model) and focussing on mathematics and Thai language, Raudenbush and his colleagues found four main results. First, on the magnitude of school differences in achievement from the empty model, 31 per cent of the total variation in mathematics reflected differences among schools, while the remaining 69 per cent reflected differences among children within schools. In Thai language, 35 per cent of the total variation was among schools with 65 per cent of the variation lying within schools.

Second, on the magnitude of urban-rural differences before controlling for prior attainment and pupil background, the gaps were substantial. Urban children scored 0.55 standard deviation units higher than did rural in mathematics and 0.62 higher in Thai

language. Third graders attending preprimary schools in Thailand achieved significantly more in mathematics and Thai language than did children of similar social background, sex, and age with no preprimary experience. The size of the effects is modest but not trivial, equivalent to 15-16 percent of standard deviation in the urban sector and 9-10 percent of the standard deviation in the rural sector.

Third, there were results on the effect of child background. For mathematics, pupil gender, socio-economic status, and age were significantly related to achievement. Boys outperformed girls and higher socio-economic status children outperformed the lower socio-economic status. Age was negatively related to maths achievement. For Thai language, gender, socio-economic status, and age were also significantly related to achievement. But in this case, girls outscored boys. Again, socio-economic status was positively related to the outcome, and age was negatively related.

Fourth, on the effects of school composition, the average socio-economic status of the school was significantly related to both mathematics and Thai language achievement in both the urban and the rural areas. Once the Socio-economic status was controlled, the presence of community disturbances were not significantly predictive of achievement. The remaining differences between urban and rural means were substantively important and statistically significant.

2. SER in Indonesia

SER in Indonesia is very scanty, even though there have been some studies which touch upon some aspects in the territory of school effectiveness. Two typical *ordinary least square* and one *multilevel* studies will be discussed here. The first is the study by a group from BP3K under the sponsorship of the Indonesian Ministry of Education and Culture (Setijadi et al., 1978). The study was designed into 4 blocks of explanatory variables i.e. home background, school variables, classroom climate, and additional variables such as urban-rural, leisure activities, expected education level, and repeater. By using multi-stage random sampling, data were collected from 14,000 sixth grade pupils in ten regions. Four major conclusions from an OLS regression analysis were:

a. The home background of Indonesian Grade 6 pupils accounts for 8.8 per cent of the total variance of their achievement. Most of this influence is accounted for by the father's occupational status, and by such indices as the number of books in

their homes, their family religion and social status.

b. When the home environment factors are removed, certain school and teacher influences stand out. Foremost among these are the size of the class and school. Pupils from larger classes achieve more highly, regardless of home background or urban-rural differences. School with more classroom facilities and those characterised by modern methods, frequent homework and better lighting also show higher results. Pupils who attend private schools and have female teachers also perform better, other things being equal. However, the total influence of all these school features accounts for only 6.2 per cent of pupil achievement differences. Neither the kind of training nor the length of experience of the teachers showed a marked impact on pupil achievement when the effects of home background were removed.

c. The largest influence on achievement is reflected in the indices of classroom climate. Pupils in classes generally high in educational aspirations, perform better regardless of other home and school factors. The classroom climate factors were reported to account for over 46 per cent of the variance. This finding is interpreted primarily as an unmeasured effect of good teaching, probably a feature of the teacher's personality and interpersonal relationships with her pupils. Whatever its explanations, it may not easily be affected by administrative policy decisions, but clearly deserves closer study.

d. City children achieve higher attainments than rural children. This difference is explained, in similar proportions by home, school and classroom climate factors, and could not therefore be readily eliminated by policy changes.

The process aspects appeared as classroom climate in this study. These results were used as some starting considerations for innovation in Indonesian primary education, known as CBSA (student active learning), introduced by ALPS project (Tangyong, Wahyudi, Gardner, & Hawes, 1989) run by a team from the Institute of Education, University of London.

The second Indonesian study was done by Suryadi (1993) under the sponsorship of the Indonesian Ministry of Education and Culture and USAID to improve primary schools. From the sample of 5790 pupils, 398 teachers, 398 principals, and 5636 parents through stratified random sampling (in three provinces), he found that home and

community variables affected variation in achievement more strongly than did the school quality variables. Related to school, he concluded that:

a. Teacher quality and the length of instructional time in each subject (mathematics, science, and Indonesian language) are the strongest policy manipulable predictors of pupil achievement. Generally, higher achieving pupils are those who have more instructional time per week; taught by teachers who have a better knowledge of subject content and were involved in professional activities, such as reading books and peer discussion; and who were taught through reading, use of teaching materials, discussions, and classroom exercises.

b. A number of managerial variables were found to be associated significantly with achievement. Higher academic performance is associated positively with a higher degree of external school relations (attending parent-teacher-association meetings, comparative studies with other schools, and interaction with children's parents); continuous mechanisms of internal control for the improvement of the instructional process (classroom supervised by headteacher, headteacher correcting lesson plans, etc); and discussions or interaction with school supervisor.

c. Teaching process variables have also been shown to be determinants of achievement. Lecturing appears to be the common teaching method used by most teachers. This study found that lecturing, a structured teaching approach, affected pupil achievement negatively. On the other hand, more dynamic teaching approaches, such as textbook reading, use of materials, classroom demonstrations, discussion and problem solving methods affected achievement positively.

d. Because of negative *beta* weight of the teacher variable "preparation of lesson plans" it was concluded that lesson preparation was not a task that interests teachers, and that perhaps this even had discouraged teachers from enriching their capacity to learn.

d. Provision of mathematics textbooks explained differences in maths scores in Java, but was not significant in the provinces outside Java. Textbooks in the Javanese schools did significantly affect achievement, perhaps because problems of textbooks insufficiency tend to exist when the rate of enrolment exceeds the

rate of textbook production.

Although the two studies were used for policy-making (IIES, 1986) both suffered from severe methodological problems because they failed to consider intake variables and ignored the hierarchical nature of data.

The third, as the first Indonesian multilevel study was carried out by van der Werf and Creemers (1998). This study evaluated the PEQIP project in two provinces (from six provinces), Aceh and North Sulawesi. Each province included 72 to 78 schools with 9 clusters (each one nuclear school and six to nine satellite schools).The project was focussed in teacher professional development, educational management (including community participation), books and learning materials, and evaluation and monitoring. Using two-level analysis they found that 46 per cent variance between schools for mathematics, 39 per cent for Indonesian Language, and 40 per cent for science in primary schools. In North Sulawesi where the PEQIP had a statistically significant influence, the pupil, classroom, and school variables were found for the three subjects as the following. By and large, PEQIP had positive effects on mathematics attainment and science where satellite schools made more progress than nuclear schools. For Indonesian Language attainment, teacher professional development, community participation and evaluation and monitoring had significant effect but not the homework (in terms of frequency and parental control). Teachers' experience and parental involvement related negatively. For mathematics achievement, teacher professional development comprised innovative teaching and homework frequency were positively significant. The influence of evaluation and monitoring were not significant. For science, the results indicated that only innovative teaching has a significant positive effect.

D. The Model of the Present Study

This present study adopted the multilevel model for the study of SER issues as has been carried out in a few developing countries, but never before in Indonesia. This starts from a basic consideration of school as an organisation, and consisted of three levels: pupil, class, and school. In the author's observation, generally, SER in developing countries, using multilevel models, is still much affected by the concept of educational production function. On this concept in developing countries Hanushek (1994) states it is less extensive, less rigorous, and more difficult to interpret than that for well developed

countries. About the determinants of school performance in developing countries, the apparent differences in the level of educational support provided by families and schools need to be explored.

Most multilevel studies, as mentioned in the previous section, elaborated the input variables into different levels while ignoring the process of schooling itself (an important exception being the recent study by van der Werf & Creemers, 1998). Therefore they suffer from the criticisms applied to the input-output model relating to the failure to explore process factors. Some missing factors in the previous multilevel studies in the developing countries have been taken into account in this present study. They include process and context variables in all levels. Individual learning processes at home related to family background, teacher pedagogy and headteacher leadership are all included as part of the process components. Family social environment, classroom and school conditions are the context components.

The basic conceptual model is shown in the following Figure 2.5, the explanatory variables are grouped in pupil, class, and school levels. Most of the predictor variables included in the conceptual model have been extracted from the previous studies in developing countries.

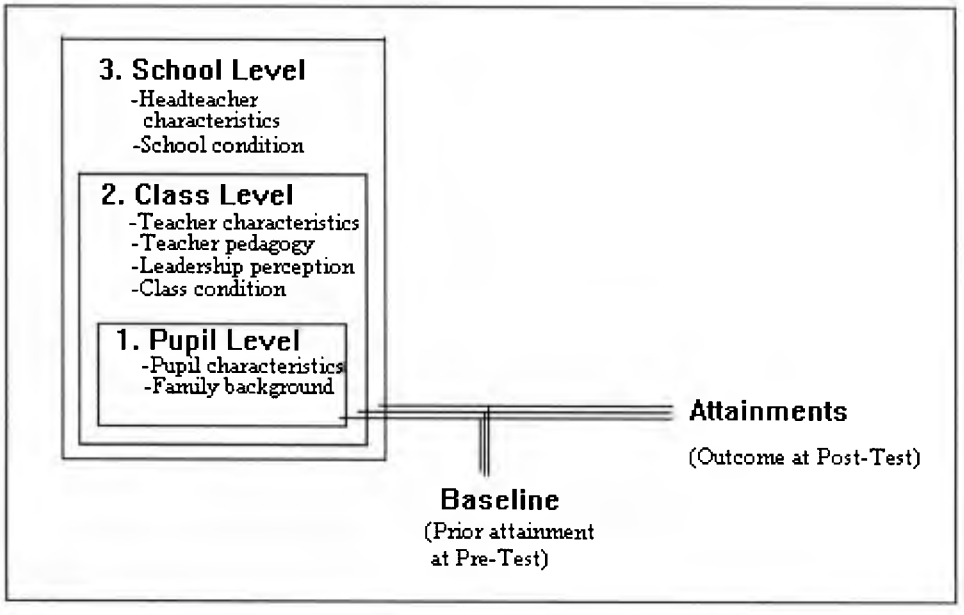

Figure 2.5 Conceptual Model for Indonesian Study

1. Pupil Level

Most relevant literature indicates strong links between pupil attainment and factors related to the individual pupils' characteristics. The factors are identified into two groups i.e child characteristics and family background.

a. Pupil Characteristics

Individual characteristics of pupils which are considered important determinants of their attainments are: age, gender, ethnicity and religion. In most Indonesian research age has been negatively correlated with attainment (Soegiyanto, 1984; Suryadi, 1993). That is, the older pupils in a class were showing lower the attainment levels than the younger ones. This is a reflection of the fact that children who do not attain a certain standard in any given school year are required to remain in that grade for another year. Gender has been shown in many studies previously mentioned as a significant child characteristic for attainment. It appears from some studies that girls perform higher in language (verbal and reading) but not in mathematics in comparison to boys (Martin & Levy, 1994, Skaalvik & Rankin, 1994). Ethnicity in UK research (Sammons et al, 1993; Sammons, Thomas, Mortimore, Owen, & Pennell, 1994; Sammons, 1995), appeared as a significant variable for children's academic attainment. Although Indonesia comprises a considerable number of ethnic groups from many different subcultures, no study has been done to examine the relationship between the ethnicity and the children's attainment. In the Indonesian case, it has, however, been found that variation in pupil attainment is related to religious background (Setijadi et al., 1978); the Non-Muslim children performed better than those who were Muslim.

b. Family Background

Aspects to be considered in family background are social status, family social environment, and the home learning environment. Social status in terms of parents' occupation and education is one of the major issues to be taken into account because as Gillborn (1992) has argued, ignoring this factor may produce misleading results. On parents' educational qualification, a summary from an international study (King, 1994) showed that in Indonesia the fathers' and mothers' education made a significant contribution to children's schooling. For male children, the father's contribution was much higher than mother's but for female children, the father's effect was slightly lower than that of the mother's.

The family constellation includes family size, order and number of siblings, and social pressure for academic attainment (Iverson & Walberg, 1982). Studies carried out in Indonesia, particularly in Java by Paige (1979), Mani (1983), and Soegiyanto (1984), show that family size and number of siblings has a positive influence on children's attainments. Social pressure for academic attainment may come from elder brother(s) or sister(s) who have gone on to a higher educational level. This pressure may affect the individual attainment as found by Paige (1979). Birth order seems to be an intervening variable. The attainment associates with the parent-child relationship especially for the only child or for the first-born (Soegiyanto, 1984). Thus the first-born children can show higher attainment motivation and that appears to affect their academic performance.

The home learning environment is elaborated into variables such as study place, the availability of books and newspapers, home language, time spent on homework and parental encouragement. On home language, because there are many local languages (Napitupulu, 1990) possibly used at home but not at school, the more often the family uses the Indonesian Language (the school language) at home the better the attainment of the child tends to be at school. Homework is a valid component of the learning process (Cooper, 1989; Faulkner & Blyth, 1995; Hoover-Dempsey, Bassler, & Burow, 1995; Cowan & Trail, 1998) and internationally shown as influenced by the home (Walberg, 1985; 1991a) as indicated by the proportion of time devoted to this kind of learning (Mortimore et al., 1988; Alexander, 1992). In addition, the availability of printed books and newspapers at home may encourage children to develop a reading habit and to improve their school language (Elley, 1994; Purves & Elley, 1994; Sugihartati, 1997) which affects their learning. And a convenient study place at home also may support the children's learning.

Parental encouragement is defined by Mani (1983) as a set of factors concerned about and helping homework, concerning schoolwork, and reward for academic achievement. In Indonesia he found a significant effect of parental encouragement on pupils' achievement and aspirations. Therefore all the elements of the home learning environment, as hypothesised, will positively influence academic achievement at school.

2. Class Level

Primary classrooms are different in terms of the teacher characteristics, teacher pedagogy, and the composition of pupils. The differences in pupil attainment may be related to variation in the classrooms (Pollard, 1992; Sammons, 1996, 1998).

a. Teacher Characteristics

Teacher's gender, educational qualifications, teaching experience, inservice training, and rank promotion are considered as teacher characteristics. Related to class learning outcomes, studies (Joyce & Showers, 1988; Ross & Postlethwaite, 1989; Lockheed & Vespoor, 1992; Postlethwaite & Ross, 1992; Setijadi, 1992; Sahertian, 1994; Lundberg, 1994) have shown that women teachers and all the other characteristics make a positive contribution. Murnane (1975) raised an interesting issue of teacher's marital status as a characteristic although more evidence is needed.

b. Teacher pedagogy

Teacher pedagogy in this model relates to lesson plans, correction of pupils' work, homework assigned to the class, and teaching characteristics. Lockheed and Levin (1993) concluded from Nepal, Thailand, and Columbia that increasing pupil involvement in learning through teaching practices encourages pupil learning. It is hypothesised that key variables relevant to pupil involvement will be the amount of homework assigned to pupils per week, hours for lesson planning and for correcting pupils' work.

The change of teaching styles and roles occur from time to time. As an illustration from British primary schools since 1988 is that the main changes were from child-centred to subject-centred learning, from informal to formal teaching methods, from classroom-based to standard assessment, from teachers as tutors, guide and resources to teachers as managers (Sylva, 1996). As in Britain, in Indonesia striking change has taken place in teaching styles. The two main styles of teaching in the Indonesian primary schools can be identified as conventional and innovative. The conventional style is characterised by lecturing, using standardised textbooks, memorising, allowing no pupil talk in the classroom, and a uniform task for the whole class. On the other hand, the innovative style makes the children more active in the classroom through using teaching aids, discussing, assigning tasks for children in groups, using experiments, and homework (Semiawan, Tangyong, Belen, & Matahelemual, 1985; Joni, 1992; Semiawan, 1993). Most primary teachers are in the transition from traditional to progressive methods as a result of the

ALPS project in Indonesia (Gardner, 1994; Moegiadi, Tangyong, & Gardner, 1994) which is popularly known as CBSA (= Student active learning). It is hypothesised that progressive teaching methods will engage pupils more actively in the learning process than the conventional teaching methods so that the attainment of the class will be increased.

For improving teacher pedagogy in developing countries, inservice-training programmes are recommended (Andrews, Hosego & Thomas, 1990; Suryadi et al., 1992). However, the resistance to change from the participants may appear in such situations (Fullan, 1991, 1997). For the Indonesian primary condition, Leigh (1991) and Parker (1992a) confirmed that it is very similar to the "textbook culture" in India (Kumar, 1988). The features of the culture are

- teaching in all subjects is based on the textbooks prescribed by government
- the teacher may not deviate from the syllabus
- resources other than textbooks are not widely available, and when they are available are rarely used
- assessments are based on textbook knowledge

In this kind of culture and under a certain degree of control from the Ministry of Education and Culture the teachers have to follow the instructions they receive from the inservice programmes. Presumably the programmes are well planned and organised in order to improve the teaching-learning process, it is hypothesised that the more often the teachers participate in inservice programmes the better the attainment of their pupils.

c. Leadership as perceived by teachers

The role of the headteacher leadership in school may be overemphasised (Fullan, 1991; Tsang & Wheeler, 1993) as a vital aspect of school management and there is little empirical evidence to support its impact in developing countries (Harber & Davies, 1997). However, these authors also recognise that effective teaching can be facilitated or impeded by the headteacher's role. It may encourage teacher collaboration in discussing pedagogical and content concerns, in the development and use of materials, and so on.

Leadership is a multidimensional concept. In terms of styles, known as democratic, laissez-faire, and autocratic, Reynolds and Packers (1992; also in Reynolds, 1992 based on Galloway's study) illustrated the New Zealand case that from four

'effective schools' two were characterised by autocratic headteachers, one democratic and one mixed style. Harber and Davies (1997) summarised from developing countries that most school headship is influenced by cultural traditions and tends to be autocratic. Another way to study leadership is by focussing on leadership behaviour. After reviewing the ideas based on results from some different studies, Hoy and Miskel (1991; see also Harris et al., 1996) classified the dimensions of leadership behaviour into two main groups regarded as 'concern for organisational tasks' (task-oriented) and 'concern for individual relationships' (people-oriented). Some studies (Cheng, 1993; 1994) have found that the dimensions of leadership based on headteacher behaviours have a positive influence on the teachers' and pupils' attainments. Georgiades and Jones (1989) provided evidence from study in Thailand that the effective headteachers were high on interpersonal relationship and low in task-oriented.

d. Classroom condition

Class size, pupil gender composition, and textbook resources in the class are considered part of the class condition domain. Evidence about the role of class size as an influence on pupil attainment in developing countries is still inconclusive, and there are some doubts about its role in improving teaching quality (Harbison & Hanushek, 1992; Johnson, 1992; Glewwe, Grosh, Jacoby, & Lockheed, 1993). Some research has found a large association with high pupil performance (9 out of 14 studies in Pennycuick, 1994). In Indonesian studies conducted decades ago researchers found that the larger the class the better the pupil achievement (Setijadi et al. 1978; Aanenson, 1979; Ross & Postlethwaite, 1989). The bigger class may be helpful for children in order to socialise and enrich each other in peer groups (Joni, 1993; Semiawan, 1993; Ross & Postlethwaite, 1994). However, it is not possible to disentangle class size from intake differences unless good control of prior attainment is made (see Goldstein, 1998; Goldstein & Blatchford, 1998; for an initiative of class size research). On gender composition, in line with gender at the pupil level, the higher proportion of girls in the class, the higher the class attainment. Textbooks as instructional materials are the key ingredients to enhance pupil achievement (Lockheed, Vail & Fueller, 1987; Lockheed & Vespoor, 1992; Postlethwaite & Ross, 1992; Khandker, Lavy, & Filmer, 1994; Pennycuick, 1994).

3. School Level

School variables are classified into headteacher characteristics, professional development, and school condition.

a. Headteacher characteristics

Headteacher characteristics are described as gender, age, educational qualification, experience, and promotion rank order. Some studies suggest that female headteachers and the other characteristics may affect pupils' attainment although there is no evidence of causal links (see Joyce & Showers, 1988; Krueger, 1995; Carron & Chau, 1996). On age and experience of headteachers in Indonesia, Sembiring and Livingstone (1981) found that there were positive relationships with pupil achievement.

b. Headteacher professional development

Other professional actions are related to meetings, entering classrooms, doing schoolwork at home, and involving oneself in activities for professional development. All these activities are hypothesised as having a positive influence on school attainments (See Office of the National Education Commission, 1982).

c. School Condition

School condition is characterised by school size, book resources, pupil and teacher compositions. With regard to school size, studies in Indonesia found that pupils in larger schools achieved higher attainment than in smaller schools because the larger schools had better resources, especially in the availability of books (Sembiring & Livingstone, 1981; Leigh, 1991; Ross & Postlethwaite, 1994), better teaching, and highly qualified staff (Suryadi et al 1992). It is hypothesised that the school size, resources (viz. school books), female pupils and teacher proportion (refer to the lower level variable) contribute positively to pupil attainments in the school.

In summary, the research hypotheses based on the conceptual model are:

- At the pupil level it is predicted that the pupil characteristics, family background and constellation, and home learning will be associated with the attainment over the school year after taking the prior attainment into account.
- At the class level it is predicted that teacher's characteristics, qualifications, pedagogy, and class conditions will be associated with pupil attainment after taking prior attainment into account.
- At the school level it is predicted that the headteacher's characteristics,

qualifications, professional development and the school context will be associated with pupil attainment after taking into account the prior attainment.

This chapter, the literature review on school effectiveness, has resulted in a conceptual model for carrying out research on primary schools in Indonesia. The conceptual model was used as the guide for designing the empirical study and analysing the data. These are presented in the following chapters.

CHAPTER THREE
THE STUDY DESIGN, INSTRUMENTS, AND PROCEDURES

The aim of this study was to identify possible factors related to educational attainment in the upper grades of urban primary schools. Conceptual frameworks and empirical findings, presented in Chapter Two explored specific models and characteristics of schools and pupils which were related to attainment. However, findings from investigations in terms of the 'integrated model' have not found differences between the grades within any one school at the same time. This study attempted to contribute to this knowledge based on data collected in the Indonesian context.

The following sections describe the design of this study and include research questions, type of study, research setting and sampling. This is then followed by a review of the research instruments administered in this study. Finally the chapter reports the procedures of carrying out this study including strategies of data processing and analysis.

A. Design of Study

1. Research Questions

It is forcefully argued in the school effectiveness literature that schools make a difference to pupil attainment. However, there is a need for further research to demonstrate this in more detail including the extent of difference and possible reasons for it. Educational attainment has been shown to be affected by many factors such as characteristics of pupils, teachers, headteachers, home background, classroom context, school context, along with some process aspects. The statistical influence of these factors on attainment can be best investigated by models which take into account the nesting within a hierarchical structure. This means that variance in pupil attainment is examined at different levels (e.g. the individual child, the class, the school). Goldstein (1995, 1997), Willms and Raudenbush (1997), and Gray (1998) point out that this analysis is a promising approach in comparison to many previous studies which have ignored the hierarchical (clustered) structure of educational data.

In recent years there have been a number of educational effectiveness studies employing the hierarchical modelling techniques carried out in well developed countries

but few in developing ones. Unfortunately, until the present study, there has been only one study recently appeared (by van der Werf & Creemers, 1998) using these techniques for research in Indonesia. In light of multilevel perspectives, the three major questions addressed in this study are:

(a) How much variation in pupil achievement lies among pupils, and what part lies among classes and schools?

(b) After taking into account entry scores (called 'baseline measures') which school, class, and pupil characteristics contribute to pupil achievement in different grades at the primary schools?

(c) If effective and ineffective schools can be identified, what are their characteristics?

This study focused on the upper grades of primary schools in an urban setting (the choice will be discussed further in the section Research Setting and Sampling). The response variables in this study were pupil attainments in Indonesian Language and Mathematics which express the basic skills in the Indonesian primary curriculum. These outcomes were measured by tests developed at national and district levels. The pupil attainments at the end of the 1995/1996 academic year(grades three, four, and five) were used as pretest. The scores of the same subjects at grades four, five, and six in 1996/1997 academic year were treated as post-test results (to be explained later in the Instrument section).

The explanatory variables extracted from the teacher and pupil questionnaires were related to pupil characteristics and home background, classroom context and teacher characteristics, and school context and headteacher characteristics. These will also be described later in the Instrument section.

2. Type of Study

The present study adopted a longitudinal approach following pupil progress over one school year from the pre-test to post-test (to be described later in the Procedure of Data Collection). Information was collected at different points in time in order to study changes in pupil attainment, or the 'progress effects' (Fraenkel & Wallen, 1996; Keeves, 1997). The design is also a survey research because of its descriptive characteristics naturally occurring without creating any intervention (as is usual in an experiment)

(Robson, 1996; de Vaus, 1996; Rosier, 1997). Surveys are useful to explore aspects of a situation, or to seek explanation and provide data for testing hypotheses. In surveys it is necessary to describe whether samples are representative and/or random. That is the reason why most survey research deals with a large number of participants (see Sampling).

One strength of survey research is that it is economical, both of time and of money, since it provides data from a large number of respondents in a short period of time. It is in the provision of a large set of data that another inherent advantage arises, namely, that it affords the potential for generalisations. When survey research is based upon rigorous sampling techniques, the possibility exists for generalisations to be made from the sample to the population if the appropriate statistical techniques have been employed. Furthermore, in contrast to many experimental research designs, survey work is mounted in the real setting. From the point of view of the researcher, survey research allows for the control of the research situation, i.e., the variables to be addressed are pre-determined. Thus a survey instrument may be trialled before administration and amended on that experience. Then the replication of a study using survey techniques is readily possible and the refinement of the instrument can take place over time. The advantages clearly apply to this study which requires a large sample size (shown in the next section) for generalising the results.

On the other hand, there are some limitations of survey research related to the present study. The point about economy brings with it the disadvantage of distance from the research situation. This 'distance' raises the problem of uncertainty for the researcher because respondents may hold different perceptions or biased perceptions which the survey instrument cannot detect. A related problem is the uncertainty of the lack of congruence between what people say, i.e., what they write in surveys in response to items, and what they really do.

For facilitating statistical analysis, as well as economy of time and effort, a questionnaire needs to be well constructed. This usually involves a considerable period of time and energy. The preconstructed instrument does not carry with it any flexibility. The items have to be appropriate to the variety of situations, variations in terminology in those situations and to a variety of people. Meanings are assumed to be constant across respondents.

There is another related criticism, namely, that the surveys are too restricted because they rely on highly structured questionnaires which are necessarily limited. The survey researcher assumes that the respondents can be treated as equally knowing and that the knowledge resides within the respondents. Of course, many researchers who use survey techniques are aware of these problems and take the obvious steps to gather alternative data from such other sources as they see fit. A final difficulty for the user of the survey technique is that the respondent can sometimes feel that the questionnaire is impersonal, mechanical, and demeaning and the response categories are limited, artificial, and constraining (Sommer & Sommer, 1980). Relating to technical-based criticism, some argue that surveys are too statistical and ignore the qualitative dimension (de Vaus, 1996).

Keeping in mind such limitations, the study was designed carefully, expert advice was taken and substantial piloting of instruments (to be described later in the Procedure section) was carried out. In the conclusion chapter, the relevant problems for generalisation will be raised again.

3. Research Setting and Sampling

a. Research setting: Malang, East Java

The urban municipality (Kotamadya) of Malang, the area within which the research was conducted, is located in the province of East Java, one of 27 provinces which comprise Indonesia. East Java is the second largest province on the island of Java covering a total land area of 47,366 square kilometres. According to the 1995 census the province of East Java had the largest population (32,458,966) and was one of the most densely populated (675 persons per square kilometre) of all the 27 provinces (BPS, 1995).

Primary education in East Java, according to statistics published for the school year 1995 (Kanwil Depdikbud Jawa Timur, 1996), reached 3,608,955 pupils located in 22,417 schools. Approximately 95 percent of these schools were state (negeri); the remaining 5 percent were private (swasta). Table 3.1 summarises selected statistics on the educational features of the province of East Java. Malang is an appropriate choice from the point of view of administering the research programme, because conducting research in Indonesia entails getting permission at many levels and keeping many offices

informed of the progress of the research, it seemed wise to locate the study in an area where transportation logistics would not pose a serious problem. The procedures for having permission to carry out research in primary schools in Malang were more efficient and easier than in any other municipalities in East Java.

Table 3.1
Selected Demographic and Educational Characteristics of East Java

No.	Description	Figures
1.	Total Population - 1995:	32,458,966
2.	Population Density per Square Kilometre - 1995:	675
3.	Land Area in Square Kilometres:	47,366
4.	Number of Urban Districts/Municipals (Kotamadya):	8
5.	Number of Districts or Regencies (Kabupaten):	29
6.	Number of Primary School - 1996:	
	a. State	21,630
	b. Private	805
	Total	22,435
7.	Number of Primary School Pupils - 1996	
	a. State	3,227,262
	b. Private	163,430
	Total	3,390,692
8.	Number of Primary Teachers - 1996:	
	a. State	164,259
	b. Private	7,814
	Total	172,073
9.	Number of Primary Graduates in 1996:	
	a. State	513,173
	b. Private	27,732
	Total	540,905
10.	Educational Indicators - 1996:	
	a. Participation rate	96.12%
	b. Drop-out rate	0.41%
	c. Repetition rate	6.19%
	d. Promotion rate	99.30%
	e. Pupil-Class ratio	24
	f. Pupil-Teacher ratio	20

Source: Kanwil Depdikbud Jawa Timur (1996), BPS (1995).

There are also important methodological considerations associated with selecting Malang as the research site. Kotamadya Malang or Malang Municipality is a reasonably large and rapidly developing urban area with a well-developed and quite heterogeneous primary education system. Table 3.2 presents selected educational statistics and from

these it can be seen that there are a large number of state schools. Generally, the proportions between state and private schools, pupils, teachers, and graduates in Malang have similar tendencies as in East Java shown in the previous table. Those tendencies are also evident at the national level, discussed in Chapter 1. Information on "educational indicators" in Malang shows them to be broadly representative of the whole country because they resemble the quite similar figures in upper national administrative levels of Indonesia.

Table 3.2
Primary Schools in Malang Municipality - 1996

No.	Description	Figures
1.	Number of Primary Schools - 1996:	
	a. Public	304
	b. Private	66
	Total	370
2.	Number of Primary Pupils - 1996:	
	a. Public	59,997
	b. Private	12,398
	Total	72,355
3.	Number of Primary Teachers:	
	a. Public	2,609
	b. Private	605
		3,214
4.	Number of Primary Graduates - 1996	
	a. Public	10,193
	b. Private	2,280
	Total	12,473
5.	Educational Indicators - 1996:	
	a. Participation rate	100%
	b. Drop-out rate	0,40%
	c. Repetition rate	5.28%
	d. Promotion rate	99,96%
	e. Pupil-Class ratio	29.65
	f. Pupil-Teacher ratio	20.5[1]

Source: Kanwil Depdikbud Jawa Timur (1996).

[1] This ratio is different from the pupil-class ratio because every school has an additional religious teacher and sport teacher who are teaching in some classes.

Figure 3.1 Indonesian Archipelago
(Drake, 1989:11)

Figure 3. 2 The East Java Province
(BPS, 1995:6)

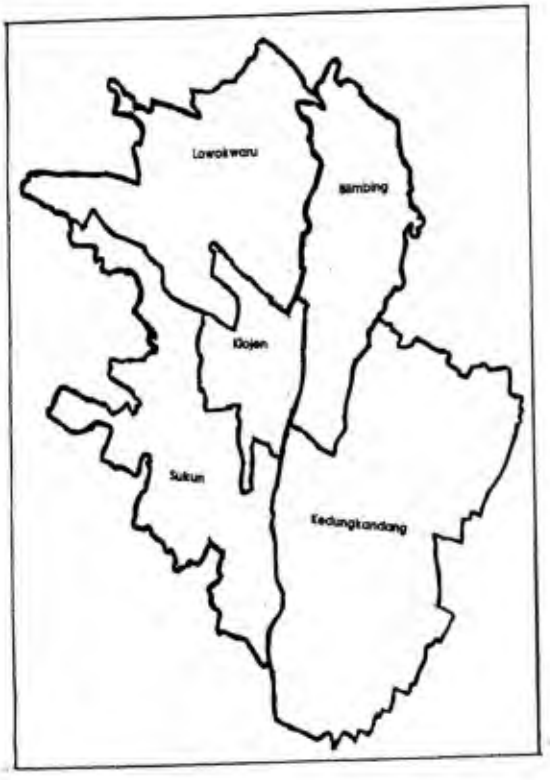

Figure 3.3 The Malang Municipality
(BAPPEDA, 1995:4)

b. Urban state primary schools as the focus

This study selected state primary schools in an urban setting for several reasons. Firstly, many studies (Setiadi et al., 1978; Beeby, 1979; Suryadi, 1993) of Indonesian primary schools reveal that schools in urban areas are quite different from those in rural areas. Factors affecting pupil attainments may also be very different in these settings. Secondly, using the classroom as the unit of analysis in primary schools simplifies the study because pupils stay with the same teacher over one year in almost every case, and the same class teacher teaches all the subjects under investigation. Thirdly, in terms of quality, the state schools are in the middle position that represent the bulk of schools in Indonesia, with the highest and the lowest quality schools found in the private sector (Mertaugh, Dove, & Nazareth, 1989; Purves & Elly, 1994).

Primary schools comprise grades one to six. The target of this study were grades four to six. The reasons for this choice are: (1) the curriculum content in such grades is included in the national leaving examination which is considered by school administrators to indicate school quality; (2) parents of children in these grades prepare their children more seriously for better attainment in all subjects; (3) an additional practical reason, pupils in these grades have developed skills in independent writing, reading, and mathematics and thus can be assessed using standardised tests

c. Sampling design

A stratified random sampling was used in this study. Based on 5 subdistricts in Malang (Blimbing, Kedungkandang, Klojen, Lowokwaru, and Sukun), 60 primary schools were selected randomly - 12 from each subdistrict. One class each from grade four to six of these schools were selected (randomly if there was more than one class in each grade level).

All pupils in the these classes, their class teachers and their school headteachers were included in the sample. This sampling expressed three levels of school organisational hierarchy, those of pupil, class, and school levels. The whole sample comprised 60 heads, 180 class teachers, and 5,860 pupils as shown in Table 3.3, about 16 per cent of the population.

Table 3.3
The Description of Population and Sample of Pupils

Subdistricts of Malang Municipality	Population[2]		Sample[3]
	Number of state schools	Number of Pupils in grade 4-6	Number of Pupils (% from population)
Blimbing	71	8203	1247 (15.2%)
Kedungkandang	59	6942	1121 (16.15%)
Klojen	39	8233	1230 (14.94)
Lowokwaru	63	5662	1254 (22.15%)
Sukun	72	8341	1008 (12.08%)
Total	304	37,381	5,860 (15.68%)

d. Response rate

An important consideration in surveys is related to response rate whether the population representation is still maintained (Cohen & Manion, 1997; Ross & Rust, 1997; Mertens, 1998). From the target sample, the response rate of teachers and headteachers was 100 per cent. However for pupils the rates were different because data collection was undertaken at different points in time. As shown in Table 3.4, the figures of the target sample, the appropriate returned questionnaire related to prior attainment, and the useable data from post-test were different. Information from that table was that from 5860 eligible pupils, 318 did not return the questionnaires and 315 were considered inappropriate. To be 'appropriate' the pupil had to be non-repeater, had not to have just moved from another school and with complete fixed information on the questionnaires and their records. By this way, the problems related to missing data that cannot be solved in MLn work-sheet were solved. When the post-test scores were obtained, the number

[2] Source: Kandepdikbud Kodya Malang (1996).

[3] The sample consisted of 60 schools (12 from each subdistrict) and 180 classes (3 from every school).

dropped to 5188 because 39 pupils no longer appeared on the list.

Table 3.4
Response Rate of Pupils

Subdistrict of Malang Municipality	Number of questionnaires			Number of confirmed pupil after post-test
	Distributed	Returned		
		All	Appropriate only	
Blimbing	1247	1227	1175	1172
Kedungkandang	1121	1061	998	994
Klojen	1230	1168	1101	1086
Lowokwaru	1254	1118	1015	1009
Sukun	1008	968	938	927
Total	5860	5542	5227	5188

B. Instruments

Four questionnaires for pupils, parents, teachers, and headteachers were developed for this study. The development of the questionnaires was guided by the main explanatory variables (derived from the research literature) and then elaborated into more specific measurable description. The list of variables and items are shown in Appendix B.1. Preliminary exploration of instrument validity is described in this chapter. Further, more technical discussion of the validity and reliability of the questionnaires is included in Chapter Four.

1. Questionnaire for pupils

After writing the first draft of the pupil questionnaire in an Indonesian version, they were distributed for comments as pre-pilot to eight Indonesian educators studying at the Institute of Education University London. Their professional expertise (guaranteeing confidentiality) improved the original draft; some Indonesian common expressions were altered (using *you* for male and female, *kami* and *kita* for we), the unclear and closing statement was changed and the questionnaires were revised according to the suggestions as shown in Appendix B.2a. This expertise was important in terms of

establishing face validity to make sure that the questions extracted the kind of information required.

Table 3.5
Aspects of Home Learning Environment
- Variables and Indicators

Themes	Description
1. Home language	- Pupil use of national language in the home
2. Learning time	- Hours spent on homework every night
3. Physical facilities for studying and learning	- Established place in the home for studying and the quality of the study area - Number of books in the home - Presence of newspaper in the home
4. Parental encouragement	- Frequency of parental control over homework - Frequency of parental assistance with homework - Frequency of parental interest shown regarding schoolwork - Nature of parental rewards for excellent schoolwork
5. Social pressure for academic attainment[4]	- Number of elder siblings who have attended or are attending junior high school - Number of elder siblings who have attended or are attending senior high school - Number of elder siblings who have attended or are attending college

The questionnaire was used for obtaining pupil information about their personal characteristics and family background. The first and second questions addressed the school name, grade level, and pupil name as identifiers. On pupil characteristics there were four straightforward items related to gender, age, religion, and ethnicity because in East Java pupils would automatically know how to answer them without any consultation. Gender was the biological determined background characteristic and was dichotomised into two categories, male and female. Age was assessed in number of

[4] Later this variable was considered as an element of 'family constellation'.

months from the date of birth to July 1996. Religion referred to the spiritual or denominational orientation of the respondent (e.g., Hindu, Islamic, Christian, Buddhist). Ethnicity assessed the ethnic identity of the respondent (e.g., Madurese, Javanese, Chinese).

On family background, the items included sibling order and home learning environment. Sibling order referred to the birth order position of the child in the family. Some other information about the family was acquired through the parent's questionnaire.

The home learning environment item assessed the arrangement of physical and human resources in the home which have been shown to influence learning. Table 3.5 lists the five themes and identified the content of the items subsumed under each of these themes.

2. Questionnaire for parents

The parent's questionnaire (Appendix B.2b) was designed to elicit additional information about pupils' family background, i.e family size, siblings at home, parents' education and parents' occupation. If parents were illiterate, they were asked to answer orally and their son/daughter wrote their replies on the questionnaire. Again, similar to pupil's questionnaire, face validity was sought through professional expertise of the same colleagues at the London Institute of Education.

Family size referred to the total number of individuals, excluding household staff members, residing in the respondent's place of residence. Family size is not necessarily synonymous with the nuclear family in East Java for it is common for members of the extended family to reside in the household with the nuclear family and play an active role in family life. Because these individuals can and do influence the learning environment of the home, they were included in the estimate of family size. This was followed by the order of and the number of children (siblings) at home. These variables were considered as parts of 'family constellation'.

The investigation of socio-economic status (SES) was problematic because no robust measure has been developed for Indonesian conditions. Heyneman (1989), Hughes (1992), and Paterson (1992) note that three standard sociological measures should be included in measurement of SES: occupation (carefully validated and scaled), income,

and educational attainment. Although in Heyneman's previous analysis (Heyneman, 1986) parental education was used only as a single indicator, this has been attacked by Riddell (1989) as a weak measure of SES in developing countries. Soegiyanto (1984) argued that similar to Malaysia and Thailand, SES could be misleading in East Java because parental education and occupation are relatively orthogonal to each other (wealth and prestige patterns were different). Therefore instead of drawing conclusions about SES, this study used *parents' occupation* and *parents' education* separately as variables and the analyses presented support the view that both have an influence on attainment.

Father's occupation and mother's occupation were ascertained through open-ended questions due to a wide range of urban occupations. Father's education, and mother's education were based on the formal educational structure in Indonesia viz. primary, junior secondary, senior secondary, and tertiary level.

3. Questionnaire for teachers

Similar to the pupil questionnaire, the teacher questionnaire (Appendix B.2c) was developed and distributed to four Indonesian educators at the London Institute of Education for their advice on the content validity of items. Their inputs for revision required statement on guaranteeing confidentiality and they found several unclear statements which might lead to difficulties in response. More importantly, they assured a professional-but-friendly 'tone' to the questionnaires.

The questionnaire for class teachers was used to obtain information about teachers' personal characteristics, pedagogy, leadership, classroom context, and class resources. Teacher personal characteristics included gender, age, marital status, educational qualification, teaching experience, rank of promotion order, and experience in inservice-training shown in Table 3.6.

Teacher pedagogy referred to the activities, methods, and materials used by the teacher in the instructional process. Teacher pedagogy was assessed by items related to three components of that process. Those components and the content of the item related to each theme are listed in Table 3.7. The panel of Indonesian educators at the Institute of Education served again as 'informed pilots' and helped in the development of the questionnaires, which were amended according to their advice. This panel paid particular attention to making the questions relevant to the construct in the Indonesian context.

Table 3.6
Teacher Characteristics

Variable	Description
1. Teacher's gender	- being dichotomised by male and female.
2. Teacher's age	- being expressed as number of years from the date of birth until July 1996.
3. Marital status	- being expressed as married vs not married at the moment.
4. Educational qualification	- the formal educational qualification/degree.
5. Teaching experience	- the years in teaching service.
6. Rank of promotion	- the position of last promotion order in the service.
7. Inservice-training	- how often being involved in inservice-training for Indonesian Language and for Mathematics

Table 3.7
Aspects of Teacher Pedagogy

Component	Description
1. Instructional methods used	
* Conventional	- class using standardised textbooks only - lecturing - pupils memorising - no pupil's talk - uniform task for class
* Innovative	- using teaching aids - pupils discussing - class assignment - using experiment - teacher assigning home work
2. Teacher preparation	- Time spent preparing lesson plans - Time spent correcting schoolwork
3. Homework assignment	- Number of homework assignment given per week

Leadership is a multidimensional concept applied in an organisation, including schools. Most empirical studies based on psychometric properties indicate that there are two general dimensions (Hoy & Miskel, 1991: 261):

- concern for people and interpersonal relations which indicates friendship, trust,

warmth, interest, and respect in the relationship between the leader and members of the group.

- concern for the tasks which delineates relationship between the leader and the subordinates, and at the same time, establishes defined patterns of organisation, channel of communication, and methods of procedure.

However, because of cultural differences, the dimensions of leadership found from studies in the west might be different from those in eastern countries. Kaluge (1988) found that the LBDQ XII, a leadership behaviour questionnaire developed by Stogdill in USA, appeared in an Indonesian sample with the same two basic dimensions but with rather different patterning of items. The selected items from that Indonesian study were picked up for the present study cautiously by testing their applicability in primary schools before using them for further analysis. For this study, the dimensions were called 'task oriented' and 'people oriented' as shown in Table 3.8.

Table 3.8
Leadership Dimensions

Dimensions	Item description
People Oriented	- friendly and approachable - using teacher's suggestions - treating teachers as his/her equals - looking out for teacher's welfare - acts without teacher's consultation - giving advance notice of changes - willing to make changes
Task Oriented	- staff competition - needling teachers for greater effort - pushing for increasing attainments - keeping teachers working maximally - not allowing teachers to work at an easy pace - working rapidly - emphasising hard work

Classroom resources was operationally defined as the total number of textbooks for learning Indonesian Language and Mathematics. These textbooks were kept only for

the class.

Classroom context was defined by grade level (4, 5, and 6) and class size. Classroom size was operationally defined as the total number of pupils in the grade four to six classrooms. This would be broken down into number of males, number of females, and the proportion of male to female pupils.

4. Questionnaire for headteachers

The development of the headteacher questionnaire (Appendix B.2d) was similar to the teacher questionnaire and with similar comments for revision. The questionnaire for the school headteachers was used in order to collect information about headteacher's personal characteristics, school context, and school resources. Headteachers were characterised by gender, age, educational qualification, teaching experience, administrative experience, and rank of promotion order shown in Table 3.9.

Table 3.9
Headteacher Personal Characteristics

Variable	Description
1. Gender	- being dichotomised into male vs female.
2. Age	- number of years from the date of birth until July 1996.
3. Educational qualification	- last formal education/degree
4. Teaching experience	- years in teaching service in years.
5. Administrative experience	- years in administrative experience as headteacher
6. Rank of promotion order	- the position of last promotion order.
7. Professional growth	- activities for professional growth based on whether - taking a course, - doing independent study, - joining teacher's club, - educational training, and - educational seminar.

School context referred to the number of teachers and the number of pupils. The number of teachers and pupils in school were broken down into number of males and number of females.

There are many kinds of school resources such teaching aids, sports equipment, books, laboratory supplied by Department of Education Culture (DOEC). But school resources for this study were basically determined by number of books in the school library. This is because instead of a book supply from the DOEC, schools may provide books through a parent association (called 'BP3') and staff members' efforts. As a result the availability of this resource varies from school to school.

5. Tests for pupil attainments

Pupil academic attainments in Indonesian Language and Mathematics were used as predictor baselines and response variables. These attainments were the results of summative tests which were used for researching the effectiveness of curriculum (Bloom et al. Cited in Black & Wiliam, 1996). The baselines or prior attainments were the scores of the subjects gained by the child at the end of 1995/1996 school year. During that year pupils were in Grades 3, 4, and 5. The DOEC applies the policy that for every district at the end of each school term, all schools administer the same test for the same subject at the same grade. The tests are developed by a team of experienced teachers at district level using an item bank as the resource developed since 1975 (Nasoetion, Djalil, Musa, Soelistyo, Chopin, & Postlethwaite, 1976). In this resource the difficulty and discrimination indices were considered carefully. Both indices affect the reliability estimates of the tests (Mehrens & Lehmann, 1978). The tests should be consistent, neither too easy nor too difficult, and should discriminate validly among the high- and low-achieving pupils. In terms of content validity, test grids as displayed in the tables of specification were used. The tables were provided by the Directorate General of Primary and Secondary Education (Ditjen Dikmenum) based on relevant subject content and instructional objectives in the national curriculum (Umar, 1993). Parallel tests were developed in order to estimate the reliability (with $r \leq 0.9$, $p < 0.05$ as reliable for both parallel tests) and to serve as reserve if anything untoward happened before the tests were administered. This Indonesian model of item bank (at the Examination Development Centre of the MOEC) related to difficulty, validity, and reliability was illustrated by Umar (1993, 1994). Samples of baseline tests are shown in Appendix B.3.

The response variables were the scores of the same pupil in the same subjects (Indonesian Language and mathematics) obtained at the end of 1996/1997 school year.

During this school year children had moved one grade higher i.e grade 4, 5, and 6. Tests for grade 4 and 5 were developed similarly to the baseline tests. However, grade 6 tests were the national "leaving examination", developed by a special team at national level. Basically, all these post-tests were developed in similar ways as pre-tests in terms of their validity and reliability. Samples of tests in these three grades are shown in Appendix B.4.

C. Procedures

The three main phases in this study were planning, data collection, and data processing and analysis. The sequence of events within the time frame of this study is presented in Table 3.10.

Table 3.10
An Overview of the Research Process

Phases of the research programme		***Time block***
Phase I	Planning	
	Develop research outline,	--- May 1996
	instruments & tryout	April - June 1996
Phase II	Data collection	
	- Getting formal permission	May - July 1996
	- Pilot	August - September 1996
	- Main survey	September 96 - September 1997
Phase III	Data processing & analyses	April - December 1997
	- Data processing	
	- Preliminary analysis	
	- Main analysis	

1. Planning

Developing the research outline and instruments were the main activities in the planning phase. This framework led to a more detailed analysis of individual research constructs and to an examination of the items to be used in the questionnaires (discussed in the Instrument section).

In data collection, some formal procedures were needed to obtain consent to enter the schools. By preparing a letter from university supervisors and from IKIP Surabaya Research Centre where the researcher formally worked, the Municipal Office of DOEC gave a permission letter to the schools. This letter facilitated the data collection after it was shown to the Head of Sub-district Office of DOEC, the school inspectors, and headteachers. After this the pilot and main study could be carried out. A sample of letters appear in Appendix B.5.

The first step in the management of data collection was dividing the sample into five school batches or cycles based on five subdistricts. Thus each batch consisted of 12 schools. Next came scheduling the activities for obtaining data. The characteristics of data and instruments affected the techniques of data collection. In this case, data about academic attainments were obtained through school archives, whereas data about other predictor variables were gathered through questionnaires. Academic attainments, i.e Indonesian Language and Mathematics scores were obtained by using national leaving examination tests (for grade 6), and district learning achievement tests (for Grades 4 and 5). These scores were kept in every school. Piloting of questionnaires was done in the first batch.

A prepilot of questionnaires had been done in London after finishing the first drafts, emphasising the clarity of instruction to reduce the potential sources of bias. Still there were some matters that had to be taken into consideration such as the limitations of survey as previously mentioned, the ethical aspect, and problems related to coding and data entry. In order to address these issues, a pilot study was necessary.

a. Ethical considerations

Ethical aspects are some of the most critical components of the survey, especially related to headteacher leadership as perceived by teachers. Through a respectful approach and interaction between data collector and the respondents, there was no objection to filling out the questionnaires honestly and openly although it was difficult to prove their answers. The headteachers also had no objections after it was explained that this study was not to criticise them but as a kind of honour and respect to the daily life of primary schools. It was stressed that the results would have no effect on their position and status within the school's hierarchy.

Although respondent anonymity was a basic principle, their class and school

identity were needed for nesting the data into appropriate levels. Through a written statement on the questionnaire and a personal approach, the researcher guaranteed confidentiality. This guarantee was strengthened by the promise that it was only to be used for academic purposes, not related to their assessment and job promotion.

b. Further consideration of reliability and validity

The research team, consisted of the author and 5 data collectors (all of them had finished their masters degree at the University of London and IKIP Malang). They met together regularly to discuss the possible problems and how to handle them in order to ensure reliable and valid data. There were three potential areas of concern.

Firstly, a possible serious potential bias of response was the tendency to present an overly positive expression of home and school. The respondents could be reluctant to answer a question which would negatively reflect on their schools or personal circumstances. This problem was discussed during one session of the research team. To overcome this potential source of bias, the following strategies were used

- wording of items was carefully examined to insure exclusion of negative connotations
- emphasis was put on the need for an efficient monitoring system during the administration of the questionnaire
- questionnaire administrators were chosen from non-school members to minimise the tendency toward a positive response set.

Secondly, there were potential difficulties in obtaining parents' occupations. Some researchers obtain this through school documents. However, this kind of data could be biased for those who change their jobs recently. Thirdly, consideration was given to the proper time for filling out questionnaires for teachers and headteachers. It was agreed that it would be better in mid-school year, to explain what generally took place. This agreement affected two cycles of data collection with 24 schools.

An unexpected problem appeared when one class gave the wrong birth data. This happened because their class teacher stated "write down today's date". Actually pupils did not need this instruction. Since then we agreed that teachers and data collectors should confine themselves only to important explanation on how to answer in order to avoid confusion. If the problem had already occurred, the researcher checked the school

archives to get the right data.

Six schools, 10 per cent from the targeted sample, were selected to pilot the questionnaires for teachers and headteachers. Six classes from two schools were chosen for piloting pupil and parent questionnaires. The pilot data were collected and computer-entered without any problem. Then a series of simple descriptive analyses was done (Appendix B.6, Table 1 through 4).

2. Data collection

The process of data collection required several school visits. In the first visit the researcher met with the School Headteacher with the purpose of introducing himself, the study, asking for filling out questionnaires and obtaining pupils' test scores, asking for data about the school context, and arranging a schedule for the next visits. All the schools were enthusiastic with this study.

The second visit was carried out with three assistants so that three classes could be covered simultaneously. Activities during the second visit included: meeting with headteacher and teachers, introducing the assistants, asking teachers to fill out the teacher questionnaires, and helping assistants in three classes of three different grades to fill out the pupil questionnaire (the questions were read by the assistant to avoid potential misunderstanding for any pupils with literacy difficulties). Overall the first and second visits were undertaken over 15 weeks, 3 weeks per batch. Pupils who were absent on the day were not included in this study. Children who had already completed the questionnaires were administered additional questionnaires, consisting of 7 items to be filled in at home after discussion with their parents. It was possible to ask parents to fill out the questionnaire, however, the problem was that some were illiterate. In such cases their child was able to help with writing.

The third visit was the last one, where the researcher met the headteacher, asked for pupils' most recent test scores, and said farewell. The time taken to complete this visit was three schools per day or five days for each batch. In trying to get the post-test scores, the most sensitive activity concerned the national leaving examination. The process of the examination itself, especially in the Province of East Java, was very restricted, and under the control of the police. The tests and the results were kept secret until the

announcement day. Because of this restriction, the school inspectors suggested the researcher collect the data himself by showing the permission letter to conduct this study to overcome the tight security. This letter was important because during the previous term some headteachers had left the school and had been succeeded by another one.

3. Data processing and analysis

Data management was handled through four main statistical packages, MICROSTA, SPSS, COSAN and MLn. MICROSTA was used for data entry because of its characteristics such as being interactive, simple and easy for controlling and checking data processing, flexible for transferring to other statistical packages so that the tensions and boredom of dealing with large data sets could be eliminated. Several data files were created, one for each school, because this data processing was done by three different people and then checked by a fourth person. Then the last step was merging all the data files. SPSS was used for data description, graph presentation, and all other single-level analyses. COSAN, developed by Fraser (1988, based on McDonald, 1978 & 1980), was a special package for performing confirmatory factor analyses instead of exploratory factor analyses. The programme was recommended as useful for eliminating limitations in RAM and LISREL (McDonald, 1985; McDonald & Goldstein, 1989). The use of MLn developed by the Multilevel Project at the Institute of Education University of London, especially for multilevel analyses was used substantially in this thesis.

a. Exploring data

At the very beginning, descriptive analysis was used to explore the data patterns. This data exploration is necessary before multilevel modelling (Plewis, 1997; Kreft & de Leeuw, 1998). The pre- and post-test data were analysed in terms of the shapes of their distributions, the characteristics of relationships and heteroscedascity. The continuous explanatory variables were analysed in terms of mean, standard deviation, and the range. The data with nominal scales were described in terms of frequency and percentage.

Complex variables which consisted of some indicators were validated by using Confirmatory Factor Analysis. This analysis was chosen for two reasons. The first, factor analysis plays an important part with respect to three types of validity, predictive validity, content validity, and construct validity (Nunnally, 1978; Rust & Golombok, 1989; Carmines & Zeller, 1994). The second, the Confirmatory Factor Analysis is superior to

Exploratory Factor Analysis in testing hypothesised dimensions as recommended by McDonald (1981), Kline (1994), Long (1994) and Nesselroade (1994). The basic model and its specification as used in COSAN for this present study is described as the following (Fraser, 1988).

The covariance structure of this model is commonly expressed in matrix terms as $C = HSH' + D$

where C is an nxn correlation matrix, H is an nxk matrix of factor loadings, S is an kxk symmetric matrix of factor correlations and D is an nxn diagonal matrix of unique variances.

The equivalent COSAN of order one is expressed as

$$C = F_1 P F_1'$$

where $F_1 = [H\ I_n]$

and $P = \begin{bmatrix} S & 0 \\ 0 & D \end{bmatrix}$

I_n is the identity matrix. Within F_1 the sub-matrix I_n keeps fixed. F_1' denotes the transpose of matrix F_1. H matrix only allows to calculate the loadings of hypothesised items whereas the rest are set to be zero.

For example, suppose we have 6-variable correlation matrix and we wish to fit the 2-factor restricted factor model, H is a (6x2) matrix of factor loadings, S is a symetric matrix of factor correlations and D is a (6x6) diagonal matrix of unique variances.

Suppose on H the following structure:

$$\begin{bmatrix} X & 0 \\ X & 0 \\ X & 0 \\ 0 & X \\ 0 & X \\ 0 & X \end{bmatrix}$$

which each X denotes a loading to be estimated and each 0 denotes a fixed zero loading.

So $F_1PF_1' = [H\ I_n] \begin{bmatrix} S & 0 \\ 0 & D \end{bmatrix} \begin{bmatrix} H' \\ I_n \end{bmatrix}$

$= [\ HSD\ ] \begin{bmatrix} H' \\ I_n \end{bmatrix}$

$= HSH' + D$

(I_8 is the identity matrix of order 8. The reader should verify that $F_1PF_1' = HSH' + D$). The pattern matrix for F_1 will be

$$\begin{bmatrix} X & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ X & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ X & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & X & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & X & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & X & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

And the pattern matrix for (the lower triangle of) P will be

$$\begin{bmatrix} 0 & & & & & & & \\ X & 0 & & & & & & \\ 0 & 0 & X & & & & & \\ 0 & 0 & 0 & X & & & & \\ 0 & 0 & 0 & 0 & X & & & \\ 0 & 0 & 0 & 0 & 0 & X & & \\ 0 & 0 & 0 & 0 & 0 & 0 & X & \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & X \end{bmatrix}$$

The two 0's in the diagonal correspond to the fixed one X in the factor correlation matrix S. (For more detail about formula and application, see McDonald, 1978, 1980, 1982; Kenny & Judd, 1984; Loehlin, 1992).

In this study, the uniqueness(U^2) of the items was transferred into the communalities (h^2) as commonly reported. For testing the internal consistency, alpha coefficients were calculated. There is no absolute value for the consistency but as a rule of thumb Mehrens and Lehmann (1978) state about 0.65 may suffice for 'group decisions'.

The correlations between continuous explanatory variables were examined in order to detect possible multicollinearity. This consideration was followed up in the main analysis, multilevel modelling.

b. Modelling data

Multilevel analysis was used to answer the research questions. Since the first use of multilevel analysis in *School Matters* (Mortimore et al., 1988), then followed by many studies (Sammons et al., 1993; Sammons et al., 1994; Sammons et al., 1995a) it has been recognised that the statistical package of MLn enables more efficient estimates of school differences in pupil attainment. Because multilevel analysis is relatively new, some typical equations and explanations are presented in this section. The analysis took into account the hierarchical structure of the data in which pupils are nested within classes/schools (Patterson & Goldstein, 1991; Goldstein, 1995; Plewis, 1997). The multilevel analysis can be regarded as the extension of single level regression analysis by considering more than one source of variation (e.g variation of pupils in level 1 and of school in level 2). Aitkin and Longford (1986) established important bases for comparing school effectiveness after the adjustment of intake differences in individual level as demonstrated by Rutter et al. (1979). The bases were regarded in the following phases of analysis:

1) Starting null model

The first simplest one was the null model which only estimated the total variance and its components. In this model the Indonesian Language and Mathematics scores were regressed on the constant term (coded 1 for every student). In addition the constant term was set at random at both the student and school levels. The aim of this analysis was to estimate the overall mean achievement at both intake and at the end of school year and also to see whether there were any school differences in mean achievement. The intra-school correlation (the proportion of the total variance which was between schools) was also computed from the random estimates.

The model fitted was (based on Goldstein & McDonald, 1988; Goldstein, 1995):

$$Y_{ij} = \beta_{oj}x_o + e_{oij}x_o$$

with $\beta_{oj} = \alpha_{oo} + u_{oj}$ (between school variation)

where

i = pupil

j = school

y_{ij} = pupil's attainment

x_o = the intercept term (constant) with a value of 1

for every pupil

α_{oo} = overall mean attainment

u_{oj} = school level residual

e_{oij} = student level residual

Thus the model can be summarised as follows:

$$Y_{ij} = \beta_o + (u_{oj} + e_{oij})$$

fixed random

The following parameters were estimated by model 1:

β_o = overall average attainment

σ^2_{oe} = student level variance i.e between students within schools variation

σ^2_{ou} = between school variance

The intra-school correlation was given by the formula:

$$\rho = \sigma^2_{ou} / (\sigma^2_{ou} + \sigma^2_{oe})$$

This correlation measured the proportion of the total variation that was due to schools and also the degree of similarity of the students within a school. The larger the value of ρ the greater the clustering and the more important it was to use a fully efficient estimation procedure (Goldstein, 1995).

2) Exploring the model at the fixed part

A model reduction procedure of omitting predictors that did not contribute to the variation in achievement would refine the model into a 'minimal' model. A stepwise procedure was used in analysing the data i.e. one or a group of related variables were entered at a time starting with the simplest models and then building up to more complex models. Any predictor that did not contribute to the variance in attainment would be omitted to refine the model. Levels of significance under the 95 per cent confidence interval were obtained if the estimate was equal to or greater than double standard error (Patterson, 1991; Woodhouse, Rasbash, Goldstein, & Yang, 1996).

Model 1 was extended by the inclusion of explanatory variables measured at pupil, class and school level. The purpose of fitting this model was to find out which of the pupil, class and school factors had significant effect on attainment.

The model was represented by the equation:

$$Y_{ij} = \beta_{oij} x_o + \beta_1 x_{1ij} + ... + \beta_n x_{nij}$$

with $\beta_{oij} = \beta_o + u_{oj} + e_{oij}$

where

i = pupil

j = school

Y_{ij} = response variables (scores in Indonesian Language, or Mathematics)

$x_{1ij} ... x_{nij}$ = explanatory variable (eg gender, age, etc)

u_{oj} = school level residual

e_{oij} = student level residual

β_0 = constant (intercept term)

$\beta_1 ... \beta_n$ = regression coefficient

Some models were developed using the equation above. After performing the null model, the modelling stages dealing with explanatory variables were consecutively entered: initial scores as baseline, child background and characteristics, class and school variables. Then the variances attributable to school and pupil were checked.

3) Identifying the school effectiveness

The third stage was the identification of 'effective' and 'ineffective' schools for each subject using the residuals estimates and their associated confidence limits which pinpointed those schools performing better or worse than expected from their intake ($p<0.05$). Some explorations in this phase (as demonstrated by Goldstein, 1991; Goldstein, Rasbash, Yang, Woodhouse, Pan, Nuttall & Thomas, 1993; Sammons et al., 1993) were plotting the school's mean raw score for the relevant outcome, the residual of language and mathematics against each other for same grade, and the same subject-matter across the grades.

This is the end of the methodological chapter. The next two chapters report data

analyses concerning the pupils, the schools, the instruments and attempts to answer the formal research questions.

CHAPTER FOUR
EXPLORING THE VARIABLE CHARACTERISTICS AND RELATIONSHIPS

This chapter, the first of the data analysis chapters, presents descriptive statistical information about the attainments, the children, the teachers, the headteachers and the schools in the sample. The purpose of this chapter is to describe the information, to study the distribution in order to assess the suitability for statistical analysis, and to examine the interrelationship as a prologue to further data analyses.

Special attention was paid to issues of heterogeneity, the distribution, the heteroscedascity, and multicollinearity (Wonnacott & Wonnacott, 1990; Bryk & Raudenbush, 1992; Howell, 1992; Marsh, 1992; Cooligan, 1994). If they appeared as problems, then some solutions such as removing and transforming were needed before proceeding to or special caution when doing the next analyses. These kinds of solutions are useful to ensure that the models used provide the best-fit to the data and thus to limit the possibility of misleading conclusions.

A. The attainments

Since the study employed different tests for the same subject-matter in three different grades, the response variables were split into grade-based analyses. Two distinctions were made - prior attainment and post-test attainment. This distinction influenced the description of the following explanatory variables in pupil and class levels.

Table 4.1 showed that there was a wide range of scores on the attainments of Indonesian Language and Mathematics across the three grades. Indonesian Language was higher than Mathematics in pre- and post-test. The dispersion (S.D.) and the range of mathematics scores were higher and wider than Indonesian Language. In addition, the pretest scores of Indonesian Language in Grades 5 and 6 showed that the higher the grade the better the attainment. However, the post-tests showed, the higher the grade the lower the scores. The same tendency appeared in Mathematics results.

Table 4.1

Descriptive Statistics (Mean, Standard Deviation, Range)

for the Learning Outcomes (N=5188)

Subject	Grade[1]	Mean	S.D.	Range
Pre-test:				
Indonesian Language '96	4	70.3	11.78	35-97
	5	65.2	11.49	22-98
	6	67.9	9.89	35-95
Mathematics '96	4	64.9	14.90	31-98
	5	58.4	13.27	20-97
	6	61.9	14.11	29-96
Post-test:				
Indonesian Language '97	4	68.2	11.99	34-98
	5	67.8	11.41	32-96
	6	70.0	9.62	40-96
Mathematics '97	4	64.2	16.25	32-97
	5	58.3	12.99	31-96
	6	54.4	14.00	31-96

The distributions of the scores[2] in every class (Appendix C.1) showed that Indonesian Language in Grade 4, and Mathematics in Grades 4 and 6 deviated slightly from normal. The distributions would require transformation for the latter analyses. The correlation matrix of pre- and post-test in each grade (Table 4.2) showed that the association between Indonesian Language and Mathematics tended to be slightly higher than the same subject pre- post association. It was also worthwhile evident from the table

[1] The total sample is 5188, consisted of 1668 from Grade 4, 1756 from Grade 5, and 1764 from Grade 6.

[2] The raw scores ranged between 0-100, but later they were divided by 10 before being used as marks of pupil attainments. That was the reason for using 10 as the interval in Appendix C.1.

that for each grade 1997 Mathematics correlated more highly than 1996 Mathematics to the 1997 Indonesian Language. This means that Mathematics and Indonesian Language in the same year tend to be more closely associated than the correlates accross years. The relation between pre- and post-test scores (Appendix C.2) showed no tendency of heteroscedascity.[3] However, there were some non-linear (quadratic) relationships. This typical relationship needed transformation to be tested in modelling, presented in the next chapter.

Table 4.2

Correlation Matrix of Indonesian Language and Mathematics

Grade 4

	IND96	IND97	MTH96	MTH97
IND96	1.00			
IND97	.43	1.00		
MTH96	.59	.43	1.00	
MTH97	.40	.62	.54	1.00

Grade 5

	IND96	IND97	MTH96	MTH97
IND96	1.00			
IND97	.51	1.00		
MTH96	.56	.46	1.00	
MTH97	.46	.58	.55	1.00

Grade 6

	IND96	IND97	MTH96	MTH97
IND96	1.00			
IND97	.53	1.00		
MTH96	.52	.47	1.00	
MTH97	.43	.53	.54	1.00

Note:
All the coefficients were (2-tailed) significant, $p<0.0001$
IND96 - The pre-test of Indonesian Language carried out in 1996
IND97 - The post-test of Indonesian Language carried out in 1997
MTH96 - The pre-test of mathematics carried out in 1996
MTH97 - The post-test of mathematics carried out in 1997

[3] The heteroscedascity (not equal scatter) occurs when the variance of student residuals varies systematically with the predicted values of the response (Bryk & Raudenbush, 1992; Plewis, 1997).

B. The Pupil Characteristics and Home Background

1. Pupil characteristics

Table 4.3 presented descriptive statistics regarding the characteristics of the 5188 pupils. The variables were described, their response categories and frequencies were presented as a percentage of the total number of respondents. It shows that in certain respects the pupils were more homogeneous than in others. Religion and ethnicity are the characteristics in which pupils tend to be the most highly concentrated; fully 97.5 per cent of those responding to the ethnicity item identified themselves as Javanese, and 96.4 per cent reported Islam as their religion. Although pupils from other religious groups and ethnic communities were represented in the sample, they were distinctly in the minority. This sample was broadly representative of the Indonesian population where about 90 per cent are Muslim (see Chapter 1) and East Java where the majority are Javanese.

Table 4.3
Pupil Characteristics

Variable	Grade (%)			Total (%)
	4	5	6	
1. Gender				
- Male	817 (49)	908 (51.7)	867 (49.1)	2592 (50)
- Female	851 (51)	848 (48.3)	897 (50.9)	2596 (50)
2. Religion				
- Muslim	1605 (96.2)	1705 (97)	1695 (96)	5003 (96.4)
- Christian	59 (3.6)	53 (3)	68 (3.9)	180 (3.5)
- Hindu	4 (0.2)	-	1 (0.1)	5 (0.1)
- Buddhist	-	-		
3. Ethnicity				
- Javanese	1626 (97.5)	1719 (97.8)	1714 (97.2)	5059 (97.5)
- Madurese	26 (1.6)	24 (1.4)	23 (1.3)	73 (1.4)
- Chinese	4 (0.2)	1 (0.1)	4 (0.2)	9 (0.2)
- Other	12 (0.7)	12 (0.7)	23 (1.3)	47 (0.9)
4. Age (months)				
- Average	116.71	129.95	141.01	129.45
- S.D.	8.38	9.49	7.58	13.05
- Range	104-135	109-156	121-159	104-159
Total (N)	1668	1756	1764	5188

Pupil gender and age appeared as promising variables to be used further. The gender differences in Grades 4, 5, and 6 were small (below 5%). These represent the situation in Indonesian primary schools since the last three decades where girls' participation has been above 45 per cent (Department of Information - Republic of Indonesia, 1985). The age average pupil was 9.7 years in Grade 4, 10.8 in Grade 5, and 11.8 in Grade 6. The biggest range of age was in Grade 5, about 4 years, whereas Grade 4 and 6 were 2.6 and 3.2 years respectively.

2. Parents' occupations

There was a wide range of father's and mother's occupations (Appendix C.3). By using Goldthorpe and Hope's (1978) classification and considering the possible educational requirement, the classification of fathers' occupation ended up with 3 categories, whereas for mothers', there were 4 categories. The categories for fathers' occupation were unskilled manual, skilled manual, and clerical and professional. Mothers' occupation had similar categories as fathers' with an addition of "non-earning" which appeared in the Indonesian Population Census (BPS, 1996). Table 4.4 presented the frequencies of the categories of each variable in the three grades. The "unskilled manual" group was the highest in father occupation and "non-earnings" in mother occupation. The "clerical and professional" was the smallest category in fathers' and mothers' occupation.

Table 4.4
Parents' Occupation

Variable	Grade 4	Grade 5	Grade 6	Total (%)
1. Father's occupation				
- unskilled manual	673	678	696	2047 (40)
- skilled manual	575	646	616	1837 (35)
- clerical & professional	420	432	452	1304 (25)
2. Mother's occupation				
- unskilled manual	257	274	260	791 (15)
- skilled manual	369	419	412	1200 (23)
- non-earning	880	905	913	2698 (52)
- clerical & professional	162	158	179	503 (10)
Total in each variable	1668	1756	1764	5188(100)

Table 4.5
Father's Education

Educational category	Grade			Total (%)
	4	5	6	
- None	54	35	41	130 (2.5)
- Some primary school	252	299	275	826 (15.9)
- Completed primary school	445	459	481	1385 (26.7)
- Some Junior high school	108	93	110	311 (6)
- Completed junior high-school	196	229	256	681 (13.1)
- Some senior high school	65	62	47	174 (3.4)
- Completed senior high school	305	328	306	939 (18.1)
- Some tertiary education	64	63	62	189 (3.6)
- Completed tertiary education	179	188	186	553 (10.7)
Total	1668	1756	1764	5188 (100)

3. Parents' Education

Table 4.5 showed that most pupils came from families where the father's educational qualifications were primary (the biggest) and secondary levels. Only a few were from tertiary level or had never been involved in any formal education. The dropout rate for fathers from primary education was four times higher than those who entered secondary and tertiary education.

Similar to fathers', as shown in Table 4.6, the majority of mothers' educational qualification levels were primary (the highest) followed by secondary education. Compared with fathers' education, fewer mothers had had tertiary education. There was a lower dropout in secondary level but a higher dropout in primary. There were also more mothers in the category of those who had never attended school.

For the subsequent analysis, the educational categories were changed into 'years of education' (for details of the conversion used see Appendix C.3). The dropouts were treated as the position in the middle of the two closest categories.

Table 4.6
Mother's Education

Educational category	Grade			Total (%)
	4	5	6	
- None	98	95	93	286 (5.5)
- Some primary school	384	414	397	1195 (23.0)
- Completed primary school	462	483	515	1460 (28.1)
- Some Junior high school	82	87	80	249 (4.8)
- Completed junior high-school	183	198	236	617 (11.9)
- Some senior high school	39	62	33	134 (2.6)
- Completed senior high school	267	279	255	801 (15.4)
- Some tertiary education	44	40	49	133 (2.6)
- Completed tertiary education	109	98	106	313 (6.0)
Total	1668	1756	1764	5188 (100)

Table 4.7
Family Constellation

Variable	Grade 4 (N=1668)	Grade 5 (N=1756)	Grade 6 (N=1764)	Total (N=5188)
Family size				
- Average	5.87	6.00	6.08	5.99
- S.D.	1.64	1.61	1.66	1.64
- Range	3-9	3-9	3-9	3-9
Number of siblings				
- Average	3.04	3.12	3.21	3.12
- S.D.	1.06	1.04	1.05	1.05
- Range	1-5	1-5	1-5	1-5
Sibling order				
- Average	2.25	2.35	2.36	2.32
- S.D.	1.18	1.23	1.26	1.22
- Range	1-5	1-5	1-5	1-5

4. Family Constellation

The family constellation indicated by family size, number of siblings, and sibling order is considered as family social background (Iverson & Walberg, 1982). Table 4.7 shows that pupils came from families with varying sizes, different number of siblings and represented many sibling order positions. The average family size was a little lower for

Grade 4 (5.87) than Grade 5 (6.0) and Grade 6 (6.08) perhaps as a result of the family planning programmes launched by the government in order to reduce and stabilise the national population (Ananta, Lim, Molyneaux, & Kantner, 1992; Samosir, 1992).

5. Home Learning Environment

In order to describe the home learning environment, the pupils were asked a number of questions about the material and human resources of their homes. Table 4.8 presents the description of each variable.

Table 4.8
Home Learning Environment

Variable	Grade 4 N=1668	Grade 5 N=1756	Grade 6 N=1764	Total (%) N=5188
1. Home language				
- Average	3.00	3.08	3.16	3.08
- S.D.	0.93	0.86	0.79	0.86
- Range	1-4	1-5	1-5	1-5
2. Learning time				
- Average	2.54	2.61	2.64	2.60
- S.D.	0.94	0.91	0.91	0.92
- Range	1-4	1-4	1-4	1-4
3. Social pressure				
- Average	0.95	1.17	1.19	1-11
- S.D.	1.15	1.24	1.18	1.20
- Range	0-6	0-6	0-6	0-6
4. Books at home				
- Average	2.31	2.42	2.63	2.46
- S.D.	0.87	0.93	1.00	0.95
- Range	1-4	1-4	1-4	1-4
5. Newspaper availability (%)				
- No	1070 (64.1)	1171 (66.7)	1193 (67.6)	3434 (66.2)
- Yes	598 (35.9)	585 (33.3)	571 (32.4)	1754 (33.8)
6. Study place (%)				
- None	409 (24.5)	475 (27)	441 (25)	1325 (25.5)
- Not good	166 (10.0)	168 (9.6)	170 (9.6)	504 (9.7)
- Good enough	1093 (65.5)	1113 (63.4)	1153 (65.4)	3359 (64.7)

The questions on the home learning environment showed that there is considerable variation in the pupils' homes, from how often the national language is used at home, time spent learning, the social pressure for academic achievement (siblings in senior high school and siblings at the university), books, newspapers, and a place to study. Some pupils had set hours for studying at home of at least one hour with the longest being 4 hours for doing homework.

The homes vary in other ways as well. Some homes had books and newspapers; others did not. Therefore in some homes the children had an opportunity to read newspapers (66.2%) and in others they did not (33.8%). Some children did not have a place to study (25.5%); others did (64.7% were seen as "good enough" and 9.7% were "not good"). Overall, these items suggest that the home learning environments of the pupils in the sample varied a great deal.

6. Parental Encouragement

Perceived parental encouragement was considered as part of the home learning environment; however, it was treated as a separate scale. Parental encouragement was assessed on a scale consisting of items on the level of parents concern about homework, how they helped with homework, whether they asked about schoolwork, and how they rewarded good academic attainment (Iverson & Walberg, 1982; Mani, 1983). The assumptions for factor analysis were satisfied by preliminary analyses.[4] The estimation of Generalised Least Squares (GLS) was used because Maximum Likelihood failed to extract the solution due to the extreme communalities (h^2).[5] The COSAN provided information that the GLS estimation stopped when the largest absolute gradient was 0.0000009; and the obtained $\chi^2 = 9.4$, $df = 2$, $p<0.01$. The residual matrix, presented in Appendix C.4, has the largest magnitude = 0.025 and the average = 0.0078. These results show the best fit of the factor pattern. Factor analysis in Table 4.9 revealed that the four

[4] KMO measure of sampling adequacy = 0.66 and Barlett Test of Sphericity significance = 0.00. This means that the sample is adequate and the correlation matrix can be factor-analysed. The eigenvalue and percentage of variance explained by the factor were 1.7 and 42.9 per cent.

[5] As a rule of thumb, communalities above 0.9 may be considered as extreme since it may lead to Heywood Case as improper solution (see McDonald, 1985).

indicators had significant loadings (between 0.40 and 0.74). The analyses confirmed that the dimension of 'parental encouragement' can be treated as a valid latent variable. Further information about the description and intercorrelation between items are shown in Appendix C.4.

The internal consistency was not high, $\alpha = 0.54$, however it could be considered as rather moderate. For further analyses, a composite of the 4 items were created as a variable.

Table 4.9
Results of Confirmatory Factor Analysis on Parental Encouragement

No.	Item description	Factor loading	h^2
1	Parents' concern about homework	0.73	0.53
2	Parents' helping in homework	0.69	0.48
3	Parents asking about schoolwork	0.74	0.54
4	Parents' attitude toward a good school report	0.40	0.16
	Alpha	0.54	

Table 4.10
A Summary of High Bivariate Correlations in Pupil Level

Variable association	Correlation coefficients		
	Grade 4	Grade 5	Grade 6
- Father and mother education	0.71	0.72	0.71
- Family size and number of siblings	0.66	0.63	0.67
- Number of siblings and sibling order	0.65	0.69	0.68
- Sibling order and social pressure	0.70	0.76	0.78

7. The Intercorrelation of Pupil Level Variables

So far pupil level variables have been described and appear useful as explanatory variables except for those related to religion and ethnicity. However, it was hypothesised that the relationship between the continuous variables might lead to the problem of

multicollinearity. The high association of explanatory variables may affect the requirement for independency of variables, raise the standard errors, and decline the estimates.[6] Correlation matrices of each grade were created (Appendix C.5) in order to detect the possible high correlations. Four associations were above 0.6 in the three grades which are presented in Table 4.10. These associations can be reconsidered after controlling for prior attainment and pupil characteristics in multilevel modelling.

Table 4.11
Teacher Characteristics

Variable	Grade 4 (N=60)	Grade 5 (N=60)	Grade 6 (N=60)	Total N=180
Gender				
- Male	14 (23.3%)	16 (26.7%)	25 (41.7%)	55 (30.6)
- Female	46 (76.7%)	44 (73.3%)	35 (58.3%)	125 (69.4)
Marital status				
- Single	8 (13.3%)	3 (5%)	2 (3.3%)	13 (7.2)
- Married	52 (86.7%)	57 (95%)	58 (96.7%)	167 (92.8)
Age				
- Average	37.78	37.27	40.73	38.59
- S.D.	8.22	5.73	6.97	7.17
- Range	22-58	27-52	28-59	22-59

C. Teacher and Class Characteristics

1. Teacher Characteristics

Teacher characteristics, qualifications, pedagogy, and perceptions of leadership were also assessed as an important part of this study. Table 4.11 presents frequency distributions for selected background characteristics (gender, marital status, and age) of the 180 teachers in the sample. Females outnumbered males in the teacher sample, 69.4 per cent compared with 30.6 per cent. Table 4.11 demonstrates the common situation in primary schools where the lower the grade, the higher the number of female teachers. Most teachers in urban schools were married; below 10 per cent were single. This marital

[6] For explicit explanation, see Pedhazur, 1982.

characteristic failed to be heterogeneous. Teacher age appeared to be varied over a wide range at over 30 years, from the neophyte teachers as the youngest and the near-retired teachers as the oldest.

Table 4.12
Teacher Qualifications

Variable	Grade 4 N=60	Grade 5 N=60	Grade 6 N=60	Total N=180 (%)
Educational qualification				
- Senior secondary	33	29	30	92 (51.1)
- Dip.Ed (below BA)	8	7	9	24 (13.3)
- BA	4	4	6	14 (7.8)
- Sarjana degree	15	20	15	50 (27.8)
Teaching experience				
- Average	14.53	14.68	18.43	15.78
- S.D.	7.93	5.74	6.72	7.05
- Range	1-37	1-29	3-39	1-39
Promotion scale				
- Average	4.23	4.80	5.32	4.78
- S.D.	1.93	1.60	1.05	1.62
- Range	1-7	1-8	1-7	1-8
Participation in Indonesian Language in-service training				
- none	15	13	13	41 (22.8)
- a little	23	26	23	72 (40.0)
- a lot	22	21	24	67 (37.2)
Participation in Mathematics in-service training				
- none	20	17	13	50 (27.8)
- a little	15	25	20	60 (33.3)
- a lot	25	18	27	70 (38.9)

2. Teacher Qualifications

Information was collected on the qualifications and experiences of the teachers. In Table 4.12 the statistical breakdown shows that the teachers varied from one another in terms of educational preparation and years of teaching experience and to a lesser degree on the in-service training items and teaching status. In light of the fact that the

government required primary teachers to train for a minimum of three years at a teacher training senior high school (Sekolah Pendidikan Guru = SPG), it is interesting to note that 51.1 per cent of the teachers in the sample had received that type of education, and the rest had received advanced teacher training or university training, 13.3 per cent DipEd, 7.8 per cent BA, and 27.8 per cent Sarjana degree.

In recent years, the Ministry of Education has attempted to upgrade the teaching profession by means of in-service training programmes. Given the importance of these programmes, teachers were asked to indicate if they had participated in Indonesian Language and Mathematics in-service training at any time during the last three years. Approximately 22.8 per cent of the teachers in the sample had never attended Indonesian Language in-service training and 27.8 per cent had not attended Mathematics in-service training. Those who had attended only once (a little) were 40 per cent in Indonesian Language and 33.3 per cent in Mathematics. By contrast 37.2 per cent and 38.9 per cent had experienced 'a lot' of inset in the two subject-matters.

In terms of years of teaching experience, 19.4 per cent were in teaching service for 1-10 years, 58.3 per cent for 11-20 years, 18.9 per cent for 21-30 years, and 3.3 per cent for 31-40 years. The mean for years of teaching experience was 14.53 years for Grade 4 group, 14.68 for Grade 5, and 18.43 for Grade 6.

For promotion ranks, the average for teachers in Grade 4 was 4.23 (about IIIa) four ranks after the first promotion, Grade 5 was 4.80 (near IIIb) five ranks, and Grade 6 was 5.32 (a bit above IIIb) above five ranks.

3. Teacher Pedagogy

A number of teacher pedagogy variables were included in the study to investigate the instructional approaches inside and outside of the classroom. The processes involved in classroom teaching concern the expression of teacher pedagogy: how the teacher interacts with the pupils, which instructional strategies the teacher uses, or how diligently the teacher prepares lessons.

Table 4.13
Teacher Preparation and Homework

Variable	Grade 4 N=60	Grade 5 N=60	Grade 6 N=60	Total N=180
Time for preparing lesson				
- Average	3.80	4.44	4.66	4.30
- S.D.	1.97	2.03	2.40	2.16
- Range	1-9	1-8	0.5-9	0.5-9
Time for correcting schoolwork				
- Average	3.90	4.18	4.15	4.08
- S.D.	1.95	1.97	2.08	1.99
- Range	1-9	2-9	1-9	1-9
Homework assignment (per week)				
- Average				
- S.D.	4.63	4.97	4.68	4.76
- Range	1.60	1.56	1.73	1.63
	1-8	2-9	1-9	1-9

Teachers were asked to report on the instructional methods they used in the classroom, on the matters related to preparing lessons and on homework assignments. These items expressed teacher pedagogy and the results from their responses to these items are presented in Tables 4.13 and 4.14.

Teachers were asked about preparing lessons, homework assignments, and instructional methods. Table 4.13 presents information about teachers' activities outside the classroom setting, such as the amount of time they spent on lesson planning, correcting schoolwork (including exams and homework), and amount of homework assigned each week. The average teacher in the sample spent approximately 4 hours per week on lesson planning, 4 hours for schoolwork correction, and gave 5 homework assignments per week. Grade 4 had the lowest average in these three variables, compared with Grades 5 and 6. Teachers in Grade 6 spent time the longest time in lesson preparation however less than Grade 5 in correction and assigning homework.

On instructional strategies, 10 indicators identify two hypothesised dimensions, viz. conventional (factor 1) and innovative (factor 2) ones as discussed in Chapter Two

(p. 68) and Chapter Three (see Table 3.8). The preliminary analysis[7] satisfied the assumptions for factor analysis. The Maximum Likelihood estimation stopped when the largest absolute gradient was 0.000002; and the obtained $\chi^2 = 98.2$, df = 34, $p<0.01$. The residual matrix, presented in Appendix C.4, has the largest magnitude = 0.25 and the average = 0.058. These results show the best fit of the pattern matrix. Confirmatory Factor Analysis in Table 4.14 confirmed all 5 indicators of conventional dimension, but only 3 of innovative dimension. Two indicators with non-significant loadings and very low communalities (less than 0.05) were "using individual discussion", and "running experiment in the class". These two methods were applied rarely in the Indonesian primary classrooms.

Table 4.14
Results of Confirmatory Factor Analysis on Instructional Approach

No.	Item description	Factor loading (S.E)		h^2 (S.E)
		Factor 1	Factor 2	
1	Using standard textbooks	.58 (.08)	0	.34 (.09)
2	Using lecture format	.61 (.08)	0	.38 (.09)
3	Using memorisation format	.65 (.08)	0	.42 (.08)
4	Not allowing pupil talk	.48 (.08)	0	.23 (.09)
5	Using uniform task	.33 (.09)	0	.11 (.10)
6	Using visual aids	0	.38 (.10)	.14 (.10)
7	Using individual discussion	0	.13 (.10)	.02 (.10)
8	Assigning group project	0	.60 (.11)	.37 (.13)
9	Running experiment in the class	0	.17 (.10)	.03 (.10)
10	Assigning individual homework	0	.30 (.10)	.09 (.10)
Alpha (for items with loading ≥ 0.3)		.68	.57	

The internal consistency of the conventional approach ($\alpha = 0.68$) was more reliable than the innovative approach ($\alpha = 0.57$) as rather moderate.

[7] KMO measure of sampling adequacy = 0.669; and Barlett Test of Sphericity = 630.11, significance = 0.00. This means that the sample is sufficient and the correlation matrix can be factor-analysed. The eigenvalues and percentages of variance explained by the two factors were 1.47 (29.9%) and 0.8 (14.4%)

Table 4.15
Results of Confirmatory Factor Analysis on Dimensions of Leadership
(As perceived by classroom teachers)

No.	Item description	Factor loading (S.E)		h^2 (S.E)
		Factor 1	Factor 2	
1	Friendly and approachable	.39 (.08)	0	.15 (.09)
2	Using staff suggestions	.82 (.07)	0	.67 (.06)
3	Treating staff as his/her equals	.67 (.07)	0	.46 (.07)
4	Looking for teacher's welfare	.54 (.08)	0	.29 (.08)
5*	Acting without consultation	-.15 (.08)	0	.02 (.10)
6	Giving advance notice of changes	.33 (.08)	0	.11 (.10)
7	Willing to make changes	.28 (.08)	0	.08 (.10)
8	Urging staff competition	0	.62 (.07)	.39 (.07)
9	Needling staff for great effort	0	.59 (.07)	.34 (.08)
10	Pushing to increase outcome	0	.72 (.07)	.51 (.06)
11	Keep working maximally	0	.57 (.07)	.33 (.08)
12*	Allowing to work at easy	0	-.47 (.08)	.22 (.09)
13	Working rapidly	0	.57 (.07)	.32 (.08)
14	Emphasising hard work	0	.50 (.08)	.25 (.08)
Alpha		.68	.76	

* Negative direction (be reversed for further analyses)

4. Leadership perception

Headteacher leadership may make a significant contribution to classroom and school effectiveness. It was assessed by a rating scale completed by classroom teachers. The two hypothetical dimensions of leadership, people oriented (factor 1) and task oriented (factor 2) consisted of 14 items. The preliminary analysis[8] satisfied the assumptions for factor analysis. The Maximum Likelihood estimation stopped when the largest absolute gradient was 0.00007; and the obtained $\chi^2 = 97.9$, df = 76, $p<0.04$. The residual matrix, presented in Appendix C.4, has the largest magnitude = 0.22 and the average = 0.037. These results show the best fit of the pattern matrix. Both dimensions were confirmed by Confirmatory Factor Analysis in Table 4.15 except two indicators

[8] KMO measure of sampling adequacy = 0.873; and Barlett Test of Sphericity = 630.10, significance = 0.00. This means that the sample is sufficient and the correlation matrix can be factor-analysed. The eigenvalues and percentages of variance explained by the two factors were 1.8 (26.4%) and 2.4 (34.5%)

with non significant loadings for people-oriented dimension (factor 1). The excluded items were "acting with/without consultation" and "willing to make changes". They were not applied well because teachers perceived that changes automatically happen in school based on centralised regulations from government.

The internal consistency of people-oriented ($\alpha = 0.68$) is rather lower than task-oriented ($\alpha = 0.76$). However, both may be considered sufficiently reliable for inclusion in subsequent analysis.

Table 4.16
The Class Context

Variable	Grade 4 (N=60)	Grade 5 (N=60)	Grade 6 (N=60)	Total N=180
Male pupil				
- Average	16.45	17.52	16.23	16.73
- S.D.	5.32	4.22	4.70	4.77
- Range	6-27	8-31	5-24	5-31
Female pupil				
- Average	16.12	15.42	16.28	15.94
- S.D.	4.95	5.04	4.84	4.93
- Range	5-31	8-27	6-29	5-31
Total (class size)				
- Average	32.38	32.78	32.50	30.26
- S.D.	8.36	7.03	7.05	7.47
- Range	15-49	19-46	21-50	15-50
Books for Indonesian Language				
- Average	12.10	13.00	14.13	13.08
- S.D.	12.88	13.47	16.52	14.33
- Range	1-45	1-75	1-79	1-79
Books for Mathematics				
- Average	11.95	12.85	15.78	13.53
- S.D.	13.82	12.86	14.91	14.33
- Range	1-62	1-65	1-80	1-79

5. Classroom context

In terms of classroom organisation characteristics, gender ratios, and class size were considered. Table 4.16 showed that on average there were 17 males and 16 females in a class. The average class size was 30 (rather similar to the size in UK which was 28,

see Wiliam, 1998) with the smallest of 15 and the largest of 50 pupils. These organisational characteristics were similar in Grades 4, 5, and 6.

In terms of resources, there was quite a wide range of textbooks available in the class for Indonesian Language and Mathematics. On average, the higher the grade, the more books in the class. In other words this means that the higher the grade the more books they receive from the government and other sources.

6. The Intercorrelation of Class Level Variables

As with pupil variables, the same caution of multicollinearity was considered with class level variables. The correlation matrices (Appendix C.6) indicated that some correlation coefficients were quite high, ≥ 0.6, as summarised in Table 4.17. The associated variables would be taken into account after controlling for prior attainment and pupil level variables in multilevel modelling.

Table 4.17

A Summary of High Bivariate Correlations in Class Level

Variable association	Correlation coefficients		
	Grade 4	Grade 5	Grade 6
- Teacher age and promotion rank	0.77	0.61	0.69
- Task- and people-oriented	0.64	0.69	0.59

D. Headteacher and School Characteristics

1. Headteacher

Information about the school (school level data) was related to headteacher and school characteristics. Data about headteachers included their personal biodata characteristics, qualifications, and professional development. Table 4.18 presents the frequency distribution of headteacher gender and age. Most headteachers were female (63%) and the average age was 53 years. The youngest was 36 and the oldest 60 years.

Information about headteacher qualifications, Table 4.19, shows that the biggest

group of headteacher educational qualifications were senior secondary education (52%) followed by Sarjana or Drs. degree (33%). The smallest group were BA (5%) and Dip.Ed (10%).

Table 4.18
Headteacher Characteristics
(N=60)

Variable	Frequency	Percentage
1. Gender		
- Male	22	36.7
- Female	38	63.3
2. Age		
- Average	52.63	n.a
- S.D.	5.75	
- Range	36-60	

Table 4.19
Headteacher Qualifications

Variable	Category	Frequency (%)
Educational qualification	- Senior secondary	31 (51.7)
	- Dip.Ed	6 (10.0)
	- BA	3 (5.0)
	- Sarjana	20 (33.3)
Teaching experience	- Average	31.27
	- S.D.	7.88
	- Range	10-42
Head experience	- Average	10.08
	- S.D.	7.46
	- Range	1-30
Promotion scale	- Average	7.77
	- S.D.	1.0
	- Range	5-9

The average teaching experience was 31 years, whereas experience as headteacher was 10 years. Most headteachers became head after more than 10 years in teaching. The average promotion rate was in grade 7.8 (in between IIId and IVa). This position is regarded as top the level for those in primary schools.

Headteachers were involved in activities such as taking a course for a degree, independent study, teachers' club, educational training, and educational seminars. These indicators were described as "professional growth" variable with average of 4.20 and S.D. 0.95 as presented in Table 4.20. For the sake of in-service education headteachers had an average of four meetings a week, and spent even longer at home (7 hours) engaged in educational work than at class (6 hours).

Table 4.20
Headteacher Professional Activities

Variable	Average	S.D.	Range
Professional growth	4.20	0.95	1-5
Meeting per week	4.40	1.67	2-8
Class hour	6.40	1.80	2-12
Home hour	7.22	3.04	2-12

2. School context

Table 4.21 shows that generally the schools had an average of 8 teachers with the majority being female (6 teachers) compared to males (2 teachers). However, there were some schools with less than 6 teachers because of fewer classes (without Grades 1 and 2). These special schools had small classes (fewer than 20), and with the total number of pupils fewer than 100. The average school had 193 pupils where with an average 99 boys and 93 girls. The school resources, especially books, ranged widely from 300 to 686 with the average 517 books.

Table 4.21
School Context

Variable	Average	S.D.	Range
Teachers			
- Male	2.23	1.13	1-6
- Female	5.77	1.48	2-8
- Total	8	1.44	5-13
Pupils			
- Male	98.60	26.25	49-202
- Female	93.47	28.33	45-204
- Total	192.07	51.74	97-406
Books in the school library	517.12	95.82	300-686

3. The Intercorrelation of School Level Variables

Based on matrix in Appendix C.7, 3 correlation coefficients were above 0.6 explaining the association between:

- teaching experience and age ($r = 0.88$)
- head experience and age ($r = 0.61$)
- promotion rank and head experience ($r = 0.61$).

These associated variables needed to be assessed after controlling for prior attainment, pupil level variables, and class level variables in multilevel modelling.

To summarise, this chapter has presented a descriptive analysis of the children, class, and school related variables. In general, pupil gender and age in months appeared to be pupil characteristics variables except religion and ethnicity. Parent's occupation and education, family background, home learning environment including parental encouragement were also potential variables. At class level, variables classified as teacher characteristics, qualifications, pedagogy, leadership perception, and class condition showed variation. Variables relating to headteacher characteristics and school context

were also heterogeneous. All these variables were used for modelling in the next chapter.

However, intercorrelation indicated that between father's and mother's education, family size and number of siblings, sibling order, and social pressure were rather high associations. The same typical association at class level were teacher age and promotion rank, task- and people-oriented leadership. Whereas at school level the association were between headteacher's age and teaching experience, and headship experience, and promotion rank. These associations provided that came together as significant are considered carefully in the next chapter.

On prior attainment and response variable, there was no heteroscedascity but in certain relationships appeared to be non-linear (quadratic). For the subsequent analysis, transformations were needed for such relationships.

CHAPTER FIVE
MODELLING PUPIL, CLASS, AND SCHOOL FACTORS

The purpose of this chapter is to explore the relationships between pupil attainments and a variety of explanatory variables measured at different levels. It contains a description and analysis of different statistical models in order to answer the three research questions outlined in the previous methodological chapter (Chapter Three) by using multilevel techniques. The three issues addressed in relation to the research questions are:

- the variance components of the outcome measures,
- the contribution of explanatory variables, and
- the identification of differences between schools in their effectiveness in promoting pupil progress.

The first section (A) describes analyses related to the first two issues. The second section (B) addresses the third issue of the research, the extent of differences in school effectiveness examining consistency in effects across outcomes and across grades in particular.

A. Multilevel Modelling

A series of strategies were considered in modelling. Because of the use of the pupil's class as the basis for the sample, from each school only one class was involved and it is thus not possible to disentangle class and school effects in the analysis. The multilevel model became two levels viz. level-1 for pupils and level-2 for class/school as illustrated by multilevel summaries in Appendix D.1. The analyses revealed that pupil samples at Grade 4 for every school ranged in size between 14-41, at Grade 5 between 17-45, and at Grade 6 between 16-44 pupils. These conditions of range satisfied the requirements of multilevel modelling (see Mok, 1995; Mok & Warton, 1996; Cohen, 1998; Kreft & de Leeuw, 1998).

The frequency distributions of the six raw outcome measures were examined and tests of skewness and kurtosis conducted. In order to facilitate comparison of the different model results it was considered desirable to transform the outcome measures to a

standard format. Before the response variables were transformed to normal scores[1] and centering the baselines around the average to improve model fit (as recommended by Goldstein et al., 1993; Woodhouse, Rasbash, Goldstein, & Yang, 1996), the strategy consisted of 6 possible consecutive models which are summarised in Table 5.1. Model 1, known as the null model, disaggregated the variance components of the two levels. Model 2 is a simple value-added analysis of pupil progress over one school year after controlling for prior attainment only. Including prior attainment is a basis for comparing schools (McPherson, 1992, 1997; Wiliam, 1992) although for the present study the comparison will be after Model 4. As shown in the previous chapter, there was a significant association between pupils' scores in Indonesian Language and in Mathematics, therefore the two scores were both included as baseline measures of prior attainment. The quadratic terms of each baseline were also tested in order to allow for any non-linearity in the relationships with the response variable.

Table 5.1
Strategy for Modelling

Variable	Model						
		1	2	3	4	5	6
CONS (intercept)	X	X	X	X	X	X	
Prior attainment			X		X	X	X
Pupil Characteristics			X	X	X	X	
Family Background			X	X	X	X	
Home Learning Environment				X	X	X	X
Teacher Characteristics						X	X
Class Condition						X	X
Headteacher Characteristics						X	
School Condition							X

[1] A method by assigning expected values from the standard normal distribution according to the ranks of the original scores. The *output column* contains the Normal Equivalent Deviates (NED) of (i-0.5/n) where i ranks the values in *input column* and n is the number of values (Rasbash & Woodhouse, 1996).

The contextualised model, Model 3, included measures of child background factors such as individual characteristics and family/home background without prior attainment. Model 4 is a more complex longitudinal value-added analysis which includes both significant background factors and the prior attainment measures. Models 5 and 6 seek to explore the impact of process measures related to pupils, classes and schools. Model 5, tested the impact of class factors after controlling for the background and prior attainment measures found to be significant in Model 4. The last, Model 6, tested the impact of school factors after controlling for pupil measures and class measures. All six models are presented if at least one statistically significant variable was identified in the procedure. One additional model, by using the same results in the fixed part from the last model, allows the initial scores and child characteristics to vary randomly at the pupil level (level 1 random part) as covariance with the intercept. The results for the analysis of pupil outcomes are described separately for Indonesian Language and Mathematics in each of the three grade levels (Grades 4, 5 and 6).

1. Models for Grade 4 Indonesian Language

Table 5.2 summarises the progression of six models to explain the variance in Grade 4 Indonesian Language. Model 1, as an empty model which fitted a constant term only, showed that from the total variance of 0.9733 in Indonesian Language score 22.8 per cent was between class/schools and 77.2 per cent between pupils. These percentages are similar to those found in primary school studies in other contexts. (Tymms, 1993; Hill & Rowe, 1996).

Model 2, controlled for prior attainment. As would be expected, prior Indonesian Language attainment accounted for a significant proportion of the variance in pupils' Indonesian Language results at Grade 4, the reduction from the total variance was 24.2 per cent. In terms of the remaining unexplained variance, the pupil variation was 67.2 per cent, and the class/school component was raised to 32.8 per cent. The model included quadratic relationships between both prior attainments and the outcome measure Indonesian Language score.

A stepwise procedure (Appendix D.2a) was carried out to produce Models 4 and 3 which contained significant pupil level variables in the fixed parameter matrix. In the procedure, because of the high correlation between father's and mother's education

(found in the previous analysis and discussed in Chapter 4), the variables were treated differently in step 5 and 6. Father's education was found to be a better predictor. In this case, father's education was considered as the best representation of parents' education. The intercept from Model 3 represents the attainment of girls and of the youngest quartile age. The variables identified as significant in the fixed part of both models were

Table 5.2
Analysis of Grade 4 Indonesian Language

Parameter	Estimate (Standard Error)						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 6a
Fixed Part							
*Intercept	.0054	-.095	-.0097	-.045	.59	1.12	1.15
	(.065)	(.069)	(.087)	(.085)	(.29)	(.34)	(.34)
*Language		.032	--	.026	.026	.026	.026
		(.0021)		(.0021)	(.0021)	(.0021)	(.002)
*Sq-Language		.00049	--	.0005	.00049	.00049	.0005
		(.00011)		(.00011)	(.00011)	(.00011)	(.00011)
*Mathematics		.016	--	.016	.016	.016	.017
		(.0016)		(.0015)	(.0015)	(.0015)	(.0015)
*Sq-Mathematics		.00018	--	.00017	.00017	.00017	.00017
		(.000076)		(.000074)	(.000074)	(.000074)	(.00007)
*Pupil gender			-.41	-.32	-.32	-.32	-.32
			(.041)	(.035)	(.035)	(.035)	(.035)
Age1			.046	.014	.014	.016	.015
			(.056)	(.048)	(.048)	(.048)	(.047)
Age2			-.11 *	-.029	-.029	-.03	-.025
			(.056)	(.048)	(.048)	(.048)	(.047)
*Age3			-.41	-.16	-.17	-.17	-.16
			(.063)	(.055)	(.055)	(.055)	(.055)
*Father's education			.059	.026	.027	.026	.024
			(.0084)	(.0073)	(.0073)	(.0073)	(.0072)
*Teacher age					-.017	-.019	-.02
					(.0075)	(.0071)	(.0072)
*Meetings						-.097	-.099
						(.035)	(.035)
Random Part							
*School σ^2	.2217	.2419	.1827	.223	.204	.1787	.1828
	(.046)	(.048)	(.038)	(.044)	(.041)	(.036)	(.037)
*Pupil σ^2	.7516	.4954	.6487	.4632	.4632	.4632	.4623
	(.027)	(.018)	(.023)	(.016)	(.016)	(.016)	(.016)
*Language/Intercept							-.0027
							(.00071)
Total σ^2	.9733	.7373	.8314	.6862	.6672	.6412	.6397
% school σ^2	22.8	32.8	22.0	32.5	30.6	27.9	28.6
% pupil σ^2	77.2	67.2	78.0	67.5	69.4	72.1	71.4
% σ^2 accounted for	---	24.2	14.6	29.5	31.5	34.1	34.3
-2(log-likehood)	4388.75	3721.1	4140.78	3607.94	3603.13	3595.88	3579.5

Note: * $p<0.05$
Pupil gender (0=female pupil, 1=male pupil);
Age in month (0=the first quartile as the youngest, Age1=the second quartile, Age2= the third quartile, Age3= the fourth quartile as the oldest)
Standard errors shown in brackets.

- pupil gender, girls outperformed boys
- pupil age, the youngest children in Grade 4 achieved better in Indonesian Language than the oldest quartile of pupils (Age3). This is likely to represent grade retention for low attaining pupils.
- father's education, the higher the education the father had, the better the Indonesian Language attainment of the child.

Without controlling for prior attainment, in Model 3, within pupil level variance was 78 per cent and between class/school was 22 per cent. The reduction of total variance was 14.6 per cent. The results of the more complex value-added analyses of Model 4, which controlled for prior attainment **and** background factors, indicated that 32.5 per cent of the unexplained variance was between class/schools and 67.5 per cent between pupils (within schools). Model 4 accounted for 29.5 per cent of the total variance in the outcome measure, twice that achieved in Model 3. This model revealed that the amount of progress children made in terms of their Indonesian Language attainment over Grade 4 varied significantly from school to school. Another interesting point was finding the change in the estimates' coefficients in the fixed part from Model 3 to Model 4. The smaller estimates in Model 4 indicated the importance of including measures of prior scores in the analysis of pupil progress. The background measures relate to prior attainment scores, and are relatively unimportant in accounting for differences in rates of progress across one school year (see Sammons et al., 1993).

Model 5 found that only one significant variable out of 18 tested related to the class level after controlling for pupil background and prior attainment (the screening analysis involved examining 18 steps as shown in Appendix D.2b). Step 2 found that the younger the class teacher's age the higher the pupil's Indonesian Language attainment at Grade 4. This may indicate that young teachers have the benefit of fresh ideas from pre-service educational training undertaken and possibly more strategies which encourage pupil learning. For this model, random parameter explained that the level of pupil variation 69.4 per cent and of school variation 30.6 per cent. In all 31.5 per cent of the total variance was accounted for by model 5.

Model 6, after controlling for pupil and class variables in Appendix D.2c step 8 identified only one school measure out of 18 tested (the frequency of school

meetings) as having a statistically significant relationship with Indonesian Language attainment of children in Grade 4. The more frequent the meetings the lower the attainment. Meetings usually took place during school hours and this will have disrupted lessons. The children were given free time or were sent home during the meetings. This might frequently happen quite often coincidentally with the schedule of Indonesian Language. As the last fixed part modelling, the variation among schools was 27.9 per cent whereas it was 72.1 per cent among children. In all 34.1 per cent of the total variation was accounted for this in model.

The model was extended (Model 6a) by allowing for random variation in the prior attainment and using the measures of gender and age at pupil level. The likelihood function[2] indicated a better fit with χ^2=16.38, df=1, p<0.05. The total variance accounted for by this model was 34.3 per cent. It is generally appropriate to carry out a likelihood ratio test to establish the goodness of a model fit. This is done by estimating the 'deviance' of the current model and a model omitting the level 2 variance (see McCullagh & Nelder, 1989). The likelihood ratio test certificate gives a better (more sensitive estimate) of the impact of adding a variable to the level 2 parameter matrix than the use of standardised error and level 2 variance estimate (see Goldstein, 1995, p. 26).

2. Models for Grade 4 Mathematics

Models related to Grade 4 Mathematics attainment, shown in Table 5.3, differ in certain respects from those found for Indonesian Language. From the total variation of 0.9827, in Model 1 as the starting point, the intra-class/school variation was 20.4 per cent and 79.6 per cent for pupil variation. Compared with Indonesian Language in the same grade, school Mathematics attainment showed slightly less class/school level variation in Model 1.

After controlling for prior attainment, using a simple value added analysis in Model 2, the intra-school and between pupil variations changed to be 26.4 per cent and

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2 The likelihoods of the two models were compared. The difference of the likelihoods is the chi-square. We may ask the MLn to look up the probability of obtaining a chi-square of this magnitude by chance by typing **CPRO (chi-square value) (degree of freedom)** (detail in Goldstein, 1995; Woodhouse, Rasbash, Goldstein, & Yang, 1996).

73.6 per cent respectively. In all, the prior attainment measures accounted for 31.3 per cent of the total variance in Grade 4 Mathematics results, in comparison with the null model (Model 1). Similar to Indonesian Language in Table 5.2, there were quadratic associations between the two baselines and Mathematics attainment.

Results from stepwise procedures, Appendix D.3a, discovered that pupil gender, father's occupation, mother's education, and textbooks at home were significant predictors of Mathematics attainment. Girls attained more highly than boys, children whose mothers were in clerical and professional work attained higher scores than those whose mothers were in skilled-manual or unskilled manual or non-earning categories. The higher the educational level of the mother, the better her children achieved in Mathematics. The greater the provision of textbooks in pupils' homes, the better the progress made in Mathematics over Grade 4. The prior scores were also better predictors. The reduction in total variance for Model 2 was only 12.8 per cent. Of the remaining unexplained variance 84.2 per cent was attributed to the pupil and 15.8 per cent to the class/school level. For Model 4, including the initial scores and background factors provided a better fit. In all 35 per cent of the total variance was accounted for. In terms of the unexplained variance 75.9 per cent was attributed to the pupil level and 24.1 per cent to the school level. Apart from pupil gender, all the other findings differed in comparison with Indonesian Language attainment for the same cohort. Similar to the previous analysis, the coefficients of exploratory variables in Model 4 became smaller after prior attainment was controlled for. Thus we can conclude that the prior attainment measures show a stronger relationship with later Mathematics results.

None of the measures tested concerning class processes (see in Appendix D.3b), were found to be significant in accounting for Grade 4 Mathematics results. Therefore no Model 5 is shown in Table 5.3. Turning to the school level variables, Appendix D.3c (step 15) revealed that the number of male teachers at school had a positive association with Grade 4 Mathematics attainment (Model 6). The model revealed that 79.2 per cent of the unexplained variance was attributed to the pupil and 20.8 to the class/school level. The total variance was reduced by 37.8 per cent from the initial one with a significant improvement of likelihood (χ^2=10.3, df=1, $p<0.05$).

By keeping the same structure in the fixed part but allowing the initial attainment and child characteristics to vary randomly at pupil level, a better fitting model was

achieved as indicated by log-likelihood ratio in Model 6a. The model improvement was significant (χ^2=9.23, df=1, p<0.05). In all, Model 6a accounted for 41.9 per cent of the total variance (the unexplained variance reduced to 0.5709). The estimate 0.0053 indicated that the variance of boys' prior Mathematics attainment was significantly different from that of girls.

Table 5.3
Analysis of Grade 4 Mathematics

Parameter	Estimate (Standard Error)					
	Model 1	Model 2	Model 3	Model 4	Model 6	Model 6a
Fixed Part						
*Intercept	-.0043	-.14	-.3	-.2	-.53	-.53
	(.062)	(.06)	(.11)	(.096)	(.14)	(.14)
*Mathematics		.029	--	.029	.029	.029
		(.00016)		(.0016)	(.0014)	(.0015)
*Sq-Mathematics		.00024	--	.00021	.00021	.00022
		(.000076)		(.000076)	(.000075)	(.000075)
*Language		.016	--	.013	.013	.013
		(.002)		(.0021)	(.0021)	(.0021)
*Sq-Language		.00059	--	.00054	.00053	.00054
		(.00011)		(.00011)	(.00011)	(.00011)
*Pupil gender			-.24	-.16	-.16	-.16
			(.042)	(.036)	(.036)	(.034)
*Father's occup.1			-.25	-.14	-.14	-.14
			(.063)	(.052)	(.052)	(.052)
Father's occup.2			-.13 *	-.051	-.049	-.05
			(.061)	.051)	(.051)	(.05)
*Mother's education			.066	.02	.02	.019
			(.00092)	(.0078)	(.0078)	(.0078)
*Books at home			.11	.06	.059	.06
			(.026)	(.022)	(.022)	(.022)
*Male teachers					.15	.15
					(.044)	(.044)
Random Part						
*School σ^2	.2	.1783	.1351	.1542	.127	.1277
	(.042)	(.036)	(.03)	(.031)	(.027)	(.027)
*Pupil σ^2	.7827	.4965	.722	.4845	.4845	.4326
	(.028)	(.018)	(.025)	(.017)	(.017)	(.022)
*Pupil gender/ Intercept						.0053
						(.0017)
Total σ^2	.9827	.6748	.8571	.6387	.6115	.5709
% school σ^2	20.4	26.4	15.8	24.1	20.8	22.4
% pupil σ^2	79.6	73.6	84.2	75.9	79.2	77.6
% σ^2 accounted for	---	31.3	12.8	35.0	37.8	41.9
-2(log-likehood)	4448.79	3707.89	4298.34	3660.33	3650.03	3640.8

Note: * p <0.05
Pupil gender (0=female pupil, 1=male pupil);
Father occupation (0=clerical & professional, 1=unskilled manual, 2=skilled manual)
= Model 5 not shown because no class level measures identified as significant.

3. Models for Grade 5 Indonesian Language

Grade 5 Indonesian Language, as in Table 5.4, showed a total variation of 0.9745. The variation was 85.9 per cent in pupil level and only 14.1 per cent in class/school level (by comparison the Grade 4 analysis showed nearly double the class/school level variance of Grade 5).

Table 5.4
Analysis of Grade 5 Indonesian Language

Parameter	Estimate (Standard Error)				
	Model 1	Model 2	Model 3	Model 4	Model 6
Fixed Part					
*Intercept	-.01	-.014	-.47	-.22	-.54
	(.053)	(.058)	(.12)	(.1)	(.14)
*Language		.04	--	.033	.033
		(.002)		(.002)	(.002)
*Mathematics		.021	--	.02	.02
		(.0018)		(.0017)	(.0017)
*Pupil gender			-.38	-.28	-.28
			(.041)	(.034)	(.034)
Age1			.082	.039	.039
			(.056)	(.045)	(.045)
Age2			-.13 *	-.058	-.057
			(.061)	(.045)	(.049)
*Age3			-.41	-.22	-.22
			(.062)	(.051)	(.051)
*Mother's education			.061	.024	.023
			(.0096)	(.0079)	(.0079)
*Home language			.14	.087	.088
			(.025)	(.02)	(.02)
*Newspaper			.17	.089	.088
			(.049)	(.04)	(.04)
*Male teachers					.14
					(.046)
Random Part					
*School σ^2	.1375	.1859	.1091	.1695	.1424
	(.031)	(.037)	(.024)	(.034)	(.029)
*Pupil σ^2	.837	.5	.7037	.4597	.4598
	(.029)	(.017)	(.024)	(.016)	(.016)
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Total σ^2	.9745	.6859	.8128	.6292	.6022
% school σ^2	14.1	27.1	13.4	26.9	23.6
% pupil σ^2	85.9	72.9	86.6	73.1	76.4
% σ^2 accounted for	---	29.6	16.6	35.4	38.2
-2(log-likehood)	4775.56	3913.37	4468.08	3765.32	3756.35

Note: * $p<0.05$
Pupil gender (0=female, 1=male);
Age in month (0=the first quartile as the youngest, Age1=the second quartile, Age2= the third quartile, Age3= the fourth quartile as the oldest).
= Model 5 not shown because no class level measures identified as significant.

Model 2 controlled for prior attainment. In this analysis the total variation was reduced by 29.6 per cent. In all, with 72.9 per cent of the unexplained variance was found to lie between pupils and 27.1 per cent between schools. The relationships were linear because no quadratic association were found to be significant in the model (illustrated through a stepwise procedure in Appendix D.4a). Also the likelihood function shows a significant reduction from the previous model (χ^2=862.19, df=2, p<0.05).

The results of examination in Appendix D.4a are summarised in Models 4 and 3. Without prior attainment (Model 3), 16.6 per cent of the total variation was accounted for. However, with prior attainment and background factors (Model 4) the total variation was 0.6292 with a bigger reduction (35.4 per cent) than Model 3 and Model 4 for Grade 4 in the same subject. This means that the prior attainments have a stronger relationship with later attainment for the Grade 5 sample. The significant explanatory variables were:

- pupil gender, girls were better than boys
- pupil age, the oldest quartile of pupils in Grade 5 (Age3) performed less well than the other age groups.
- mother's education, the higher the educational qualification of the mother the better the child performed. Appendix D.4a step 10 also showed that father's education had a significant contribution, however not stronger than mother's education indicating that parents' education influenced the child's Indonesian Language score.
- home language, the more often the child was reported to use national language at home, i.e Indonesian Language, the better score the s/he achieved.
- the availability of newspapers at home was also related to the child's Indonesian Language achievement.

After the pupil level, the class variables were tested in the model as shown in Appendix D.4b. The result was none of the variables contributed significantly to the Indonesian Language attainment and so no Model 5 is reported. The next model tested the school level variables. Model 6 (see Appendix D.4c step 15) showed that pupils in schools with more male teachers tended to have a better performance in Indonesian Language. This suggests that the greater proportion of male teachers had a positive influence in the school climate for raising the pupils' Indonesian Language achievement. Appendix D.4c also shows that there was no significant random part variation at level

1 (the pupil level) for the Grade 5 sample.

4. Models for Grade 5 Mathematics

For the analysis of Mathematics in Grade 5, the total variance was 0.9841 with 21.4 per cent of the variance attributable to the class/school and 78.6 per cent to the pupil level (see Table 5.5). These figures are similar to the pattern for Grade 4 Mathematics but not the Grade 5 Indonesian Language results. In terms of language attainment of the same child cohort 14.1 per cent of the variance was attributed to the class/school level. These data show that differences between schools in Mathematics attainment at Grade 5 were more varied than those in Indonesian Language.

The Model 2, the total variance was 0.6511 or 33.8 per cent accounted for the model, with 72.4 per cent for pupil and 27.6 per cent for class/school level. After examining the relationship as in Appendix D.5a, Mathematics had a linear relationship but Indonesian Language a quadratic relationship. A significant reduction was also indicated by the likelihood function (χ^2=851.72, df=3, p<0.05).

After examining every pupil level variable (Appendix D.5a) in the fixed parameter matrix, Model 4 and 3 were produced. Total variance was 0.9093 for the contextualised Model 3 without prior scores, where the variance was partitioned to 78.9 per cent within class/school and 21.1 per cent between class/school. On the other hand, the total variance of 0.637 for model 4 with prior scores expressing 72.6 per cent within class/school and 27.4 per cent between class/school. Both models were quite different, because prior attainments had a much greater influence as shown in 7.6 per cent (model 3) and 35.3 per cent variance (model 4) accounted for the two models. This was paralleled in the declining of the likelihood function (χ^2=754.22, df=3, p<0.05). The reduction of total variance was rather similar to the same Model 4 for Grade 5 Indonesian Language (35.4 per cent) and Grade 4 Mathematics (35%). The significant pupil level variables were

- pupil age, the oldest quartile of pupils in Grade 5 (Age3) achieved lower results than those in the other three quartiles. Again, this at first sight surprising result may be explained by the fact that the some of the older children in each class have been "held back" from promotion because of poor academic performance.

Table 5.5
Analysis of Grade 5 Mathematics

Parameter	Estimate (Standard Error)					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 5a
Fixed Part						
* Intercept	-.0018 (.063)	-.055 (.059)	.066 (.11)	-.092 (.092)	-.18 (.096)	-.19 (.096)
*Mathematics		.031 (.0017)	--	.03 (.0017)	.03 (.0017)	.03 (.0017)
*Language		.025 (.002)	--	.023 (.002)	.023 (.002)	.023 (.002)
*Sq-Language		.00037 (.000094)	--	.00037 (.000094)	.00038 (.000094)	.00038 (.00009)
Age1			.085 (.056)	.052 (.045)	.051 (.045)	.053 (.045)
Age2			-.21 * (.06)	-.091 (.049)	-.091 (.049)	-.087 (.049)
*Age3			-.37 (.06)	-.13 (.05)	-.13 (.05)	-.12 (.049)
*Father's occup.1			-.37 (.058)	-.15 (.048)	-.14 (.048)	-.15 (.047)
* Father's occup.2			-.3 (.057)	-.12 (.047)	-.12 (.047)	-.12 (.046)
*Home language			.1 (.025)	.058 (.02)	.059 (.02)	.062 (.02)
*Class teacher gender (male)					.32 (.12)	.31 (.12)
Random Part						
*School σ^2	.211 (.043)	.18 (.036)	.1915 (.04)	.1748 (.035)	.155 (.031)	.1545 (.031)
*Pupil σ^2	.7731 (.026)	.4711 (.016)	.7178 (.025)	.4622 (.016)	.4622 (.016)	.454 (.03)
*Mathematics/ Intercept						.002 (.0006)
Total σ^2	.9841	.6511	.9093	.637	.6172	.6125
% school σ^2	21.4	27.6	21.1	27.4	25.1	25.2
% pupil σ^2	78.6	72.4	78.9	72.6	74.9	74.8
% σ^2 accounted for	---	33.8	7.6	35.3	37.3	37.8
-2(log-likehood)	4662.1	3810.38	4530.62	3776.4	3769.94	3759.01

Note: * $p<0.05$

Age in month (0=the first quartile as the youngest, Age1=the second quartile, Age2= the third quartile, Age3= the fourth quartile as the oldest);

Father occupation (0=clerical & professional, Father's occup.1=unskilled manual, Father's occup.2=skilled manual);

Teacher gender (0=female teacher; 1=male teacher).

= Model 6 not shown because no class level measures identified as significant.

- children whose fathers had skilled manual and unskilled manual jobs had lower achievement than those with clerical and professional fathers.

- using the national language as the home language also appeared to influence the Mathematics results positively. This may be related to the fact that the subject is taught at school in the national language and home may find it easier to understand the explanation of mathematical concepts.

Model 5, comprising the class level variable had 0.6172 total variation with 74.9 per cent for pupil and 25.1 per cent for class/school level. The examination in Appendix D.5b step 1 found a significant variable from the class level i.e the teacher gender, children in Grade 5 with a male class teacher made more progress than those with a female teacher. Although in the school level the proportion of male teacher appeared to be significant, the class teacher's gender had a stronger contribution to the Mathematics attainment. By including teacher gender, the likelihood ratio changed (χ^2=6.46, df=1, $p<0.05$) significantly. Because Appendix C.5c did not find any significant variable from the school variables, the modelling of the fixed part stopped at Model 5 and then proceeded to random part, Model 5a. The last additional model with total variation of 0.6125 accounted for 37.8 per cent of the total variance and showed that the Mathematics initial scores varied significantly among the children; the likelihood ratio produced χ^2=10.93, df=1, $p<0.05$). This indicates a better fit for Model 5a compared with Model 5.

5. Models for Grade 6 Indonesian Language

Turning to Indonesian Language attainment at Grade 6 (Table 5.6) the total variation was 0.976, in Model 1. The pupil level variation was 80.5 per cent, and the level of class/school was 19.5 per cent. Comparing the same subject in the other two grades, the amount of variance in pupils' scores attributed to between class/school difference was greater in Grade 4 (22.8 per cent), but lower in Grade 5 (14.1 per cent) than Grade 6.

After taking into account the prior attainment, Model 2, the total variation became 0.6504, the total variance accounted for by the model was 33.4 per cent. The variance for levels (i.e that unexplained by the model) also changed to 79.3 per cent for pupil and 20.7 per cent for class/school level. The likelihood function was changed significantly (χ^2=841.5, df=2, $p<0.05$). The explained variance for this Grade 6 was higher (33.4 per

cent) than in either Grade 4 (24.2 per cent) or Grade 5 (29.6 per cent) for the same subject. The relationships between Grade 6 prior attainments and Indonesian Language were linear, the quadratic terms were not found to be significant (Appendix D.6a).

The process of selection significant pupil level variables for inclusion in the fixed effects matrix (Appendix D.6a) ended up with the results in Model 4 and Model 3 (without previous attainment). Model 3 had only 0.7838 total variance. In all, 79.3 per cent of the unexplained variance was attributed to the pupil level and 20.7 per cent to the class/school level; this model achieved a reduction of 19.7 per cent in the total variance. However a big change happened in the complex value added Model 4 controlling for prior attainment. With total variance 0.5841 which indicated a large drop in comparison with the total variance in model 1, 75.2 per cent was in pupil level and 24.8 per cent in class/school. The reduction in total variance was 40.2 per cent, higher than the same subject in Grade 4 (29.5 per cent) and Grade 5 (35.4 per cent). Four significant variables, besides prior attainment, found in the model were:

- pupil gender, again girls attained more highly than boys
- pupil age, the quartile of the oldest pupils in Grade 6 (Age3) performed less well than pupils in the other three quartiles.
- father's education, the higher the educational qualification the better their children performed in Indonesian Language. Step 11 of Appendix D.6a revealed that mother's education also had a significant influence, but weaker than father's education. Therefore, the use of father's education in the model represented parents' education).
- the availability of printed books at home, also showed a positive relationship with Indonesian Language attainment.

Similar to the all previous grades, estimates of pupil background factors in Model 4 were smaller than in Model 3, due to the impact of prior attainment.

Model 6 is the last model because as shown in Appendix D.6b none of the class level variables was significant. This includes one variable from the school level found to be significant (see Appendix D.6c step 16). The variable was the number of female teachers at the school, the higher the number, the better pupil progress in Indonesian Language. The total unexplained variance of the model was 0.5705 with the proportion 77 per cent for pupil and 23 per cent for the class/school level. The last model achieved

Table 5.6
Analysis of Grade 6 Indonesian Language

Parameter	Estimate (Standard Error)					
	Model 1	Model 2	Model 3	Model 4	Model 6	Model 6a
Fixed Part						
*Intercept	-.013	-.012	-.056	.0042	-.45	-.45
	(.06)	(.056)	(.1)	(.091)	(.21)	(.21)
*Language		.044	--	.036	.036	.036
		(.0022)		(.0022)	(.0022)	(.0022)
*Mathematics		.018	--	.016	.016	.016
		(.0016)		(.0016)	(.0016)	(.0015)
*Pupil gender			-.51	-.31	0.31	-.31
			(.039)	(.034)	(.034)	(.033)
Age1			-.0084	-.015	-.014	-.013
			(.053)	(.045)	(.045)	(.044)
Age2			-.21 *	-.075	-.073	-.073
			(.056)	(.048)	(.048)	(.048)
*Age3			-.59	-.32	-.32	-.32
			(.061)	(.052)	(.052)	(.054)
*Father's education			.042	.019	.018	.019
			(.0082)	(.007)	(.007)	(.007)
*Books at home			.096	.05	.048	.047
			(.023)	(.02)	(.2)	(.02)
*Female teachers					.08	.08
					(.034)	(.034)
Random Part						
*School σ^2	.191	.1683	.1619	.1451	.1315	.1317
	(.04)	(.034)	(.034)	(.029)	(.027)	(.027)
*Pupil σ^2	.785	.4821	.6219	.439	.439	.4634
	(.027)	(.017)	(.021)	(.015)	(.015)	(.032)
*Age1/Intercept						-.045
						(.02)
Age 2/Intercept						-.0086
						(.022)
Age3/Intercept						.0084
						(.024)
Total σ^2	.976	.6504	.7838	.5841	.5705	.5047
% school σ^2	19.5	25.9	20.7	24.8	23.0	26.1
% pupil σ^2	80.5	74.1	79.3	75.2	77.0	73.9
% σ^2 accounted for	---	33.4	19.7	40.2	41.5	48.3
-2(log-likehood)	4704.57	3863.07	4296.59	3694.85	3689.47	3681.57

Note: * $p<0.05$
Pupil gender (0=female pupil, 1=male pupil);
Age in month (0=the first quartile as the youngest, Age1=the second quartile, Age2= the third quartile, Age3= the fourth quartile as the oldest).
+ Model 5 not shown because no class level measures identified as significant.

41.5 per cent reduction in total variance in comparison with the null model (1). Model 6a expressed a significant result that the first quartile of the youngest children in Grade

5 varied in terms of their prior Indonesian Language attainment. The result from Model 5a indicated that children of the second quartile (Age1) varied (σ^2=0.3745) significantly from the youngest quartiles (σ^2=0.4634). The change of likelihood in the model was also significant (χ^2=7.9, df=3, p<0.05) with the total unexplained variance of 0.5047. In all, model 6a accounted for 48.3 per cent of the total variance.

6. Models for Grade 6 Mathematics

The results of Mathematics attainment for Grade 6 children was illustrated in Table 5.7. The empty model started with 0.9852 total variance with 70.8 per cent attributed to between pupil variation and 29.2 per cent to between class/school variation. The variation based on the same children suggested that schools were more homogeneous in Mathematics than in Indonesian Language (19.5 per cent). Compared with Mathematics in other classes, Grade 4 (20.4 per cent) and Grade 5 (21.4 per cent), this result indicates the existence of greater variation between schools and classes for the oldest grade.

After taking into account the prior attainment, Model 2, the total variation was 0.6757, the variance account for the model was 26.2 per cent. The variance for levels also changed with 61.4 per cent of the unexplained variance attributed to the pupil and 38.6 per cent to the class/school level. The likelihood function showed a significant reduction (χ^2= 993.33, df=3, p<0.05). The relationships between Grade 6 prior attainment and Mathematics were quadratic for initial Mathematics but linear for initial Indonesian Language score (see Appendix D.7a).

The examination in Appendix D.7a demonstrated a number of significant results which are summarised in Model 4. The same model was reanalysed after removing the prior attainments, as Model 3. The fixed parts of both models showed a rather different picture than the models in the analyses of younger grades. Pupil gender did not have a significant relationship to attainment in Grade 6 Mathematics. Only two main significant variables found:

- pupil age, the two quartile groups of the oldest pupils in Grade 6 (Age3) performed less well than the pupils in the younger quartiles.
- the availability of printed books at home, also showed a positive relationship with Mathematics attainment.

Table 5.7
Analysis of Grade 6 Mathematics

Parameter	Estimate (Standard Error)					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 5a
Fixed Part						
*Intercept	-.011 (.072)	-.059 (.069)	-.035 (.1)	-.055 (.091)	-.22 (.15)	-.22 (.15)
*Mathematics		.031 (.0015)	--	.03 (.0015)	.03 (.0015)	.03 (.0015)
*Sq-Mathematics		.00028 (.000071)	--	.0003 (.00007)	.0003 (.00007)	.00032 (.00007)
*Language		.023 (.002)	--	.02 (.0021)	.02 (.0021)	.02 (.002)
Age1			-.094 (.053)	0.059 (.043)	-.058 (.043)	-.061 (.045)
*Age2			-.3 (.06)	-.12 (.045)	-.12 (.045)	-.12 (.045)
*Age3			.66 (.059)	-.32 (.049)	-.31 (.049)	-.31 (.049)
*Books at home			.11 (.042)	.042 (.019)	.042 (.019)	.038 (.019)
Maths training1					.02 (.18)	.024 (.18)
*Maths training2					.36 (.17)	.36 (.17)
Random Part						
*School σ^2	.2874 (.057)	.2608 (.05)	.2866 (.056)	.2584 (.05)	.2279 (.044)	.2322 (.045)
*Pupil σ^2	.6978 (.024)	.4149 (.014)	.6295 (.022)	.4022 (.014)	.4022 (.014)	.4638 (.032)
*Mathematics/ Intercept						.001 (.0005)
Age1/Intercept						-.026 (.021)
*Age2/Intercept						-.05 (.02)
*Age3/Intercept						-.05 (.021)
Total σ^2	.9852	.6757	.9161	.6606	.6301	.446
% school σ^2	29.2	38.6	32.3	39.1	36.2	52.1
% pupil σ^2	70.8	61.4	68.7	60.9	63.8	47.9
% σ^2 accounted for	---	26.2	7.0	32.9	36.0	54.7
-2(log-likehood)	4524.37	3631.04	4348.16	3577.28	3570.2	3556.97

Note: * $p<0.05$
Age in month (0=the first quartile as the youngest, Age1=the second quartile, Age2= the third quartile, Age3= the fourth quartile as the oldest);
In-service training for Mathematics (0=none, Maths training1= a little, Maths training2=a lot).

In Model 3, the unexplained variance was 0.9161 with the proportion of 68.7 per cent for pupil and 32.3 per cent for class/school levels. The reduction of 7 per cent of total variance was statistically significant and improved the model fit. Nonetheless background factors clearly show a weaker relationship with Mathematics attainment than

for Indonesian Language, especially for older primary pupils. A bigger change was found in Model 4. Here the unexplained variance fell to 0.6606. Of this 60.9 per cent was attributed to the pupil and 39.1 per cent for class/school level. The reduction of total variance was, 32.9 per cent, more than four times bigger than in Model 3; whereas the estimates for the impact of pupil background factors were reduced as happened in the analyses of other grades.

Among the class level variables (examined in Appendix D.7b step 9), inservice-training for Mathematics teachers had a significant positive relationship with pupils' attainment in Grade 6, as shown in Model 5. The model indicated an unexplained variance of 0.6301, of which 63.8 per cent for pupil and 36.2 per cent for class/school level variation. In all, 36.0 per cent of the total variance was accounted for by model 5. None of the school variables appeared significant for the Mathematics attainment (presented in Appendix D.7c). Model 5a shows the development of the random part. This indicates that the variance of the initial Mathematics score for two quartiles of older pupils (Age2 and Age3) in Grade 6 differs from that of the other age groups. The model proved significantly (χ^2=13.23, df=4, $p<0.05$), with the unexplained variance reduced to 0.446. In all, 54.7 per cent of the total variance was accounted for by the final model 5a.

Table 5.8
Total and Class/School Variances Before Controlling for any Explanatory Variables

	Total Variance	Class/School	
		Variance	%
Indonesian Language:			
- Grade 4	0.9733	0.2217	22.8
- Grade 5	0.9745	0.1375	14.1
- Grade 6	0.976	0.191	19.5
Mathematics:			
- Grade 4	0.9827	0.20	20.4
- Grade 5	0.9841	0.211	21.4
- Grade 6	0.9852	0.2874	29.2

7. Summary of Variances and Explanatory Variables

The results of the variance components models which discussed above are summed up in Table 5.8. In general, the total variances ranged between 0.97 to 0.98 for

Indonesian Language and 0.98 to 0.99 for Mathematics. From that total, the proportion of class/school variance lay between 14.1 to 22.8 per cent for Indonesian Language and 20.4 to 29.2 per cent for Mathematics. These proportions are somewhat higher than those found in studies of western countries but not markedly higher. In line with conclusions by Bosker & Scheerens (1989) class/school effects were generally larger for mathematics than for Indonesian Language outcomes.

Table 5.9
Significant Explanatory Variables from the Whole Presentations

Explanatory Variables	Indonesian Language			Mathematics		
	Grade 4	Grade 5	Grade 6	Grade 4	Grade 5	Grade 6
Prior attainment:						
- Indonesian Language	+sq	+	+	+sq	+sq	+
- Mathematics	+sq	+	+	+sq	+	+sq
Pupil Variables:						
- Gender (male)	-	-	-	-		
- Age1						
- Age2						-
- Age3	-	-	-		-	-
- Father's occupation1				-	-	
- Father's occupation2					-	
- Father's education	+		+	+		
- Mother's education		+				
- Home language		+			+	+
- Books at home			+	+		
- Newspaper		+				
Class/school Variables:						
- Class teacher gender (male)					+	
- Teacher's age (older)	-					
- Maths training1						
- Maths training2						+
School Variables:						
- Meetings	-					
- % male teachers		+		+		
- % female teachers			+			

Note: + positive significance
- negative significance
sq quadratic relationship

Referring to Table 5.9 besides prior attainments, there are some pupil, class and school variables found to be statistically significant predictors in most analyses. Prior attainments were significant in all analyses, but some displayed quadratic features in their

relationship. The examination of 16 pupil level measures indicates that the significant ones were gender, age, parent's occupation and education, home language, books, and the availability of newspaper at home. From 18 variables tested at the class level the only significant were teacher gender, age, and amount of inservice-training in Mathematics. Amongst the school level process indicators, from 18 variables the only statistically significant ones were school meetings, number of male teachers and female teachers in school. The interpretation of results will be discussed further in the next chapter.

B. The Identification of School Effectiveness

The purpose of this section is to test the best fit of the models, to identify the most and the least effective schools and their characteristics if possible. The school identification was based on the residuals after the inclusion of significant prior attainment, child characteristics and family background, as shown in Model 4 for every grade and both subjects presented in the previous section (the later models 5 and 6 incorporated process measures which helped to account for between class/school differences). The diagnostic residuals were calculated in order to test the best fit of the model (as demonstrated by Goldstein, 1995; Paterson, 1996; Plewis, 1997). This was followed by calculation of the comparative residuals for the identification and the comparison of school effectiveness.

1. Results from Diagnostic Residuals

The diagnostic residuals were plotted with their normal scores of standard error, presented in Figure 5.1 through 5.6, to investigate whether the residuals were normally distributed. Five plots (Figure 5.1, 5.2, 5,3, 5,5 and 5,6) showed no extreme school outliers (each appeared in a rather straight line plot as a criterion for the normal distribution). The exception was the plot of Grade 5 Mathematics (Figure 5.4) which showed two outlying schools[3]: school 5 and 33 (detailed in Appendix D.8a). These two schools were therefore not included in analysing the school effectiveness residuals for Grade 5 in order to get a best fit in 95% level of confidence.

[3] Since they were not in a straight line and their magnitudes were bigger than double standard error. One further residual was larger in size but not judged to lie significantly off the straight line.

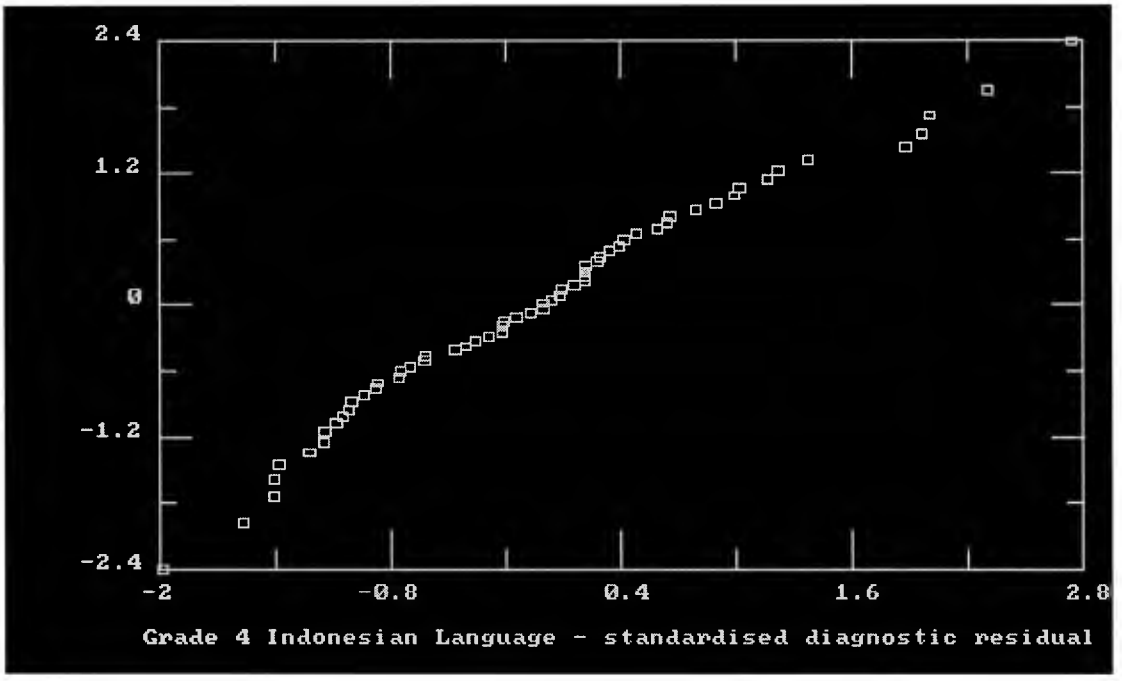

Figure 5.1 Diagnostic Residuals of Grade 4 Indonesian Language

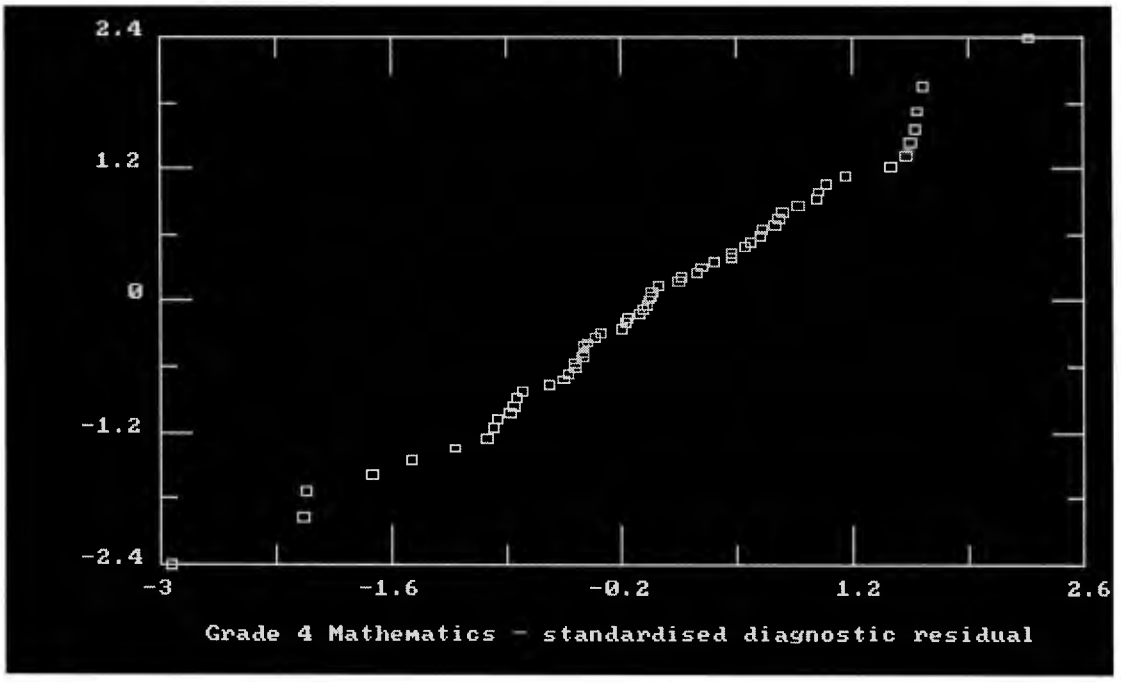

Figure 5.2 Diagnostic Residuals of Grade 4 Mathematics

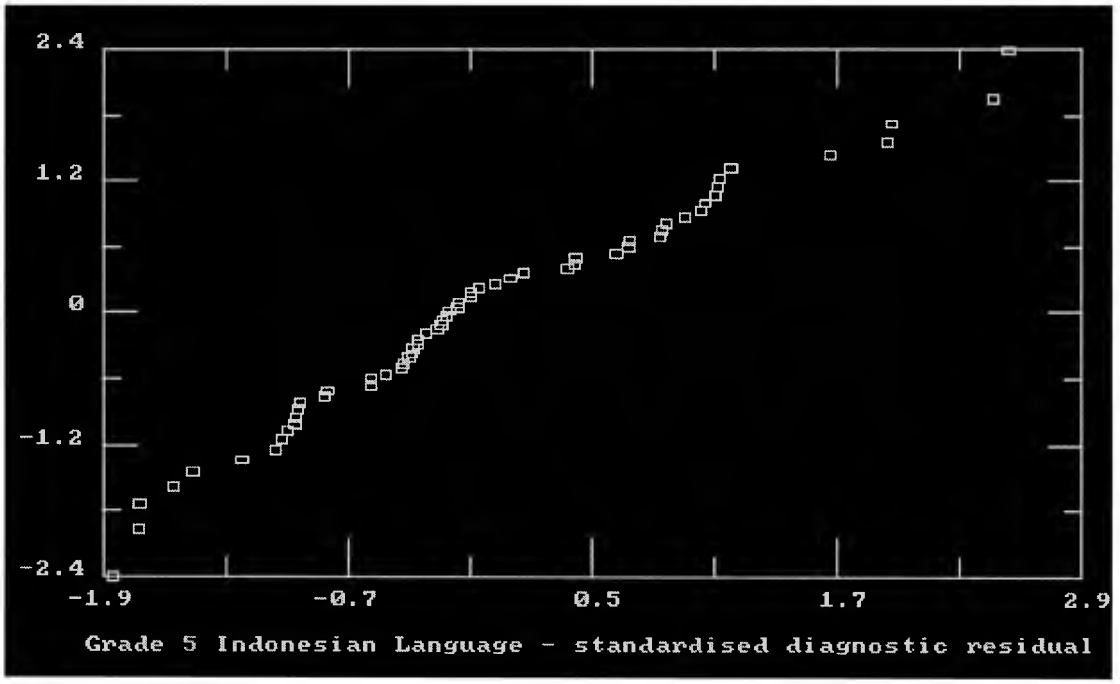

Figure 5.3 Diagnostic Residuals of Grade 5 Indonesian Language

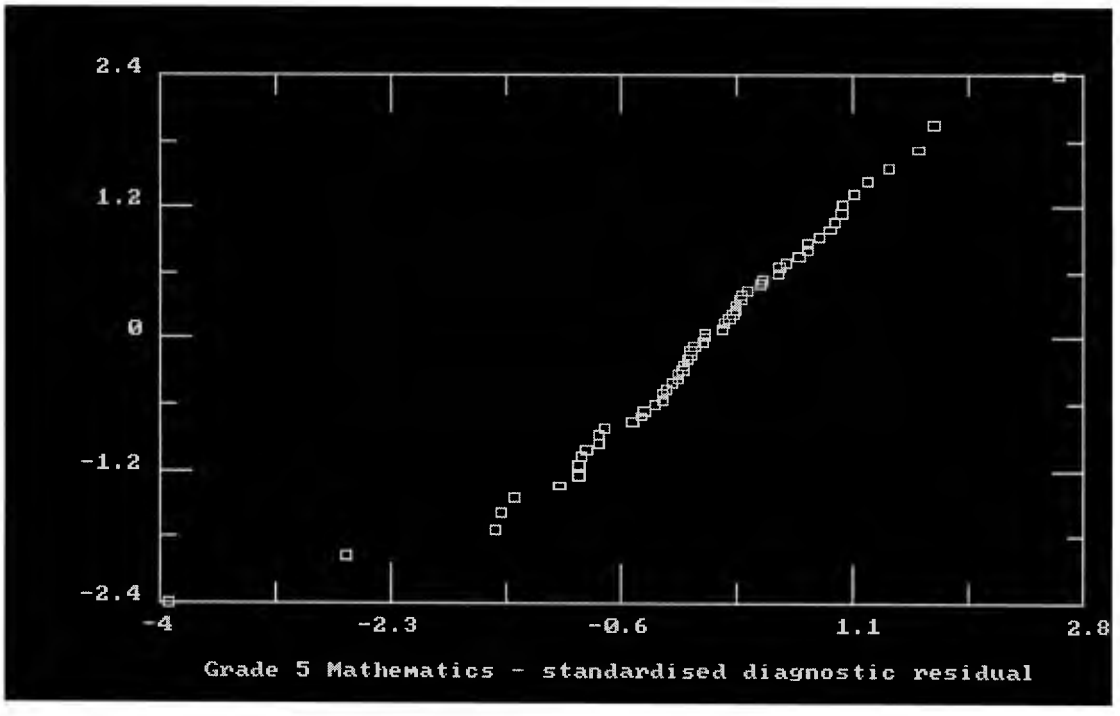

Figure 5.4 Diagnostic Residuals of Grade 5 Mathematics

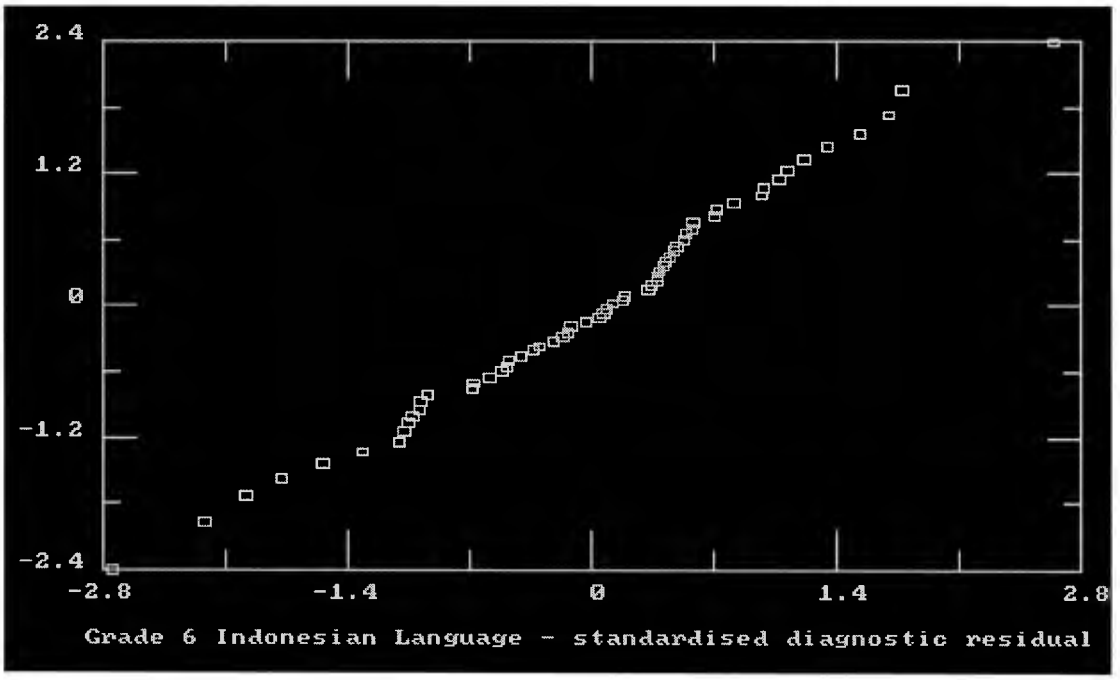

Figure 5.5 Diagnostic Residuals of Grade 6 Indonesian Language

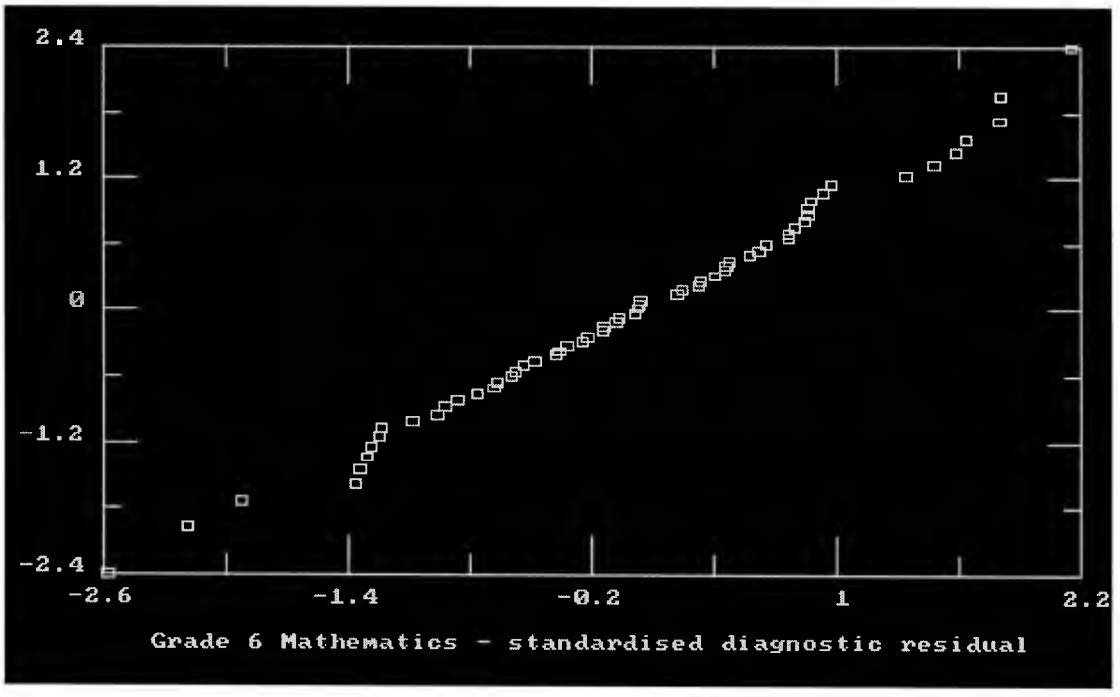

Figure 5.6 Diagnostic Residuals of Grade 6 Mathematics

2. Results from Comparative Residuals

The final aim of the multilevel analyses was to identify the most and least effective schools in terms of the value added to pupil attainment in the two key subjects under investigation in the sample of 60 primary schools. Estimates of school effects (residuals) were calculated after controlling for initial attainments and pupil background variables. Each residual was standardised by dividing by the standard error. The most effective schools were defined by a stringent criteria as those with standardised residuals of greater than or equal to 2. The least effective schools by contrast were defined as those with standardised residuals less than or equal to -2. The cross-tabulations of school residuals in Table 5.10 through 5.18 show the arrangement of positive and negative school residuals, extracted from the whole Appendices D.8a through D.8f. The intention is to examine the extent of **consistency** in the identification of the most and the least effective schools. Each cross-table is followed by a table of school characteristics referring to some limited contextual information about location, size, and book resources which was available to the researcher.

a. Grade 4 Indonesian Language and Mathematics

The correlation between the school residuals of Grade 4 Indonesian Language and Mathematics was $r=0.52$ ($p<0.001$). This indicates that in general school effects in both subjects are associated, but the correlation is by no means perfect. This meant that some schools vary in their effects on the two subjects. Table 5.10 reports the results of calculated residuals and school ranks after analysing Model 4 as presented in Table 5.2 (for Indonesian Language) and Table 5.3 (for Mathematics). The analysis showed whether any class/school of Grade 4 was consistently negative or positive in effectiveness. Although the class had the same teacher, pupils comprising the classes could be slightly different. In fact, there were negative significant residuals in 20 schools for Indonesian Language and 12 for Mathematics. Positive significant residuals were identified for 13 schools for Indonesian Language and 14 for Mathematics. Three schools showed a significant positive effect in Mathematics but a significant negative one in Indonesian Language. There were 17 outliers in terms of pupil attainment on both subjects. This indicates that just over a quarter of schools performed better or worse than that would be expected after controlling for prior scores and individual background.

There were 10 negative outlier schools and 7 positive.

Table 5.10
Cross-Tabulation of School Effects on Grade 4 Indonesian Language and Mathematics

Grade 4 Mathematics	Grade 4 Indonesian Language: Negative Significant	Negative Not signif.	Positive Not signif.	Positive Significant	Total
Negative Significant	10	1	1	0	12
Negative Not significant	5	3	10	3	21
Positive Not significant	2	3	5	3	13
Positive Significant	3	2	2	7	14
Total	20	9	18	13	60

Table 5.11
The Characteristics of the Outlier Schools
Based on Grade 4 Residuals

School ID	Location (subdistrict)	Size		Resources (number of books)
		Pupil	Teacher	
Negative:				
2	Blimbing	205	7	510
4	Blimbing	241	9	600
6	Blimbing	141	8	462
20	Lowokwaru	201	6	475
24	Lowokwaru	149	8	442
35	Kedungkandang	174	6	600
37	Klojen	213	9	662
49	Sukun	215	9	500
53	Sukun	146	9	500
58	Sukun	180	8	336
Positive:				
1	Blimbing	406	13	670
7	Blimbing	213	10	498
15	Lowokwaru	123	5	500
21	Lowokwaru	222	8	500
23	Lowokwaru	160	9	300
43	Klojen	256	10	500
55	Sukun	131	9	550

The contextual characteristics of the most and least effective schools are presented in Table 5.11. The ten least effective schools are scattered around Malang Municipal, three from subdistrict of Sukun and Blimbing, two from Lowokwaru, and one from the each two other subdistricts (Kedungkandang, and Klojen). On the other hand the six most effective schools were three from Lowokwaru, two from Blimbing, and one each from Sukun and Klojen, none from Kedungkandang. In other word, the subdistricts of Blimbing and Sukun contained as less effective schools and Lowokwaru the more effective schools especially related to Grade 4.

The other characteristics such as school size (pupil and teacher), and book resources did not reveal any salient tendency. Amongst the least effective schools, the range of the number of pupils was between 141-241, of teachers between 7-9, and of books between 336-600. For the most effective schools pupils ranged between 123-406, teachers between 5-13, and books 300-670.

b. Grade 5 Indonesian Language and Mathematics

For Grade 5, the association between Mathematics and Indonesian Language residuals was also significant ($r=0.44$, $p<0.001$) though a little weaker. The summary shown in Table 5.12 showed negative residuals for Indonesian Language in 14 schools, and for Mathematics in 11 schools; but positive residuals were in 17 schools for Indonesian Language, and 14 for Mathematics. In a small number (three schools) an opposite direction of residuals was found: two negative in Indonesian Language but positive in Mathematics, and one positive in Indonesian Language (school 16) but negative in Mathematics. Four schools (six minus two diagnostic outliers) shared consistently negative residuals in Indonesian Language and Mathematics, whereas seven schools shared consistently positive residuals in both subjects.

Location, size, and resource characteristics shown in Table 5.13 reveal no clear trends to distinguish schools according to their effectiveness classification. Based on location, the four subdistricts were represented by consistent negative schools except Blimbing. Kedungkandang had one negative school and none consistently positive. The school size of the least effective ranged between 131-204 pupils, 7-9 teachers, and 442-

616 book resources; and the most effective between 104-266 pupils, 7-11 teachers, 400-680 books. School size and resources also failed to differentiate the most and the least effective schools.

Table 5.12

Cross-Tabulation of School Effects on Grade 5 Indonesian Language and Mathematics

Grade 5 Mathematics	Grade 5 Indonesian Language: Negative Signifi	Negative Not-sig	Positive Not-sig	Positive Signifi	Total
Negative Significant	6	5	1	1	13
Negative Not-significant	4	6	2	4	16
Positive Not-significant	2	6	4	5	17
Positive Significant	2	5	0	7	14
Total	14	22	7	17	60

Table 5.13
The Characteristics of Outlier Schools Based on Grade 5 Residuals

School ID	Location (subdistrict)	Size		Resources (number of books)
		Pupil	Teacher	
Negative:				
5	*Diagnostic outlier*	-	-	-
24	Lowokwaru	149	8	442
33	*Diagnostic outlier*	-	-	-
36	Kedungkandang	204	8	523
45	Klojen	245	7	616
55	Sukun	131	9	550
Positive:				
3	Blimbing	266	11	640
8	Blimbing	214	8	680
21	Lowokwaru	222	8	500
37	Klojen	213	9	662
47	Klojen	104	8	400
52	Sukun	156	7	454
60	Sukun	159	9	489

c. Grade 6 Indonesian Language and Mathematics

In Grade 6, the correlation of residuals between Mathematics and Indonesian Language was again positive and significant but weaker than in earlier grades (r=0.30; p=0.02). Table 5.14 shows that, in all, 14 schools for Indonesian Language and 18 for Mathematics had significant negative residuals (i.e less effective). By contrast 11 schools for Indonesian Language and 19 for Mathematics were more effective. Among these, four schools were negative in Indonesian Language but positive in Mathematics and one school positive for Indonesian Language but the opposite for Mathematics. The consistent schools for both subjects were six in the negative direction and five in the positive.

Table 5. 14
Cross-Tabulation of School Effects on Grade 6 Indonesian Language and Mathematics

Grade 6 Mathematics	Grade 6 Indonesian Language: Negative Signifi	Negative Not-sig	Positive Not-sig	Positive Signifi	Total
Negative Significant	6	3	8	1	18
Negative Not-significant	2	1	5	3	11
Positive Not-significant	2	5	3	2	12
Positive Significant	4	4	6	5	19
Total	14	13	22	11	60

Table 5.15
The Characteristics of Outlier Schools Based on Grade 6 Residuals

School ID	Location (subdistrict)	Size		Resources (number of books)
		Pupil	Teacher	
Negative:				
18	Lowokwaru	97	7	640
22	Lowokwaru	205	7	510
31	Kedungkandang	252	7	320
34	Kedungkandang	205	8	655
40	Klojen	206	8	555
51	Sukun	162	6	540
Positive:				
23	Lowokwaru	160	9	300
24	Lowokwaru	149	8	442
28	Kedungkandang	141	8	400
29	Kedungkandang	243	9	620
43	Klojen	256	10	500

The location, showed in Table 5.15, of least effective schools are in Lowokwaru (two schools), Kedungkandang (two schools), Klojen (one school), and Sukun (one school), however none in Blimbing. The most effective schools are located in Lowokwaru (two schools), Kedungkandang (two schools), and Klojen (one school), none in Blimbing and Sukun however. In this case, the most and least effective schools were found in the same subdistricts (Lowokwaru and Kedungkandang) and others (Blimbing and Sukun) tended to be indifferent.

A slightly lower number of teaching staff seemed to characterise the least effective schools at Grade 6 (6-8 teachers) compared with the most effective schools (8-10 teachers). However, pupil number (between 97-252 for the least, 141-256 for the most) and book resources (320-655 for the least, 400-620 for the most) did not differentiate.

d. Indonesian Language Across the Grades

The consistency of assessment of the Indonesian Language across the grades is shown in Tables 5.16, 5.18, and 5.20; whereas the outlier school characteristics are shown in Tables 5.17, 5,19, and 5.21. Between Grades 4 and 5 (Table 5.16) there were

5 negative and 2 positive outliers. Table 5.17 shows that the least effective schools were located in two subdistricts (Lowokwaru and Sukun), and most effective in two subdistricts (Lowokwaru and Klojen). Two other subdistricts (Blimbing and Kedungkandang) did not appear to be salient. In terms of numbers of pupils, and teachers, and book resources the most effective schools seem to be characterised by higher numbers than the least effective. The correlation between results across the two grades in Indonesian Language was in fact weakly negative not statistically significant ($r=-0.106$, $p>0.05$).

Between Grades 4 and 6 (Table 5.18) there were 6 consistently negative schools and 3 consistently positive. As appeared in Table 5.19, in 2 subdistricts (Blimbing and Kedungkandang) negative outliers were found and in one subdistrict (Klojen) positive outliers were found. The number of teachers and book resources rather differentiated the most from the least effective schools. Again the correlation between Grades 4 and 6 was tiny and not statistically significant ($r=0.041$, $p>0.05$).

The cross-tabulation of school residuals between Grades 5 and 6 (Table 5.20) shows that 3 schools were significantly negative for both grades whereas 2 were significantly positive for both. Table 5.21 also shows that the positive and negative schools tended to be in the same subdistrict (Lowokwaru and Kedungkandang) and in addition, the number of pupil and of teacher tended to be smaller in the least effective schools. The correlation across Grades 5 and 6 was small and not significant ($r=-0.074$, $p>0.05$).

Table 5. 16
Cross-Tabulation of School Effects on Grade 4 and 5 Indonesian Language

	Grade 4 Indonesian Language				
Grade 5	Negative Signifi 1.00	Negative Not sig 2.00	Positive Not sig 3.00	Positive Signifi 4.00	Total
Negative Significance	5	2	2	5	14
Negative Not significance	6	5	6	5	22
Positive Not significance	3	0	3	1	7
Positive Significance	6	2	7	2	17
Total	20	9	18	13	60

Table 5.17
The Characteristics of Outlier Schools Based on Grade 4 and 5 Residuals

School ID	Location (subdistrict)	Size		Resources (number of books)
		Pupil	Teacher	
Negative:				
20	Lowokwaru	201	6	475
22	Lowokwaru	205	7	510
24	Lowokwaru	149	8	442
33	*Diagnostic outlier*	-	-	-
58	Sukun	180	8	336
Positive:				
21	Lowokwaru	222	8	500
47	Klojen	266	11	640

Table 5. 18
Cross-Tabulation of School Effects on Grade 4 and 6 Indonesian Language

Grade 6	Grade 4 Indonesian Language: Negative Signifi	Negative Not sig	Positive Not sig	Positive Signifi	Total
Negative Significance	6	1	5	2	14
Negative Not significance	6	2	1	4	13
Positive Not significance	5	5	8	4	22
Positive Significance	3	1	4	3	11
Total	20	9	18	13	60

Table 5.19
The Characteristics of Outlier Schools Based on Grade 4 and 6 Residuals

School ID	Location (subdistrict)	Size		Resources (number of books)
		Pupil	Teacher	
Negative:				
4	Blimbing	241	9	500
22	Lowokwaru	205	7	510
31	Kedungkandang	252	7	320
51	Sukun	162	6	540
58	Sukun	180	8	336
Positive:				
23	Lowokwaru	160	9	300
43	Klojen	256	10	500
55	Sukun	131	9	550

Table 5. 20
Cross-Tabulation of School Effects on Grade 5 and 6 Indonesian Language

Grade 6	Grade 5 Indonesian Language: Negative Signifi	Negative Not-sig	Positive Not-sig	Positive Signifi	Total
Negative Significance	3	5	4	2	14
Negative Not-significance	1	7	0	5	13
Positive Not-significance	6	7	1	8	22
Positive Significance	4	3	2	2	11
Total	14	22	7	17	60

Table 5.21
The Characteristics of Outlier Schools Based on Grade 5 and 6 Residuals

School ID	Location (subdistrict)	Size		Resources (number of books)
		Pupil	Teacher	
Negative:				
22	Lowokwaru	205	7	510
34	Kedungkandang	205	8	655
58	Sukun	180	8	336
Positive:				
29	Kedungkandang	243	9	620
14	Lowokwaru	276	10	464

For school effectiveness based on Indonesian Language across the three grades, only by two schools (22 in Lowokwaru and 58 in Sukun) were consistently found to have significant negative residuals in all three grades. However, none of the positive schools were found to be significant across all three grades. These results are important because they suggest great internal variation within schools in their effectiveness across grades which is suggestive of important teacher effects (a point which will be discussed in the next chapter).

e. Mathematics Across the Grades

In Mathematics, Tables 5.22, 5.24, 5.26 summarise the school effectiveness results. The location, size, and resources of the outliers are described in the other three tables (5.23, 5.25 and 5.27). Linking Grades 4 and 5, Table 5.22 pointed out 3 and 5 as negative and positive outlier schools. Proceeding to Table 5.23, two locations (Blimbing and Lowokwaru) were the places where the most and the least effective schools were identified. In terms of book resources, the most effective schools tend to have more than the other schools. The correlation between the residuals for the two grades was not significant in line with the results for Indonesian Language repeated above ($r=0.065$, $p>0.05$).

For Grades 4 and 6 (Table 5.24), there were 4 most consistent negative and

positive schools. Again, the same subdistricts (Blimbing and Lowokwaru) appeared to be the location of these atypical schools. Table 5.25 indicates that the number of teachers and books was somewhat higher in the most effective schools than in the least. A very tiny non significant correlation (r=0.019; p>0.05) was found between the class/school level residuals for these two grades.

Relating Grades 5 and 6 (Table 5.26), in all schools 4 were identified as consistently negative and 2 consistently positive. The presentation of Table 5.27 shows that the subdistricts (Lowokwaru and Klojen) were the location of the most effective and ineffective schools, however the size and resources in this instance did not appear to differentiate the outliers. No significant correlation was found for residuals across these grades (r=-0.118, p>0.05).

Table 5. 22
Cross-Tabulation of School Effects on Grade 4 and 5 Mathematics

	Grade 4 Mathematics				
Grade 5	Negative Signifi	Negative Not-sig	Positive Not-sig	Positive Signifi	Total
Negative Significance	3	1	8	1	13
Negative Not significance	5	3	3	5	16
Positive Not significance	3	9	2	3	17
Positive Significance	1	8	0	5	14
Total	12	21	13	14	60

Table 5.23
The Characteristics of Outlier Schools Based on Grade 4 and 5 Residuals

School ID	Location (subdistrict)	Size		Resources (number of books)
		Pupil	Teacher	
Negative:				
4	Blimbing	241	9	500
24	Lowokwaru	149	8	442
49	Sukun	215	9	500
Positive:				
3	Blimbing	266	11	640
8	Blimbing	214	8	680
21	Lowokwaru	222	8	400
23	Lowokwaru	160	9	300
41	Klojen	205	11	670

Table 5. 24
Cross-Tabulation of School Effects on Grade 4 and 6 Mathematics

Grade 6	Grade 4 Mathematics: Negative Signifi	Negative Not-sig	Positive Not-sig	Positive Signifi	Total
Negative Significance	4	7	5	2	18
Negative Not significance	1	4	1	5	11
Positive Not significance	1	6	2	3	12
Positive Significance	6	4	5	4	19
Total	12	21	13	14	60

Table 5.25
The Characteristics of Outlier Schools Based on Grade 4 and 6 Residuals

School ID	Location (subdistrict)	Size		Resources (number of books)
		Pupil	Teacher	
Negative:				
6	Blimbing	141	8	462
19	Lowokwaru	155	6	500
22	Lowokwaru	205	7	510
49	Sukun	215	9	500
Positive:				
1	Blimbing	406	13	670
11	Blimbing	245	9	690
23	Lowokwaru	160	9	300
43	Klojen	256	10	500

Table 5. 26
Cross-Tabulation of School Effects on Grade 5 and 6 Mathematics

Grade 6	Grade 5 Mathematics: Negative Signifi	Negative Not-sig	Positive Not-sig	Positive Signifi	Total
Negative Significance	4	6	2	6	18
Negative Not significance	1	4	3	3	11
Positive Not significance	2	2	5	3	12
Positive Significance	6	4	7	2	19
Total	13	16	17	14	60

Table 5.27
The Characteristics of Outlier Schools Based on Grade 5 and 6 Residuals

School ID	Location (subdistrict)	Size		Resources (number of books)
		Pupil	Teacher	
Negative:				
16	Lowokwaru	234	10	500
45	Klojen	245	7	616
48	Klojen	150	8	650
49	Sukun	215	9	500
Positive:				
23	Lowokwaru	160	9	300
37	Klojen	213	9	662

In examining Mathematics attainments across all the three grades, one school (school 49 in Sukun) was consistently negative and one (school 23 in Lowokwaru) was consistently positive. Overall, as with the Indonesian Language results therefore, the findings reveal great variation in effectiveness across grades and very few schools which are highly effective or by contrast highly ineffective across grades.

3. Summary Remarks

The results of the multilevel analyses reported in this chapter point to a fair degree of complexity in the patterns of pupil progress in the two subjects at the class/school level in Indonesian primary schools. Only a few schools can be identified as worse or better across the grades for the same subject and none of the sample of 60 was found to be consistent across both outcomes and grades. In sum, the correlation matrix (Table 5.28), suggests that no schools can be classified as either 'good' or 'poor' across the board.

Nonetheless, the consistency of different subjects **within** certain grades suggests that class or teacher effects may be more influential at the primary level, at least in analyses of progress over one school year. As shown in the correlation matrix table, all the coefficients for the same grade, even the smallest one, were statistically significant and positive. However, none of the limited range of school contextual characteristics for which data were available were found to be the feature of the greater or lesser

effectiveness.

Table 5.28
Correlation Matrix of School Residuals

	IND4	MTH4	IND5	MTH5	IND6	MTH6
IND4	1.00					
	p= .					
MTH4	.523*	1.00				
	p= .000	p= .				
IND5	-.106	.09	1.00			
	p= .420	p= .492	p= .			
MTH5	.044	.065	.441*	1.00		
	p= .737	p= .620	p= .000	p= .		
IND6	.044	.027	-.074	-.125	1.00	
	p= .739	p= .838	p= .574	p= .342	p= .	
MTH6	.019	.028	-.005	-.118	.299*	1.00
	p= .885	p= .830	p= .970	p= .368	p= .020	p= .

Notes:
IND4 Grade 4 Indonesian Language
MTH5 Grade 4 Mathematics
IND5 Grade 5 Indonesian Language
MTH5 Grade 5 Mathematics
IND6 Grade 6 Indonesian Language
MTH6 Grade 6 Mathematics
* Significant result (p<0.05)

In addition, no clear patterns of more or less effective schools were found in terms of their consistency **across** the grades (all the correlation coefficients were non-significant). There were some indications that location, size, and resources showed some associations with the effectiveness patterns but the number of the outlier schools are too small for generalisation.

A detailed discussion of the multilevel findings reported in this chapter and their relationship to the existing SER literature, followed by a consideration of the study's implications for the educational policy and further research is presented in the next chapter.

CHAPTER SIX
DISCUSSION: FINDINGS AND IMPLICATIONS

The key findings and some implications of this study for school effectiveness researchers, policy makers, and practitioners are discussed in this chapter. The first section examines and interprets the empirical results. The robust findings were those established after taking into account initial attainment at baseline, child characteristics and the home background. The results of this study in Indonesia are examined in relation to the findings of other school effectiveness research. The second part of this chapter discusses the limitations of the research design and data. The third and the fourth parts consider the implications of the study for further research, and for primary schooling education in Indonesia. The final remarks relate to the current educational situation in Indonesia.

A. Empirical Findings

Data on pupil attainments over a one year period (using a pre- and post-test framework) were analysed using multilevel statistical techniques as discussed in Chapter Two. These provide the most appropriate basis for the analysis of school effects on cognitive outcomes in basic skills. Although the use of basic skills as a measure of school performance has been criticised, they can be defended for two reasons (Creemers & Scheerens, 1994; Creemers & Reezigt, 1997). Firstly, the historical view of effectiveness concerns the improvement of the basic skills of disadvantaged children. Secondly, basic skills provide the foundation for further learning and therefore can be seen as lying at the core of subsequent educational outcomes and progress (for example work by Sammons, 1995, following pupils' progress from age 7 to 16 years indicates that reading attainment at age 7 is a good predictor of public examination results at the end of compulsory education a year later). These reasons are applied to this study and the findings relate to them.

The main findings are the consequences of addressing the following questions raised in Chapter Three:

- How much variation in pupil achievement lies among pupils, and what part lies among classes/schools?
- After taking into account entry scores (called 'baseline measures') which schools, class, and pupil characteristics contribute to pupil achievement in different grades at the primary schools?

  For this second question, some specific hypotheses were discussed in Chapter Two.

  - At the pupil level it is predicted that the pupil characteristics, family background and constellation, and home learning will be associated with the attainment over the school year after taking the prior attainment into account.
  - At the class level it is predicted that teacher's characteristics, qualifications, pedagogy, and class conditions will be associated with pupil attainment after taking prior attainment into account.
  - At the school level it is predicted that the headteacher's characteristics, qualifications, professional development and the school context will be associated with pupil attainment after taking into account the prior attainment.
- If effective and ineffective schools can be identified, what are their characteristics?

The findings are summarised in relation to the total variance of each component, baseline effects, child background, class factors, school factors, school characteristics, and effective school characteristics. It should be noted that the sampling frame included only one class per grade per school, therefore the two level analyses did not separate the class and school levels. In view of this the variance at level 2 is described as class/school variance.

1. Pupil and class/school variation

The empty (null) models of the two-level analysis demonstrated that a significant proportion of the variance of each outcome measure was related to between class/school differences (as expected in all cases the majority of the variance was found to lie between

pupils). The simple variance component model revealed significant differences between and within classes/schools. The contribution of school and pupil effects on the total variance before controlling for any explanatory variables, known as the null model was explored first.

From that total in the empty models, the proportion of class/school variances ranged between 14.1 to 22.8 per cent for Indonesian Language and 20.4 to 29.2 per cent for Mathematics. The proportion of pupil variances ranged between 77.2 and 85.9 per cent for Indonesian Language and 70.8 to 79.6 per cent for Mathematics. The class/school variation was greater in mathematics than in language. Another interesting difference between both subjects was that for language the higher the grade the lower the variance between class/school while for mathematics the higher the grade the larger the variance attributed to this level. These findings are in line with those found by other researchers working in primary schools in developed countries in terms of the effect sizes of the two subjects, e.g, in Scottish primary schools the total variances attributable to schools between 10.2 to 18.4 per cent for Reading and 10.7 to 21.5 per cent for Mathematics (Sammons, Smees, Thomas, & Mortimore, 1997). Nonetheless, it should be noted that the subject differences are noticeably larger in this study.

Researchers using multilevel analysis in developing countries (Figure 6.1, for detail see Appendix E) have found that the school variances tend to be considerably higher although many of the studies suffered from limitations discussed earlier in this thesis. For this Indonesian study the smaller variance results are likely to reflect the particular nature of the sample in which only urban state schools were included. In interpreting the results this particular context must be remembered and it is likely that if schools in other areas of Indonesia were included in the study the level 2 (described as a combination of class/school effects which could not be separated as only one class per grade was sampled) variance estimates would be expected to be greater. If a larger and more geographically representative sample were studied the variance in the analysis might be larger. This might enable findings, conclusions and recommendations that cover a wide range of the nation to be made.

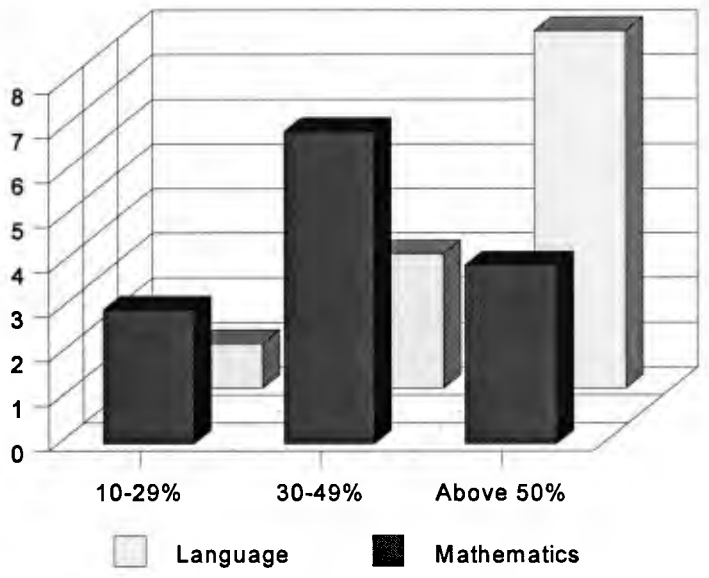

Figure 6.1 Primary School Variation in Some Developing Countries

After controlling for measures of the personal and family background of pupils and prior attainment, shown in Model 4, the range of proportion attributed to school and class factors were between 24.8 to 32.5 per cent for Indonesian Language and 24.1 to 39.1 per cent for Mathematics. These proportions appear to be different from those in developed countries i.e. 12-18 per cent (Creemers, 1994b; Sammons et al., 1995a). In the UK much lower results have been found, 8-14 per cent of variance in school and classroom (Reynolds & Farrell, 1996). The only exceptions were a study by Tymms, Merrell, and Henderson (1997) where in the lower grades of British primary schools, 40 per cent was attributed to the school level variation; the Scottish study for Mathematics controlling for prior attainment 32 per cent in the primary study (Sammons et al, 1997); and also the Surrey study had intra-school correlations above 14 per cent range (Sammons & Smees, 1997) .

It should be noted in interpreting this study's findings that the percentages have a role in setting the boundaries for the potential impact of factors in different levels only (Creemers & Reezigt, 1996). To discover more about the explanatory factors in each level, further analyses are needed.

2. Baseline effects

The relationship between outcome measures and pupils' prior attainment was assessed in order to examine the question of linearity. Non-linear relationships were found between Grade 4 Indonesian Language's and Mathematics' prior with both post scores, Grade 5 language prior scores with mathematics, and Grade 6 mathematics prior with mathematics post scores. By controlling for these linear and non-linear relationships, more appropriate results were achieved in terms of model fit (Plewis, 1996; Plewis, 1997; Kreft & de Leeuw, 1998). After discovering the typical relationships, the prior scores were treated as baselines for examining the impact of other significant predictors.

3. Child background factors

The child background measures were classified in terms of five groups of 16 variables. Some measures were found to be statistically significant predictors for some subjects and grades but not for others. The first group, individual characteristics, consisted of gender and age. Girls were performing better than boys in all three grades in terms of Indonesian Language, but differences were only significant in mathematics for Grade 4. This evidence is in line with the results of studies by Fuller, Hua, and Snyder (1994), Lockheed and Longford (1991), and Reezigt et al. (forthcoming). However, for Grades 5 and 6 Mathematics, no gender differences were found. This gender parity is in accord with studies by Nyagura (1991), Sammons et al. (1994), and van der Werf (1997). Turning to age, the oldest quartile of children were found to attain poorer results than the youngest in all grades and subjects except Grade 4 Mathematics. A similar result was found by Raudenbush et al. (1991). This finding is in contrast to the British experience where age does not predict children's attainment when prior attainment is controlled for (Sammons, Nuttall, Cuttance & Thomas, 1995b) or where younger children perform less well (Strand, 1998; Sammons, Smess, Thomas, Robertson, McCall & Mortimore, 1998). (Note that the latter study did not control for prior attainment being a contextualised analysis of attainment.) The retention of under-performing pupils is likely to account for the Indonesian findings and reminds us to be aware of different educational contexts in comparing results across national settings.

The second group of predictors concerns parents' occupation. Children whose fathers had skilled manual (Grades 4 and 5) and unskilled manual jobs (Grade 5) had

poorer mathematics achievement than those with fathers in clerical and professional work. However, the hypothesis that mother's occupation would relate to child's attainments had to be rejected for all grades and subjects from this study's data. It appears that the aspect of socio-economic status (SES) which relates most strongly to primary children's attainment is the father's employment. Similar results were found by Lockheed and Longford (1989, 1991).

The third group comprises measures of parents' education. Father's education had a strong relationship with child's attainment in Grades 4 and 6 Indonesian Language, and Grade 4 mathematics. However mother's education was the stronger predictor of Grade 5 Indonesian Language scores. In fact, the educational level of both parents was found to be a significant predictor for Grades 5 and 6 Indonesian Language. Lockheed and Longford (1989) by contrast found that mother's education was associated with pupil attainment, but not father's education.

The fourth group of child background variables concern family background, and were comprised of family size, number of siblings and birth order. None of these three variables showed a significant relationship to pupil attainment in the present study. These findings are at first sight surprising and are not in accord with those in many other developing countries (Nyagura, 1991; Lockheed et al., 1989; Mani, 1983). Thus hypotheses based on previous studies in the developing world were not supported by the multilevel analysis. It is possible that previous research has picked up SES effects linked with family structure, but that the good measures of SES (occupation and education) in this study account for variance which might otherwise be attributed to family structure.

The fifth group of child measures concern the home learning environment, as indicated by home language, learning time, social pressure, parental encouragement, books, newspapers, and study place. Three variables were found to have a significant positive impact, namely home language, books and newspapers at home. The use of national language (Indonesian) at home also contributed to better Grade 5 Indonesian Language scores, and Grades 5 and 6 Mathematics attainment. The availability of textbooks at home affected Grade 4 Mathematics and Grade 6 Indonesian Language, whereas the availability of newspapers influenced Grade 5 Indonesian Language.

4. Class related factors

Five classifications were used to group the 18 variables related to the class level. The first were teacher characteristics such as gender and age. For gender, male class teachers were associated with significantly better pupil achievement for Grade 5 mathematics (in line with Chivore, 1994; Warwick & Jatoi, 1994). For age, the findings are similar to a study by van der Werf and Creemers (1998) which showed that the younger the teacher the better the performance of children in Grade 4 Indonesian Language. These results were not however consistent across grades and thus need to be interpreted with care.

The second was related to teacher qualifications measured by level of education, teaching experience, promotion scale, inservice training (in language and mathematics teaching). None of these measures was found to be significant apart from mathematics inservice training which positively contributed to Grade 6 Mathematics attainment. The measures of teacher pedagogy, as the third, investigated in this study concerned lesson preparation, schoolwork correction, homework assignment, and instructional approach (traditional vs innovative). The fourth related to the class teachers' perceptions of school leadership and consisted of people-oriented and task-oriented dimensions. These findings are in line with the findings in the Netherlands (Creemers, 1992a). The operationalisation of teacher experience and qualifications used in the present study has no discernible relationship to Indonesian primary pupils' attainments. The results suggest that such measures may not provide the best indicators of teacher effectiveness in developing countries (the implications of this result for policy are discussed later). It should be noted that the findings reported here are in keeping with results reported by Carron and Chau (1996).

The fifth group includes class conditions with respect to the composition of pupils in terms of gender, class size, and the availability of class textbooks for both subjects. None of these variables was found to be significantly related to pupil attainment in either subject. On gender composition and class size, the results suggest that these variables are not important for the pupil attainment. The negative finding concerning text books tends to support Hanushek's (1994, 1996) conclusion that resources are not an important element in educational effectiveness. Nonetheless, it should be noted that the range in class size and textbook provision for this sample of schools was not as great as in some

developing countries.

5. School related factors

Turning to the school level, 18 variables were classified into four main groups. Group one concerned the headteacher's personal characteristics of gender and age. Group two comprised headteacher qualifications such as level of education, teaching experience, experience of headship, and promotion scale. None of the variables in these two groups was found to be significant in accounting for variations in pupils' results in the multilevel analysis. On age and experience of headteachers, in line with studies in Kuwait, Botswana and Thailand (summarised by Georgiades & Jones, 1989) results showed that they were not related significantly to pupil attainment. Also in the Netherlands, as a developed country, Creemers (1992a) summarised that school management aspects and individual school leaders' characteristics are of less importance. This particular result lends support to the claim that promotion to headteacher is not necessarily made on the basis of leadership or management skills, but can be the result of a purely administrative process (Carron & Chau, 1996).

The measures in group three included headteacher professional activities viz. professional development, school meetings per week, class hours and home hours devoted to school works. Only one variable, the number of meetings per week, was found to be significantly related to pupil attainment. This showed a negative relationship to pupils' Grade 4 Indonesian Language achievement only. Such meetings might disrupt the lesson time when language work is conducted in the sample schools. Also, in Indonesia there is evidence that headteachers generally devote themselves more to administration than to pedagogy (Beeby, 1979; IIES, 1986; Georgiades & Jones, 1989). However in interpreting these results it could also be that schools in difficulty may have more meetings as a response to awareness of problems.

The last group of school level variables includes the school context such as teachers' and pupils' composition in terms of gender balance, and book resources. The only significant finding was that, more male teachers were associated with better pupil results in Grade 4 Mathematics and Grade 5 Indonesian Language; whereas a greater number of female teachers was related to better Grade 6 language attainment.

Overall the study was able to throw little light on the reason for school/class

differences in effectiveness in terms of process characteristics. Nonetheless negative findings that are non-significant are important in eliminating certain aspects. There is a strong possibility that the process measures may not have been adequately measured, desirable (given the need to rely on questionnaires) must also be remembered.

6. Effective school characteristics

The investigation into effective and ineffective schools as indicated by statistically significant positive and negative residuals ($p>0.05$) revealed that only a small number of schools were outliers for both language and mathematics in the same grades. Nonetheless, the correlation of subject residuals showed that in general classes/schools which were effective in promoting language attainment were also effective for mathematics at the same grade (the range of correlations shown in Table 5.25 was from a minimum in Grade 6 of 0.299 with $p<0.02$ to a maximum 0.523 with $p<0.001$ in Grade 4. These findings are in line with those reported in other studies, for example, Sammons et al. (1993), Thomas, Smess, MacBeath, Sammons, and Robertson (1998). The correlation coefficients indicated a statistically significant relationship between both subjects in each grade, but no characteristics (in terms of location, size, and resources) seemed to differentiate between the two typical schools. In contrast with the outlier grade results, there was very little consistency in effectiveness on the same subject across grades and no significant correlation appeared between the grades (see Table 5.28 which indicated that all 12 correlations between grades were non-significant, $p>0.05$). The present study thus shows that the best and the worst class (grade) attainment can be found in the same schools. In other words there was no consistency across grades in the residual measures of effectiveness in the two subjects from the focus of this study.

The results reported above suggest that teacher effects on primary pupil progress across academic years may be stronger than school effects and this is in line with the conclusions of recent research in Australia (Hill & Rowe, 1996; Marsh & Rowe, 1996) and the Netherlands (Creemers & Reezigt, 1996; Luyten & Snijders, 1996; van der Werf, 1997).

B. Limitations

Some caution is required in the interpretation and generalisation of the results from this study because of limitations related to the conceptualisation, methods, and analysis. The conceptual model for this study was a direct additive one. There are some limitations of the model related to the possible existence of interaction and indirect relations between variables. Nonetheless the stages of analysis sought to control for background effects prior to those related to either class or school level variables. Referring to the literature review (see Chapter 2), the present study was not able to measure all the variables which may be important in accounting for differences in school effectiveness, e.g. pupil aptitudes and curriculum as shown in Creemers' model (Creemers, 1994a), quality of instruction and coordination in QAIT/MACRO model (Stringfield & Slavin, 1992), pupil reinforcement and cooperative planning of teachers in Scheerens' model (Scheerens, 1990).

Furthermore, the scope of this study is limited to upper grades in the urban state schools of East Java. It did not capture the whole picture of Indonesian primary schools because the attainment of pupils in the lower grades (1-3) was not measured. Thus the baseline measures used themselves may reflect earlier school/class effects. Also the characteristics of rural schools with shortages of teachers (less qualified and fewer females), resources, and communication (IIES, 1986; Suryadi et al., 1992); private schools with more variation in religion, ethnicity, and quality (Mertaugh et al., 1989); and other provinces with different subcultures and different socio-economic conditions (Napitupulu, 1990; Kopong, 1995; Ajisuksmo, 1996) than East Java have not been investigated.

Another limitation of the study was the use of a survey approach. For practical reasons, one of the main techniques used for data collection was questionnaires (de Vaus, 1996; Robson, 1996; Cohen & Manion, 1997). However, the limitations of the technique made it impossible to explore differences in process characteristics in any detail. This limitation affects the quality and coverage of the school and classroom process data and may help to explain the lack of significant results from the questionnaires.

Complex variables used in this study had to be oversimplified. The measure of parental encouragement did not have sufficient internal consistency because of the small number of items (Nunnally, 1978; Rust & Golombok, 1989). Leadership was classified

into only two dimensions. Other variables such as school resources and classroom process were very limited in their description.

It is possible that the questionnaire techniques used to measure the educational resource indicators such as number of books and study place at home and the amount of books in the classrooms tended to evoke too positive answers. These problems also appeared in the PEQIP study due to the fact that parents have to buy books themselves. This might be the reason that curriculum turns out to be so weak in SER in Indonesia compared with India (Creemers & van der Werf, 1998).

In analysis, the school and classroom level could not be separated because only one class per grade was sampled for each subject and grade; this meant that the effect size of classrooms and schools could not be differentiated clearly. Distinguishing these two levels would enable better analysis of the impact of policies and practices concerning classroom processes (mainly teaching), and school process (mainly management). By and large results from many studies in developed countries show more variance between classes within schools than between schools (Scheerens & Bosker, 1997). However other research suggests that developing countries can display different patterns; Nyagura (1991) studied Zimbabwean primary schools using three-level analysis and discovered that school variances were higher than class variances and different from subject to subject. The results of this Indonesian study cannot directly address this issue. Nonetheless the lack of consistency between grades supports the position that classroom differences are likely to be more important than those between schools and support the theoretical models of Scheerens which are further discussed in the next section (C).

C. Theoretical Implications

This part will discuss the relevance of the research methodology and findings to theories of school effectiveness.

1. Methodological aspects

Snow (1973) pointed to six levels of theory: formative hypotheses, elementisms, descriptive theories and taxonomies, conceptual theories and constructs, and axiomatic or broken axiomatic theories. Odi (1982) put this in a simpler way by describing a theory as an explanation of an observed relationship between phenomena which consists of

- a set of unit (facts, concepts, variables)

- a system of relationships among units
- interpretations about the relationship system that are comprehensible and predict empirical events.

New possibilities for assessing educational quality in the Indonesian primary school context have been attempted using multilevel analysis with a value-added approach. An achievement of this study is the refinement of a conceptual model for the study of primary school effects and the results have some theoretical implications. The evidence from the present study suggests that the hierarchical (multilevel) model used for statistical explanation of educational attainments based on value-added approaches by taking into account prior (baseline) attainments, followed by pupil background characteristics has some demonstrable empirical validity[1]. The theoretical view that the child, class, and school characteristics show different relationship to subsequent pupil attainment is applicable to the Indonesian context. The findings are useful as a start in identifying the features of urban state primary education in the Indonesian setting which show a measurable relationship with pupils' cognitive outcomes. Overall, statistically significant relationships were found at all the levels of analysis (although these were at a minimum in terms of class and school processes). The research evidence strongly suggests that intake influences (related to prior attainment and the child's background) are considerably more important in accounting for differences in pupil outcome than the process characteristics which were measured in this research.

The model developed for the present study was based on a review of previous literature and was developed before conducting the analysis. The strategy of entering variables in a particular order, removing insignificant ones and retaining only those found to be statistically significant proved convenient. This strategy reduced the number of variables retained in the final model. The other point is that variables related to the characteristics and background of the individual child are the most important, followed by class and school level measures.

The multilevel modelling strategy adopted in this study demonstrates the need to

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[1] In the sense that pupil intake differences by variables measured at the lower level (pupil level), enabled control for the possible biases in assessing the effectiveness in the upper level (school level) and calculation of better residual estimates of school effects.

examine the hierarchical characteristics of educational data in depth. The school performance indicators may be developed based on the findings in the present study. Another contribution is that the indicators may be different from grade to grade, and from one subject to another subject. There is much less consistency in school effects for the same subject across the grades than between different subjects in the same grade (as can be seen in the correlation shown in Table 5.28). Because of this, the findings clearly show that effective schools cannot simply be identified by selecting one class at one grade to represent the whole school. Rather it is important to examine internal variations in effectiveness and to acknowledge that school effectiveness is best seen as a retrospective and relative concept which is both outcome and grade specific (Sammons, 1996).

2. The theoretical models

The purpose of this sub-section is not to analyse the merits of current theoretical models, but rather to take certain features of the model developed by Scheerens (1990) and analyse how far the findings of this research illuminates it. The reasons for taking the Scheerens' model, as showed in Table 6.1, are the similarities to a degree with the present study such as input, process, context, and output. Theoretical models of school effectiveness (Scheerens, 1990; Stringfield & Slavin, 1992; Creemers, 1994a) have emerged from correlational studies that have identified factors that are held to be linked with effectiveness (Mortimore et al., 1988; Creemers, 1994c; Sammons et al., 1995a). Variables in Creemers' model (Creemers, 1994a) were included in this study although with different labels; for example allotted time for pupils doing homework and allotted time for teachers planning lessons. Variables in Scheerens' model (Scheerens, 1990) were also included, for example parental encouragement and leadership. However, the only similarity with QAIT/MACRO model (Stringfield & Slavin, 1992) was the outcome measure.

Table 6.1
Comparison of Conceptual Models

Model for This Study (significant results only)	Scheerens' Model	Creemers' Model	QAIT/MACRO Model (3 first levels only)
Pupil Level: - Pupil characteristics (gender, age) - Family background (father's occupation & education, mother's education, home language, books & newspapers)	*Pupil Level*: - per pupil expenditure - parent support	*Pupil Level*: - time on task - opportunity used - motivation - aptitude - social background	*Pupil Level*: (QAIT) - aptitude - time for learning - perseverance - ability to understand instruction
Class Level: - Teacher characteristics (gender, age) - Teacher pedagogy (inservice-training)	*Class Level:* - teacher experience - time on task - structured teaching - opportunity to learn - expectations of pupils' progress - evaluation & monitoring - reinforcement	*Class Level*: - quality of instruction (curriculum, grouping, teacher behaviour) - time for learning - opportunity to learn	*Class Level*: (QAIT) - teacher's presentation, feedback, guidance, assignments - difficulty of subject - stimulus for learning - actual teaching time & scheduled time
School Level: - Head professional development (meetings) - School condition (proportion of teacher gender)	*School Level*: - achievement policy - consensus, cooperative planning - quality of school curricula - orderly atmosphere - evaluative potential	*School Level*: - school work plan - school organisation - material conditions	*School Level:* (MACRO) - meaningful goals - attention to academic function - coordination - recruitment & training - organisation in school level (related to school culture/ethos)
	Context Level: - achievement stimulants - development of educational consumerism - 'covariables' (school size, student body, school category, urban/rural)	*Context Level*: - education board - policy on attainment target - financial/material conditions	

The results of this study give little support to Creemers' and QAIT/MACRO models. None of the factors identified in Carroll's original model (the basis for both models) was significant but problems of measurement must be acknowledged. However the empirical results show some correspondence with the Scheerens (1990) model. In this analysis Scheerens developed the model under the assumption that conditions at higher

levels can be the incentives to promote effectiveness at lower levels (Scheerens, 1990; Scheerens & Bosker, 1997).

This Indonesian study suggests that the reality in school may not conform well to those assumptions. If girls outperformed boys, it does not mean that school with higher proportions of girls are necessarily better. This study also found that a higher proportion of female class teachers (Grade 6 Indonesian Language) was associated with higher attainment but that classes taught by a female teacher did not necessarily perform better. The other result, male class teachers had pupils with better class attainment (Grade 5 Mathematics), did not imply fact that higher proportions of male teachers in the school were related to higher pupil performances. The interpretation of the findings concerning teacher gender is not clear and being inconsistent across grades should be treated with great caution. Probably the differences between effects at the pupil level i.e related to gender characteristics compared with contextual (compositional) effects need further elaboration and interpretation as demonstrated by Sammons (1996).

The study makes an important contribution by seeking to develop and test measures of school and classroom processes from a review in the literature to establish the extent to which such factors can be shown to relate to pupil outcomes. Although most hypothesised relationships were not statistically significant these negative findings are nonetheless important to the further development of school effectiveness theory because they provide an example of an attempt to test the empirical validity of current knowledge (see also Reezigt et al., forthcoming).

In general, this study makes three contributions to school effectiveness theory. First, it confirms that a multilevel model which seeks to explain differences in school effectiveness (in a statistical sense) can be developed for the Indonesian context although it is not easy to find an effective school rather an effective class appear to be identifiable. Moreover it distinguishes the 'antecedent', process, context, and outcome with different elaboration of variables than in other available models. Thirdly, it contributes the elaboration and explanation of pupil attainment in terms of pupil, class, and school variables.

D. Implications for Future Research

The development of a method of classifying parents' occupations was a useful achievement of this study. The results were three categories for father's and four for mother's occupation based on the classification of Goldthorpe and Hope (1978), Indonesian Population Census (BPS, 1996), and educational requirements. These proved acceptable for Indonesian occupations and may be used for future research.

The findings of this study are useful starting points for further educational effectiveness research. The effect sizes of schools found in this study are similar to those found by other researchers in developed countries but not in developing countries (which tend to be much bigger). This apparent anomaly may reflect the study design because the sample was limited to urban state schools in a specific province of Indonesia. Life in Indonesian big cities is more developed, individualistic, and progressive than in rural areas. The effect sizes may be different, for future studies, if a new sample were drawn to include rural and private schools from other provinces, especially those outside Java.

Many variables did not contribute significantly to the model although they were hypothesised to be positively related to pupil attainment. It is not suggested that these variables have no use in explaining the progress of pupil attainment. They could operate in different ways through different models proposed by Bosker and Scheerens (1994), Scheerens and Bosker (1997), Creemers, Scheerens, and Reynolds (forthcoming) viz. interactive, indirect, synergetic, and recursive models. These provide interesting possibilities for designing future research and use multilevel structural equation modelling (SEM) as predicted by Reynolds and Teddlie (forthcoming) in the future.

This study provides preliminary evidence about which child, class, and school factors are associated with cognitive attainment and progress in primary schools. The model used in the present study could also be used for studying other educational settings. For a better understanding, observational studies of the classroom and better measure of 'school process' might be employed from time to time so that the issue of consistency over time (Sammons et al., 1995a; Sammons, 1996; Thomas, 1998) could be investigated. Another variation would be to design experimental studies (Reynolds & Teddlie, forthcoming) to test different classroom intervention strategies intended to support pupil learning. Such experimental approaches need careful consideration of the relevant cultural values of the participants.

Another important direction to be explored would be the noncognitive outcomes for Indonesian primary pupils. Although beyond the scope of the present study, research by Mortimore et al. (1988) indicates that schools may vary in their effects on cognitive compared with social/affective outcomes. In the Netherlands, Knuver and Brandsma (1993) have suggested that these dimensions are independent. Given the multiple goals of the Indonesian education system, it may be misleading to judge the whole enterprise on the measurement of only one of its goals -- academic achievement. This study can be followed up with research using noncognitive outcomes, e.g. attitude formation is clearly an important output of schooling and should be evaluated as well. For primary children, self-concept, self efficacy, social responsibility, peer skills and goal orientation might be studied along with teacher expectation, teacher classroom behaviour, cooperative learning, and classroom tasks. All these should be investigated and have been studied elsewhere (Sylva, 1994). Retention was related to later attainment in this study. This policy may create a negative self image for certain children and lead to alienation, lower self-esteem and reduced motivation or behaviour difficulties. Indeed, it should be noted that those variables may have contributed indirectly to academic attainment in this study.

School and classroom organisational variables also deserve more careful attention. These organisational characteristics, were not measured in any detail in this study and inadequate measurement may have affected the results. The present study only hints at their importance. Future studies of the school organisational climate of Indonesian primary schools using instruments such as school climate (OCDQ or OHI)[2] (Hoy & Miskel, 1991), classroom climate (MCI, LEI or CES)[3] (Fraser, 1991), and relating the organisational climate to learning could throw further light on the question of the nature of the impacts of process on pupil outcomes. The development of other instruments related to educational administration is potentially useful for the future SER (Teddlie & Reynolds, forthcoming). Of course, a careful validation of each scale's applicability will be necessary.

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[2] OCDQ: Organisational Climate Description Questionnaire
OHI: Organisational Health Inventory

[3] MCI: My Class Inventory
LEI: Learning Environment Inventory
CES: Classroom Environment Scale

In identifying the characteristics of school effectiveness, this study was severely limited in terms of location, size, and resources being conducted by one researcher. Two kinds of inquiry are needed to complement the efforts in the present study. The first is detailed case studies of ineffective as well as of more effective schools to enhance our understanding of the processes of effectiveness (Stringfield, 1994a; Sammons et al. 1997b). The second is ethnographic research to clarify and explain the specific educational processes and values in individual schools. Ethnography provides unique and distinct insights that stand on their own, especially related to religious and cultural traditions that have much influence in achievement scores of Pacific Rim societies (Reynolds & Farrell, 1996). Such cultural aspects may be helpful in understanding and explaining variations in school effectiveness in the future (Little, 1990; Fuller & Clark, 1994; Pollard, 1994; Thomas, 1994; Creemers, 1997; Parker, 1997). Such qualitative approaches may help to provide an under knowledge base (as mentioned in Davies, 1997) for making decisions and influencing educational policy and practices and may provide additional evidence about the impact of national and regional contextual variables.

Educational cost as a resource related to school effectiveness and improvement can be another possible direction for investigation. As shown by Creemers and van der Werf (1998) the effect sizes of educational inputs in different subject of Indonesian primary school vary. Their study concluded that, for Indonesian Language attainment, 'community participation' (parental involvement and voluntary work) was the most cost-effective input, followed by 'teacher professional development' (homework and quality of teaching). However, 'evaluation and monitoring' by headteachers was shown to be the least cost effective approach. For mathematics, 'community participation' was also cited as very cost-effective and 'teacher professional development' was perhaps surprisingly the least effective. These hints are useful for studies that measure headteacher and teacher cost for different levels of pupil attainments.

These future directions may be useful for researchers so they can clarify, expand, confirm, or modify the results of the present study.

E. Implications for Education in Indonesia

This thesis was written when the emphasis in Indonesian educational policy was shifting from quantitative expansion to a greater stress on the improvement of quality.

No empirical evidence, in the light of value-added information by using multilevel analysis, was available when this thesis was begun. The present study was designed to develop and test a set of performance indicators for schools by distinguishing the characteristics of levels inside the schools that may be of useful to subsequent educational policy development.

1. Improvement through school comparison

This is the opportunity to link school effectiveness and school improvement in an educational arena (as recommended by Stoll & Fink, 1996; Creemers & Reezigt, 1997). The key question of school improvement is: "how can we make our school better than it is now?" (Stoll, 1996). This study has demonstrated how to identify the effective and ineffective schools on the basis of comparison in a local authority frame. By establishing which are more effective schools, ineffective schools may learn about possible strategies they might try to improve attainment under the feasible conditions (Gray, 1995a; Gray, Jesson, & Reynolds, 1996; Reynolds, 1996; Mortimore, 1998). Raw League Tables of school exam performance are inappropriate as a basis for judging school performance whereas the adoption of school effectiveness methods for studying 'value-added' may be useful to policy makers and practitioners (see Goldstein & Spiegelhalter, 1996; Sammons, 1996, forthcoming; Thomas, 1998). It is hoped that the present study will point to a new orientation for Indonesian policy to assess the quality of individual schools.

The identification of most and least effective schools brings a special implication. The finding of lack of consistency across grades considerable variation in effectiveness within schools. It suggests that Indonesian primary schools are fairly 'loosely coupled' in organisational terms and that good practice may exist in most schools at some if not all grade levels. The existence of more effective practice in some classes within most schools can be seen as a good starting point for whole-school improvement initiatives (Sammons, forthcoming) and further case study of outlier classes would be informative..

2. Factors external to the school

The findings of this study relate to the current state of Indonesian urban state primary education. A sizable portion of the variance in child attainments was accounted

for by factors external to the school, Thus gender, age, father's occupation, parents' education, and the home learning environment appear to be factors which exert a strong influence on pupil attainment and, to a lesser extent, progress across the school year. These are factors which are not easily altered by government intervention. For example, if female pupils are being socialised in the family or the school to view education differently from males, perhaps as less essential to their futures, their performance will continue to differ from males. Given the complexities of the relationship between learning and contributory factors which are external to the school, it is not clear in what ways the government might intervene in these processes. The evidence from the present study suggests several possibilities:

a. Broadening the teacher's role in bridging the gap between home and school

It is desirable that the "home curriculum" or what is learnt by the child at home and in the community support school education through cooperation (Sylva & Siraj-Blatchford, 1995; Shaeffer, 1992). Perhaps we can argue that this should be the other way round. In other words the school should support the "home curriculum" or home learning i.e build on child's knowledge of everyday experiences e.g. looking after domestic animals, going and selling at markets. This has been tried out in only a few Indonesian primary schools (Moegiadi, Jiyono, Modjiman, Sutarno, Agung, Karmidah, Tedjawati, & Suprastowo, 1992).

b. Initiating homework centres

The implications of the positive influence of home language, books, and newspapers at home may point to new practice. For raising standards it may be important to involve parents in school activities, for example encouraging homework and home reading (Sylva & Siraj-Blatchford, 1995; Sugihartati, 1997). For poorer children homework centres may be important to compensate for the lack of books at home.

c. Improved training of primary student-teacher

Preparatory teacher training programmes might train future teachers to provide greater assistance to parents, become more involved in the community, identify children who come from disadvantaged backgrounds (Eraut, 1994; de Acosta, 1996), and work with their parents more systematically to promote the learning of these children (see Coleman, 1998).

d. Preparing teachers to identify problematic children

The empirical evidence from the present study shows that older children are at a very real disadvantage in the classroom. This finding suggests that teachers must be especially sensitive to the needs of these children, many of whom have been retained because of poor progress. Their attitudes toward schooling and their learning needs require that the teacher identify them and give them special assistance (see Helmke & Schrader, 1994; Oakes, 1994; Sahertian, 1994; Black & Wiliam, 1998).

e. Recovery programme or automatic promotion

Studies on older children in the classroom suggest that repeating a grade does not necessarily promote achievement and may be associated with negative self concept, negative attitudes toward school, and higher dropout rates (Byrnes & Yamamoto, 1986; Grissom & Shepard, 1989; Sylva, 1994) although research on grade retention is by no means clear-cut for example Alexander, Entwistle, & Dauber (995) suggest that grade retention may have benefits. This problem needs careful attention and further study in the Indonesian context for example action through a recovery programme, perhaps linked to an "automatic promotion" policy could be pursued. On the other hand, however, an automatic promotion policy might well create considerable problems of its own, in terms of the need to equip teachers with skills for coping with a wider range of achievement within the class. An experimental study randomly assigning pupils to grade retention or promotion who scored below a certain level could be an avenue for future investigation.

3. Factors internal to the school

The major implications from the present study for improving school quality relate to the following areas:

a. Regarding differences across grades

The results from this study demonstrate wide differences in effectiveness across grades and subjects. Even within the same school, each class has its own characteristics in terms of age, curriculum, achievement, and social growth (Oakes, 1994; Oakes & Heckman, 1994). In addition, every subject in the same class also has its own characteristics even though subjects are taught by the same teacher. The messages are important when applying educational policies to each subject and age group. The school has to translate them carefully into appropriate practical actions.

b. inservice training in teaching mathematics.

Teachers require in-service training and rarely receive enough of it. This study found that the pupils' mathematics attainments were positively related to how often the teachers were involved in mathematics inservice programmes. Parker (1992b) carried out a depth study on primary education in Bali, another part of Indonesia, which tends to support and may help in the interpretation of the present findings. She found that teachers attended in-service training improved their self confidence in mathematics teaching. Linking with van der Werf and Creemers' (1998) findings in Indonesia that teacher development was only moderately cost effective, the present finding suggests that the benefits of improving in-service training need further clarification. This is an area where the government could take steps to commission further evaluations of the benefits of different kinds of inservice training.

c. Maintaining age and gender balance amongst teachers

Having a male teacher was shown to have positive effects for children in Grade 5 Language and Grades 4 and 5 Mathematics, however female teachers were more beneficial in Grade 6 Language. It is perhaps more likely that male teachers may differ in terms of interacting more frequently to help and encourage pupils towards better attainment (Sadker & Sadker, 1994). The presence of young teachers was associated with better class attainment (Grade 4 Language), but on the other hand, they may have less experience than the older teachers. Older teachers may be resistant to teaching improvement and innovation since these do not guarantee their future promotion. Overall it may be wise to keep the balance of teachers in terms of gender and age, length of service and experience within the school and/or local authority and to ensure that all staff are encouraged to share professional understanding of good practice.

d. Scheduling the best time for school meetings

Meetings are intended to be organised 'for the good of schools' but this study found that they can result in a negative impact on children's attainment. Perhaps the time taken up for meetings in some schools is decreasing the children's learning time, although Indonesian total annual school days are longer: 240 days per year compared with 192 in England (Reynolds & Farrell, 1996). It might be better to schedule outside the school hours in the school calendar for meetings so that it does not decrease pupils' learning time. An alternative explanation might be that schools that have more meetings

have more internal difficulties and this may underlay the negative association.

F. Final Remarks

In the last stage of writing up this thesis, Indonesia faces a serious currency problem (Indonesian Rupiah against US dollar) that may last for a long time and influence schools and homes. The finding that lack of resources is not the largest problem facing schools (Hanushek, 1996, although it has been challenged by Hedges, Laine and Greenwald, 1994) could be true in a relatively healthy socio-economic situation. However the most critical factor in the educational process, namely the teacher, is a potential source of future difficulty, in so far as quality is concerned. The teaching profession is suffering greatly from the negative impact of the economic crisis and of adjustment policies, which have had a severe impact on teachers' standard of living. This may be expected to have a negative effect on their morale, their sense of commitment and their motivation. A further negative influence on their work may arise because of deteriorating working conditions in the classroom, and weakening of various professional support structures (Carron & Chau, 1996; Suroso, 1998). For pupils' homes, the national monetary crisis will create more unemployed parents living in deteriorating home learning environments (O'Sullivan, 1998). All these factors are likely to have a negative impact on the quality of schooling and possibly on pupils' motivation, participation and in turn lead to an increase drop-out rates, especially if unemployment remains high.

The other problem is related to the political change from the New Order to the Reformation Era. Seemingly, the new regime has begun to establish new policies in many national aspects, including education. Although the direction of education policies is not clear yet, it is highly probable that schools will be restructured and reformed (Drost, 1998; Kurniawan, 1998; Mangunwijaya, 1998; Sudarsono, 1998). All these unexpected problems and changes may place education in an unsettled condition that needs to be monitored carefully.

The results from this study are most likely to be relevant if the primary school situation remains fairly constant. Nonetheless they could be kept for social comparison within the same socio-cultural setting in the new era.

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APPENDICES

APPENDIX A.1

INPRES Programme Fund Allocation in PJP-I

(billion Rp)

INPRES Programme	Pelita I	Pelita II	Pelita III	Pelita IV	Pelita V	Total
1. Village development	24.9	103.3	332.2	492	869	1,821.4
2. Dati II development	46.4	304	757.2	1,101.5	2,070.2	4,279.3
3. Dati I development	83.1	325.1	988.5	1,458.1	2,099.4	4,954.2
4. SD (primary schools)	17.2	323.7	1,596.8	1,917.8	1,663.1	5,518.6
5. Health	---	94.5	326.8	455.5	923.6	1,611.4
6. Market development and restoration	---	2.52	36	47.4	11	96.92
7. Forestry and Reboisation	---	76.5	268.8	167	221.1	580.4
8. Transportation	---	---	200.7	590.4	3,118.9	3,508.6
Total	171.6	1,229.62	4,507	6,229.7	10,976.3	22,370.82
% of SD allocation	10 %	26.3 %	35.4 %	30.8 %	15.1 %	24.67 %

(Tilaar, 1995)

APPENDIX A.2

The Provision of SD INPRES in PJP-I

Year	Budget (billion Rp)	New building unit	Teacher appointment (person)	Textbook provision (million)
1973/74	17.2	6,000	18,000	6.6
1974/75	19.1	6,000	18,000	6.9
1975/76	49.9	10,000	50,000	7.3
1976/77	57.3	10,000	60,000	8.6
1977/78	85.0	15,000	60,000	7.3
1978/79	112.3	15,000	75,000	8.5
1979/80	135.5	10,000	50,000	12.5
1980/81	250.8	14,000	50,000	14.0
1981/82	374.4	15,000	103,350	15.0
1982/83	589.2	22,600	121,100	30.0
1983/84	589.2	13,140	91,830	32.0
1984/85	580.8	2,200	17,050	32.6
1985/86	617.0	3,200	141,324	32.6
1986/87	417.2	2,773	58,840	16.3
1987/88	100.8	831	5,160	8.0
1988/89	130.5	500	16,800	5.0
1989/90	100.0	185	10,000	4.0
1990/91	369.5	400	10,000	6.0
1991/92	521.7	692	14,000	14.1
1992/93	669.11	725	21,000	20.6
1993/94	747.9	699	10,150	22.2
Total	6,534.41	148,945	1,001,604	310.1

(Tilaar, 1995)

APPENDIX A.3

Index of Trend of Schools in Primary Level by Province, 1983/84-1991/92

Province	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
1. DKI Jakarta	100	105	108	111	112	112	112	112	111
2. West Java	100	111	116	119	119	120	120	121	122
3. Central Java	100	103	104	104	104	104	104	104	104
4. DI Yogyakarta	100	101	102	103	102	103	103	104	104
5. East Java	100	102	103	104	105	106	106	107	107
6. DI Aceh	100	104	106	109	112	114	114	115	117
7. North Sumatra	100	103	103	105	107	107	108	106	107
8. West Sumatra	100	105	105	108	111	109	110	110	111
9. Riau	100	107	117	121	125	129	131	132	135
10. Jambi	100	103	106	109	111	113	114	114	115
11. South Sumatra	100	107	113	119	124	129	132	134	136
12. Bengkulu	100	109	115	122	139	144	148	145	146
13. Lampung	100	110	124	128	135	135	136	137	137
14. West Borneo	100	105	110	113	115	117	119	119	120
15. Central Borneo	100	105	106	109	110	111	115	115	115
16. South Borneo	100	105	106	108	109	110	110	108	109
17. East Borneo	100	131	119	127	130	131	141	142	142
18. North Celebes	100	104	105	108	106	107	108	108	108
19. Central Celebes	100	111	110	114	114	115	116	116	117
20. South Celebes	100	106	108	113	112	113	114	114	115
21. South-east Celebes	100	107	110	112	112	113	114	114	114
22. Moluccas	100	106	108	110	116	116	118	120	123
23. Bali	100	102	102	103	104	104	104	104	103
24. West N. T	100	109	104	111	114	112	113	113	113
25. East N. T.	100	105	108	112	113	113	113	115	115
26. Irian Jaya	100	103	105	112	119	121	121	121	123
27. East Timor	100	103	119	142	140	141	144	147	148
Indonesia	100	106	108	110	112	113	113	114	114

Source: Pusat Informatika (1993b)

APPENDIX A.4

Primary Teachers Qualification and Gender, 1991/92 and 1994/95

	1991/92		1994/95	
	Number	percent	Number	percent
Educational qualification:				
Primary level	999	0.09	---	---
Junior secondary level	83,415	7.31	84,532	7.21
Senior secondary level	996,551	87.34	1.017,820	86.81
Diploma in education	17,765	1.55	18,300	1.56
Bachelor degree	22,674	1.99	24,586	2.1
Sarjana (graduate) degree	19,628	1.72	27,285	2.32
Total	1,141,032		1.172.523	
Gender:				
Male	568,275	49.80	563,559	48.06
Female	572,757	50.20	608,964	51.94
Total	1,141,032		1,172,523	

Source: Pusat Informatika (1993a) & Ministry of Education and Culture (1996)

APPENDIX A.5

Index of Trend of Teachers in Primary Level by Province, 1983/84-1991/92

Province	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
1. DKI Jakarta	100	107	109	122	120	119	119	118	118
2. West Java	100	108	120	121	125	129	127	125	125
3. Central Java	100	107	110	110	112	114	116	115	113
4. DI Yogyakarta	100	103	104	106	105	107	105	106	106
5. East Java	100	101	105	105	106	105	104	103	104
6. DI Aceh	100	108	107	119	125	128	124	131	131
7. North Sumatra	100	105	106	113	114	119	118	117	119
8. West Sumatra	100	107	109	117	118	121	122	121	124
9. Riau	100	110	123	132	137	148	154	159	166
10. Jambi	100	115	129	134	138	137	145	146	148
11. South Sumatra	100	104	113	119	130	133	135	141	144
12. Bengkulu	100	105	114	124	139	153	157	151	157
13. Lampung	100	124	135	150	157	158	160	165	160
14. West Borneo	100	100	108	109	118	125	130	130	132
15. Central Borneo	100	124	128	128	154	177	185	184	188
16. South Borneo	100	106	114	121	119	126	123	126	128
17. East Borneo	100	144	135	156	160	175	181	183	193
18. North Celebes	100	105	110	111	115	118	123	120	112
19. Central Celebes	100	110	124	130	135	130	141	139	142
20. South Celebes	100	104	114	129	128	130	136	135	134
21. South-east Celebes	100	110	117	119	144	144	147	149	150
22. Moluccas	100	105	106	108	110	119	118	119	124
23. Bali	100	106	107	114	114	117	117	116	117
24. West N.T.	100	112	111	123	124	130	130	129	130
25. East N.T.	100	104	113	119	121	127	131	128	133
26. Irian Jaya	100	107	112	142	170	176	184	185	192
27. East Timor	100	99	103	124	144	180	179	172	181
Indonesia	100	107	112	117	120	122	123	123	123

Source: Pusat Informatika (1993b)

APPENDIX A.6a

Number of Students during PJP-I
(in thousand)

Level of education	Age group	1969/ 1970	End of Pelita I	II	III	IV	V
Primary	7-12	12,800	13,344	17,037	23,153	25,698.3	29,461.8
Junior Secondary	13-15	1,150	1,536	2,647	4,758	6,679.7	8,590
Senior Secondary	16-18	482	686	1,291	2,592	4,146.9	5,757
Tertiary	19-24	156	230.9	385	824.4	1,663.9	2,491.1

(Tilaar, 1995)

APPENDIX A.6b

The Participation Rate of Students in PJP-I

Level of education	1969/ 1970	End of Pelita I	II	III	IV	V
Primary	64	66.5	79.3	97.2	96.6	99.7
Junior Secondary	16.9	17.4	27.7	44.0	53.4	66.7
Senior Secondary	8.6	9.3	14.7	26.1	36.6	45.1
Tertiary	---	1.9	2.6	5.3	8.5	11.0

(Tilaar, 1995)

APPENDIX A.7

Index of Trend New Entrants to Grade 1 in Primary Level by Province, 1983/84-1991/92

Province	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
1. DKI Jakarta	100	101	104	108	115	112	106	103	100
2. West Java	100	102	95	96	102	102	102	103	104
3. Central Java	100	100	93	94	97	99	98	94	93
4. DI Yogyakarta	100	97	95	94	99	102	93	86	83
5. East Java	100	96	87	87	93	93	90	84	83
6. DI Aceh	100	100	96	101	107	104	116	100	104
7. North Sumatra	100	101	99	104	114	112	109	105	107
8. West Sumatra	100	96	91	99	105	104	100	98	98
9. Riau	100	107	102	114	126	128	123	125	132
10. Jambi	100	96	92	96	107	102	93	97	100
11. South Sumatra	100	104	94	105	110	107	103	101	101
12. Bengkulu	100	93	88	94	112	128	140	102	97
13. Lampung	100	111	112	111	122	126	108	103	95
14. West Borneo	100	92	85	96	95	93	87	87	90
15. Central Borneo	100	107	102	114	99	102	85	92	83
16. South Borneo	100	96	84	89	93	92	89	88	90
17. East Borneo	100	125	101	107	114	132	107	108	105
18. North Celebes	100	101	105	106	101	91	83	81	83
19. Central Celebes	100	112	103	106	109	106	105	101	103
20. South Celebes	100	99	94	95	96	92	87	85	83
21. South-east Celebes	100	102	95	106	100	102	104	99	101
22. Moluccas	100	95	95	99	96	96	93	88	94
23. Bali	100	93	82	82	88	96	84	78	78
24. West N.T.	100	96	74	77	81	81	80	79	82
25. East N.T.	100	85	77	81	84	87	75	75	78
26. Irian Jaya	100	103	105	115	126	107	108	102	107
27. East Timor	100	82	81	97	75	77	70	75	76
Indonesia	100	100	93	96	101	101	98	95	95

Source: Pusat Informatika (1993b)

APPENDIX A.8

Primary Pupil Flows, 1976, 1986, 1991
(in percentage)

	1975/76-1976/77			1985/86-1986/87		
Grade	Promotion	Repetition	Dropout	Promotion	Repetition	Dropout
1	80.7	16.0	3.3	80.5	16.7	2.8
2	82.9	12.5	4.6	84.6	12.4	3.0
3	80.8	11.1	8.1	84.6	10.6	4.8
4	80.8	9.0	10.2	86.4	8.5	5.1
5	84.1	6.7	9.2	88.0	6.7	5.3
6	91.0	2.1	6.9	95.2	1.5	5.3

	1990/91-1991/92		
Grade	Promotion	Repetition	Dropout
1	82.1	15.84	2.04
2	87.17	11.25	1.57
3	85.74	9.74	4.52
4	86.96	7.75	5.29
5	88.26	5.81	5.94
6	93.17	0.96	5.87

Source: World Bank (1989); Pusat Informatika (1993a)

APPENDIX B.1

LIST OF VARIABLES

Pupil level

Variables	Description	Label
* Last Attainment		
- Indonesian Language	Pupil's score in Indonesian Language at the end of school year 1996/1997 (Grades 4, 5, and 6).	IND97
	Later the scores were normalised.	NIND97
- Mathematics	Pupil's score in Mathematics at the end of school year 1996/1997 (Grades 4, 5, and 6).	MTH97
	Later the scores were normalised.	NMTH97
* Prior Attainment		
- Indonesian Language	Pupil's score in Indonesian Language at the end of school year 1995/1996 (Grades 3, 4, and 5).	IND96
	Later the scores were centered.	CIND96
- Mathematics	Pupil's score in Mathematics at the end of school year 1995/1996 (Grades 3, 4, and 6).	MTH96
	Later the scores were centered	CMTH96
* Residuals		
- School level residual for Grade 4 Indonesian Language		IND4
- School level residual for Grade 5 Indonesian Language		IND5
- School level residual for Grade 6 Indonesian Language		IND6
- School level residual for Grade 4 Mathematics		MTH4
- School level residual for Grade 5 Mathematics		MTH5
- School level residual for Grade 6 Mathematics		MTH6
* Pupil Characteristics		
- Gender	Pupil gender as female vs male (Dummy 0=female, 1=male)	PSEX
- Age	Pupil age in months.	PAGE
	Later was transformed into quartiles:	
	+ first quartile, the youngest (as 0)	
	+ second quartile	AGE1
	+ third quartile -	AGE2
	+ last quartile, the oldest	AGE3
- Religion	Pupil religious background (Islam, Christian, Hindu, Buddhist)	PRELIGIO
- Ethnicity	Pupil ethnicity (Javanese, Madurese, Chinese, other)	PETHN
* Family Background		
- Father's occupation	Father's (or male guardian)occupation	FOCCUP
	Later was classified as:	
	+ clerical/professional (as 0)	
	+ unskilled manual	F1DUM
	+ skilled manual	F2DUM
- Father's education	Father's educational qualification (later was changed into years).	FEDUC

Variables	Description	Label
- Mother's occupation	Mother's (female guardian) occupation Later was classified as: + clerical/professional (as 0) + unskilled manual + skilled manual + non-earning, etc	MOCCUP M1DUM M2DUM M3DUM
- Mother's education	Mother's educational qualification (Later was changed into years)	MEDUC
- Home language	How often used national language at home.	HLANG
- Family size	Number of people living at home.	FMSIZE
- Siblings at home	Number of children in the family.	CHILDREN
- Sibling order	The pupil birth order among siblings	CHLD_ORD
- Study time	How many hours spend on homework/ study every night.	TIMEHW
- Study place	Having a place to study at home Later was classified as + good enough (as 0) + no study place + not good place	STPLACE STPL1 STPL2
- Books at home	Number of books at home	PRBOOK
- Newspaper	The availability of newspaper at home (dummy 0=no, 1=yes)	NEWSPPR
* Encouragement from parents	A scale on how parents encourage their children, consisted of items + parental concerning homework + parental help with homework + parental checking schoolwork + reward for academic achievement	PARENCT HMCTRL HWHELP SWCTRL REPORTRP
* Social pressure	Social pressure for academic achievement, comprised of number of siblings at + Junior High School + Senior High School + higher education	SOCPRS JHS SHS HE

Class level

Variables	Description	Label
* Grade	The grade of the class during the school year 1996/1997 (4, 5, and 6)	GRADE
* Teacher gender	Teacher gender as male vs female (dummy 0=female, 1=male)	TSEX
Teacher age	Age of teacher in years	TAGE
Marital status	Teacher marital status (married vs not married)	TMARRIAG
Education	Teacher educational qualification	TEDUC
Teaching experience	Years of teaching experience	TEREXPER
Promotion order	Teacher's rank of promotion order	TRANK_OR
Math's training	Experience in math's inservice training, later classified as	MTHTRAIN
	+ none (as 0)	
	+ a little	MTH1TR
	+ a lot	MTH2TR
Language training	Experience in Indonesian Language inservice training, later classified as	INDTRAIN
	+ none (as 0)	
	+ a little	IND1TR
	+ a lot	IND2TR
* Teacher pedagogy		
-Instructional approach	Teacher instructional approaches, classified later as two subscales	A1-A10
	+ traditional approach (5items)	TRADITIO
	+ innovative approach (5 items)	INOVATIO
-Teaching preparation	+ Hours spend on correcting pupil works	TCORRECT
	+ Hours sped on lesson planning	LESSNPLN
-Homework assignment	Number of homework assignments per week	HMWEE
* Perceived leadership	School leadership as perceived by the teacher, consisted of two subscales	B1-B14
	+ task oriented (7 items)	TASK
	+ people oriented (7items)	PEOPLE
* Class size	Number of pupils in the target class	CLSIZE
	+ number of male pupils	MLPUP
	+ number of female pupils	FMPUP
	+ male/female proportion	MFPROP
* Resources:	Resources in terms of textbooks available in the target class	
	+ Maths books	MTHBOOK
	+ Indonesian Language books	INDBOOK

School level

Variables	Description	Label
* Headteacher characteristics		
- Gender	Headteacher's gender (dummy 0=female, 1=male)	HSEX
- Age	Headteacher's age in years	HAGE
- Education	Headteacher's educational qualification	HEDUC
- Teaching experience	Headteacher's teaching experience in years	HTEXPER
- Administrative experience	Headteacher's administrative experience in years	HEADEXPR
- Promotion order	Headteacher's rank promotion order	HRANK_OR
* School Context		
- Number of teachers		
Male	Number of male teachers in school	MALETR
Female	Number of female teachers	FEMTR
Male/female ratio	Proportion of male/female teachers	MFTCR
- Number of pupils		
Male	Number of male pupils in school	MALEP
Female	Number of female pupils	FMLP
Male/female ratio	Proportion of male/female pupils	MFPUP
- Pupil teacher ratio	Pupil/teacher ratio in the school	PTRATIO
- Number of books	Number of books in the school library	SCHLBOOK
* Meeting	Number of meetings at school during the last three terms	MEETING
* Class hours	Number of hours headteacher spend in the class	CLSHOUR
* Home hours	Number of hours headteacher spend at the home for school work	HMHOUR
* Professional growth	A composite variable related to headteacher's professional development	PROFGRW
	+ joining a course	STUDY
	+ independent study	INDPSTUD
	+ teacher's club activities	TCHCLUB
	+ educational training	TRAINING
	+ educational seminars	SEMINAR

APPENDIX B.2a

(Indonesian Version)

KUESIONER UNTUK MURID

Petunjuk

Kami minta jawab pertanyaan-pertanyaan di bawah ini. Beberapa pertanyaan di antaranya adalah mengenai dirimu sendiri, sedangkan beberapa pertanyaan lainnya lagi tentang sekolah dan keadaan rumahmu.

Semua jawabanmu tetap dijaga rahasia.

Cara Menjawab

1. Tuliskan jawabanmu pada baris yang telah tersedia.
2. Jika yang tersedia kotak, bubuhilah tanda silang (X) dalam kotak di samping jawaban yang merupakan pilihanmu.
3. Berilah tanda silang (X) pada jawaban yang merupakan pilihan yang paling tepat. Misalnya:

Jenis kelamin	☒ Laki-laki ☐ Perempuan

Berarti: *Anda seorang laki-laki.*

Semua pertanyaan ini bukanlah soal ujian. Jawablah setiap pertanyaan dengan jelas dan jujur sesuai dengan pendapatmu.

---

1. Nama Sekolah : SDN .....
   Namamu : .....
2. Kamu sekarang pada kelas berapa?
   - ❑ empat
   - ❑ lima
   - ❑ enam
3. Jenis Kelamin
   - ❑ Laki-laki
   - ❑ Perempuan
4. Agama
   - ❑ Islam
   - ❑ Kristen (Protestan atau Katolik)
   - ❑ Hindu
   - ❑ Budha

❑ Lain .....

5. Suku Bangsa
   - ❑ Jawa
   - ❑ Madura
   - ❑ Tionghoa
   - ❑ Lain .....

6. Anak nomor berapakah kamu? (Kalau kamu anak yang tertua, tulislah 1 dan seterusnya) .....

7. Bahasa apakah yang paling sering kamu pergunakan di rumah?
   - ❑ Bahasa Indonesia saja
   - ❑ Sering Bahasa Indonesia, dan kadang-kadang bahasa .....
   - ❑ Kadang-kadang Bahasa Indonesia, dan sering bahasa .....
   - ❑ Hampir tidak pernah Bahasa Indonesia, dan selalu bahasa .....

8. Setiap malam berapa jamkah kamu pergunakan untuk mengerjakan pekerjaan rumah?
   - ❑ Kurang dari 1/2 jam
   - ❑ 1/2 jam - 1 jam
   - ❑ Lebih dari 1 jam, kurang dari 2 jam
   - ❑ 2 jam atau lebih.

9. Berapa jumlah buku yang dicetak yang ada di rumahmu?
   - ❑ Tidak ada
   - ❑ 1-10
   - ❑ 11-20
   - ❑ Lebih dari 20.

10. Apakah keluargamu berlangganan atau sedikit-dikitnya dua kali seminggu membeli suratkabar?
    - ❑ Ya
    - ❑ Tidak

11. Adakah seseorang di rumahmu (Ayah, Ibu, atau orang lain) yang selalu menanyakan tentang pekerjaan rumahmu (PR)?
    - ❑ Tidak ada
    - ❑ Ada, satu kali seminggu
    - ❑ Ada, 2-3 kali seminggu
    - ❑ Ada, 4-6 kali seminggu
    - ❑ Ada, selalu

12. Adakah seseorang di rumahmu (Ayah, Ibu, atau orang lain) yang selalu menolongmu dalam pekerjaan rumahmu (PR)?

❑ Tidak ada

❑ Ada, satu kali seminggu

❑ Ada, 2-3 kali seminggu

❑ Ada, 4-6 kali seminggu

❑ Ada, selalu

13. Adakah seseorang di rumahmu (Ayah, Ibu, atau orang lain) yang selalu menanyakan atau memeriksa pekerjaanmu di sekolah (bukan PR)?

❑ Tidak ada

❑ Ada, satu kali seminggu

❑ Ada, 2-3 kali seminggu

❑ Ada, 4-6 kali seminggu

❑ Ada, selalu

14. Apakah kamu mempunyai tempat belajar tertentu di rumahmu dan bagaimana keadaannya?

❑ Tidak ada

❑ Ada, tidak baik

❑ Ada, cukup baik

❑ Ada, amat baik.

15. Jika kamu menerima rapor yang baik apakah tindakan orang tuamu (atau orang lain di rumahmu)?

❑ Tidak melakukan apa-apa

❑ Kadang memuji saya

❑ Selalu memuji saya

❑ Kadang memuji dan memberikan uang atau hadiah

❑ Selalu memuji dan memberikan uang atau hadiah

16. Berapa jumlah kakakmu yang masih bersekolah di SMP? ..... orang.
Berapa yang hanya tamat dari SMP? ..... orang.

17. Berapa jumlah kakakmu yang masih bersekolah di SMA? ..... orang.
Berapa yang hanya tamat dari SMA? ..... orang

18. Berapa jumlah kakakmu yang masih di Universitas? ..... orang.
Berapa yang sudah tamat dari Universitas? ..... orang.

========== **Terima Kasih Atas Jawabanmu** ==========

(English version)

PUPIL QUESTIONNAIRE

Instructions

We ask you answering the following questions. Some of the questions are about you yourself and others about your school and your home. Your answers are kept confidential.

Method of Answering Questions

1. Write your answer in the space provided
2. If the space provided is a box, put an X in the box next to the answer you choose.
3. Put an X to the answer you choose as the best choice.

For example:

Sex	:☒ *Male* ☐ *Female*

It means that: *You are a man.*

This is not a test (these questions are not test questions). Please answer each question clearly, honesty, and according to your opinion.

---

1. School Identity : .....
   Pupil's Name : .....

2. In which grade are you?
   - ❑ Four
   - ❑ Five
   - ❑ Six

3. Sex
   - ❑ Male
   - ❑ Female

4. Religion
   - ❑ Islam
   - ❑ Christian (Protestant or Catholic)
   - ❑ Hindu
   - ❑ Buddhist
   - ❑ Other .....

5. Ethnicity
- ❑ Javanese
- ❑ Madurese
- ❑ Chinese
- ❑ Other .....

6. What number child are you? (If you are the oldest, write 1 and so forth) .....

7. What language do you often speak Indonesian at home?
- ❑ Indonesian only (hardly ever)
- ❑ Often Indonesian and sometimes .....
- ❑ Sometimes Indonesian and often .....
- ❑ Hardly never Indonesian, almost .....

8. How many hours do you usually spend in a night on homework?
- ❑ Less than 1/2 hour
- ❑ 1/2 hour - 1 hour
- ❑ More than 1 hour, less than 2 hours
- ❑ 2 hours or more.

9. Do you have a place to study at home and what is it like?
- ❑ I do not have a place to study at home
- ❑ Yes, it's not very good
- ❑ Yes, it's fair
- ❑ Yes, it's very good

10. How many books belong to you in your home?
- ❑ None
- ❑ 1-10
- ❑ 11-20
- ❑ More than 20

11. Does your family subscribe to or often (at least two times a week) buy a newspaper?
- ❑ Yes
- ❑ No

12. Is there someone at home (father, mother, or someone else) who asks whether you have done your homework?

- ❑ No
- ❑ Yes, once a week
- ❑ Yes, 2-3 times a week
- ❑ Yes, 4-6 times a week
- ❑ Yes, every day

13. Is there someone at home (father, mother, or someone else) who helps you with your homework?
    - ❑ No
    - ❑ Yes, once a week
    - ❑ Yes, 2-3 times a week
    - ❑ Yes, 4-6 times a week
    - ❑ Yes, every day

14. Is there someone at home (father, mother, or someone else) who checks on your schoolwork?
    - ❑ No
    - ❑ Yes, once a week
    - ❑ Yes, 2-3 times a week
    - ❑ Yes, 4-6 times a week
    - ❑ Yes, every day

15. When you get a good report card, what do your parents (or others at home) do?
    - ❑ nothing
    - ❑ sometimes give compliments
    - ❑ always give compliments
    - ❑ sometimes give a present
    - ❑ always give a present

16. How many of your brothers and sisters are attending junior high school? .....
    How many have only graduated from junior high school and not continue to the next level? .....

17. How many of your brothers and sisters are attending senior high school? .....
    How many have only graduated from senior high school and not continue to the next level? .....

18. How many of your brothers and sisters are at the university? .....
How many have only graduated from the university? .....

Thanks for Your Answers

APPENDIX B.2b

(Indonesian Version)

Kuesioner untuk Orangtua
(Diisi di Rumah bersama murid)

Yth. Bapak/Ibu sebagai orangtua murid di rumah, kami mohon kesediaan bapak/ibu meluangkan waktu sejenak untuk mengisi angket ini bersama putra/i yang membawanya. Mohon diisi menurut keadaan yang sebenarnya karena angket ini tidak berhubungan dengan penilaian terhadap anak bapak/ibu. Angket ini semata-mata merupakan penelitian ilmiah untuk memperoleh gambaran tentang putra/i yang sedang bersekolah.
Semua jawaban kalian tetap dijaga **rahasia**.

Cara Menjawab

1. Isilah bagian yang ditandai dengan titik-titik atau
2. Berilah tanda silang (X) pada jawaban yang merupakan pilihan yang paling tepat. Misalnya:

Jenis kelamin	☒ *Laki-laki*
	☐ *Perempuan*

Berarti: *Anda seorang laki-laki.*

Semua pertanyaan yang diberikan bukan pertanyaan ujian. Jawablah setiap pertanyaan dengan jelas dan jujur dan menurut keadaan sebenarnya. Mohon tidak ada pertanyaan yang dilewati.

---

1. Nama murid: .....
   Lahir tanggal: ..... bulan: ..... 19.....

2. Berapa orang seluruhnya tinggal di rumahmu? (Anggota keluarga dan orang lain)
   ..... orang

3. Di keluargamu ada beberapa orang anak? ..... orang

4. Apakah Ayah atau Wali (laki-laki) bekerja ❑ Tidak bekerja
   (Kalau sudah pensiun atau meninggal, ❑ Pekerjaannya:
   sebutkan pekerjaannya sebelumnya) .....

5. Pendidikan Ayah atau Wali (Laki-laki)

- ❑ Tidak bersekolah
- ❑ Bersekolah pada SD (atau Madrasah) tetapi tidak tamat
- ❑ Tamat dari SD (atau Madrasah)
- ❑ Bersekolah pada SLP (atau Madrasah) tetapi tidak tamat
- ❑ Tamat dari SLP (atau Madrasah)
- ❑ Bersekolah pada SLA (atau Madrasah) tetapi tidak tamat
- ❑ Tamat dari SLA (atau Madrasah)
- ❑ Pernah mengikuti pendidikan taraf Universitas tetapi tidak tamat
- ❑ Tamat dari Universitas (setingkat Sarjana Muda atau lebih tinggi)

6. Apakah Ibu atau Wali (perempuan) bekerja ❑ Tidak bekerja

(Kalau sudah pensiun atau meninggal, sebutkan pekerjaannya sebelumnya) ❑ Pekerjaannya: .....

7. Pendidikan Ibu atau Wali (Perempuan)

- ❑ Tidak bersekolah
- ❑ Bersekolah pada SD (atau Madrasah) tetapi tidak tamat
- ❑ Tamat dari SD (atau Madrasah)
- ❑ Bersekolah pada SLP (atau Madrasah) tetapi tidak tamat
- ❑ Tamat dari SLP (atau Madrasah)
- ❑ Bersekolah pada SLA (atau Madrasah) tetapi tidak tamat
- ❑ Tamat dari SLA (atau Madrasah)
- ❑ Pernah mengikuti pendidikan taraf Universitas tetapi tidak tamat
- ❑ Tamat dari Universitas (setingkat Sarjana Muda atau lebih tinggi)

========== Terima Kasih Atas Kerja Sama Anda =========

(English Version)

PARENTS QUESTIONNAIRE
(To be filled with pupil at home)

Dear parents, I would like to ask you spend a spare time with your son/daughter for filling out this questionnaire. I do believe that you will be honest because this questionnaire does not relate to your child's evaluation. This is merely for research to get a clear picture about your child background.
Your answers are kept confidential.

Method of Answering Questions

1. Write your answer in the space provided
2. Put an X to the answer you choose as the best choice.
   For example:

Sex	: ☒ *Male*
	☐ *Female*

It means that: *You are a man.*

This is not a test (these questions are not test questions). Please answer all questions clearly and honestly according to your situation.

---

1. Pupil Name : .....
   Birth date in: ..... Month: ..... 19 .....

2. How many people are living in your home? (Include family members and others)
   .....
3. How many child are in your home? .....

4. Occupation of father or guardian (male). (If retired or deceased, list occupation before that)
   ❑ Not working
   ❑ Occupation .....

5. Education of father or guardian (male).

- ❑ No formal education
- ❑ Attended elementary school but didn't graduate
- ❑ Completed elementary school
- ❑ Attended junior high school but didn't graduate
- ❑ Completed junior high school
- ❑ Attended senior high school but didn't graduate
- ❑ Completed senior high school
- ❑ Attended the university but didn't graduate
- ❑ Graduated from the university (with a B.A. or higher

6. Occupation of mother or guardian (female). (If retired or deceased, list occupation before that)

- ❑ Not working
- ❑ Occupation .....

7. Education of mother or guardian (female).

- ❑ No formal education
- ❑ Attended elementary school but didn't graduate
- ❑ Completed elementary school
- ❑ Attended junior high school but didn't graduate
- ❑ Completed junior high school
- ❑ Attended senior high school but didn't graduate
- ❑ Completed senior high school
- ❑ Attended the university but didn't graduate
- ❑ Graduated from the university (with a B.A. or higher

Thanks for Your Cooperation

APPENDIX B.2c

(Indonesian Version)

KUESIONER UNTUK GURU

Yth. Bapak/Ibu guru, di tengah kesibukan sehari-hari, kami mohon kesediaan bapak/ibu guru meluangkan waktu sejenak untuk mengisi angket ini. Mohon diisi menurut keadaan yang sebenarnya karena angket ini tidak berhubungan dengan penilaian dari atasan atau orang lain terhadap bapak/ibu. Angket ini semata-mata merupakan penelitian ilmiah untuk memperoleh gambaran sekolah sehari-hari.

Pertanyaan-pertanyaan berikut adalah mengenai diri bapak/ibu dan tentang kelas yang diajari. Kami tetap **merahasiakan** semua jawaban dalam kuesioner ini.

Cara Menjawab

1. Perhatikan petunjuk-petunjuk yang diberikan,
2. Isilah bagian yang ditandai dengan titik-titik atau
3. Berilah tanda silang (X) pada jawaban yang merupakan pilihan yang paling tepat. Misalnya:

Jenis kelamin	☒ Laki-laki
	☐ Perempuan

Berarti: *Anda seorang laki-laki.*

4. Kalau masih ada sesuatu yang kurang jelas mohon segera menanyakan kepada Peneliti yang sedang berkunjung.

Mohon tidak ada pertanyaan yang dilewati. Semua pertanyaan yang diberikan bukan pertanyaan ujian. Jawablah setiap pertanyaan dengan jelas dan jujur dan menurut pendapat bapak/ibu. Mohon tidak ada pertanyaan yang dilewati.

---

1. Nama Sekolah: SDN .....

2. Bapak/Ibu mengajar pada kelas:

❒ Empat
❒ Lima
❒ Enam
❒ .....

3. Jenis Kelamin: ❒ Laki-laki
❒ Perempuan

4. Usia : ..... tahun.

5. Apakah Bapak/Ibu sudah berkeluarga?
❒ Ya, berkeluarga
❒ Tidak/belum

6. Pendidikan tertinggi
❒ SD
❒ SLTP
❒ SLTA
❒ Diploma pendidikan
❒ BA
❒ Sarjana
❒ Lain: .....

7. Pengalaman mengajar: ..... tahun

8. Pangkat:
❒ II.a
❒ II.b
❒ II.c
❒ II.d
❒ III.a
❒ III.b
❒ III.c
❒ III.d
❒ IV.a
❒ .....

9. Pernah mengikuti penataran tentang matematika?
❒ Tidak pernah

❒ Ya, pernah tapi cuma sekali

❒ Ya, mengikuti banyak kali

10. Mengikuti penataran tentang Bahasa Indonesia?

❒ Tidak pernah

❒ Ya, pernah tapi cuma sekali

❒ Ya, mengikuti banyak kali

11. Dalam mengajar saya menggunakan buku pegangan yang baku

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

12. Saya menggunakan alat bantu mengajar

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

13. Saya menggunakan metode ceramah

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

14. Saya menggunakan metode kelompok diskusi

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

15. Saya menggunakan metode pemberian tugas kelompok

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

16. Saya memberi tugas untuk dihafal murid

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

17. Saya mencobakan eksperimen di kelas

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

18. Saya memberikan pekerjaan rumah untuk dikerjakan sendiri-sendiri di rumah

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

19. Selama mengajar, saya tidak mengizinkan murid berbicara.

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

20. Selama mengajar, saya memberikan tugas yang sama pada waktu yang sama kepada seluruh kelas.

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

21. Lamanya saya mengoreksi pekerjaan murid setiap minggu?
..... jam

22. Lamanya saya menyiapkan pelajaran (satuan pelajaran) setiap minggu?
..... jam

23. Jumlah pekerjaan rumah yang saya tugaskan kepada murid (rata-rata) setiap minggu? ..... tugas

24. Berapa jumlah murid pada kelas yang diajar?
- putra ..... orang
- putri ..... orang

25. Di kelas ini, berapa jumlah buku tercetak yang dipakai untuk bidang studi matematika?
..... buah

26. Di kelas ini, berapa jumlah buku tercetak yang dipakai untuk bidang studi Bahasa Indonesia?
..... buah

Kesepuluh butir berikut mengenai kesan anda terhadap ***Kepala Sekolah.***

27. Ia peramah dan mudah didekati

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

28. Ia menekankan persaingan sehat di kalangan staf guru

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

29. Ia melaksanakan saran-saran dari staf guru

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

30. Ia mengerjakan hal-hal kecil yang menyenangkan agar dapat diterima oleh staf gurunya

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

31. Ia memberi semangat kepada staf guru untuk lebih giat berusaha

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

32. Ia memperhatikan kesejahteraan pribadi dari staf gurunya

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

33. Ia mendorong peningkatan hasil belajar di sekolah

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

34. Ia mendorong staf guru bekerja sesuai kemampuannya

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

35. Dalam pembuatan keputusan, ia bertindak sendirian

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

36. Ia membiarkan para guru mengerjakan tugas mereka dengan santai

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

37. Ia memberitahu lebih dahulu perubahan-perubahan yang akan dilakukan

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

38. Ia menjaga agar pekerjaan berjalan dengan cepat

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

39. Ia bersedia membuat perubahan-perubahan

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

40. Ia mendorong staf guru bekerja lebih keras/giat

❒ Ya, selalu ❒ Ya, kadang-kadang ❒ Tidak pernah

❒ Ya, seringkali ❒ Ya, jarang

Terima Kasih Atas Kerja Sama Anda

(English Version)

TEACHER QUESTIONNAIRE

Dear teacher, in your daily busy work, I would like to ask you spend a spare time for filling out this questionnaire. I do believe that you will be honest because this questionnaire doesnot relate to evaluation of your superior or other people outside. This is merely for research to get a clear picture about you and your school.

Some of the following questions are about you yourself and others are about your class. Your answers are kept confidential.

Method of Answering Questions

1. Pay close attention to the instructions given.
2. Write your answer in the space provided
3. Put an X to the answer you choose as the best choice.
   For example:

Sex	:☒ *Male*
	☐ *Female*

It means that: *You are a man.*

4. If a question is not clear to you, ask the researcher about it.

This is not a test (these questions are not test questions). Please answer each question clearly, honesty, and according to your opinion.

---

1. School Name/identity	: SD .....
2. Which grade are you teaching?	☐ Four
	☐ Five
	☐ Six
3. Sex	☐ Male
	☐ Female
4. Age	: ..... years
5. Are you married?	☐ Yes
	☐ No

6. Your last educational qualification

- ☐ primary level
- ☐ junior secondary level
- ☐ senior secondary level
- ☐ diploma in education (below BA)
- ☐ BA
- ☐ Sarjana degree
- ☐ Other: .....

7. Your teaching experience: ..... years

8. Your rank promotion at the moment:

- ☐ II.a
- ☐ II.b
- ☐ II.d
- ☐ III.a
- ☐ III.b
- ☐ III.c
- ☐ III.d
- ☐ IV.a
- ☐ .....

9. Have you been participated in mathematics in-service training?

- ☐ None
- ☐ A little
- ☐ A lot

10. Have you been participated in Indonesian Language in-service training?

- ☐ None
- ☐ A little
- ☐ A lot

11. In teaching I use standard textbooks

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

12. I use visual aids

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

13. I use lecture method

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

14. I use group discussions

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

15. I assign group projects

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

16. I use memorisation format

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

17. I run experiments in class

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

18. I give individualised home-work assignments

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

19. I do not allow pupils speak during the lesson.

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

20. I assign pupils work something on the same time.

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

21. How long you spend per week correcting exams, etc.?
..... hours

22. How long you spend per week for lesson planning?
..... hours

23. How many homework assignment you give per week?
..... assignment

24. How many pupils in your class?
..... boys
..... girls

25. How many printed books for teaching mathematic in your class?
..... books

26. How many printed books for teaching Indonesian Language in your class?
..... books

The following ten items are about your Headteacher. How do you perceive?

27. The headteacher is friendly and approachable

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

28. The headteacher stresses being ahead of competing teaching staff members

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

29. The headteacher puts suggestions made by the teaching staff into operation

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

30. The headteacher treats all teaching staff members as his/her equals

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

31. The headteacher needles teaching staff members for greater effort

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

32. The headteacher looks out for the personal welfare of teaching staff members

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

33. The headteacher pushes teachers to increase teaching learning outcomes

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

34. The headteacher keeps the teaching staff working up to capacity

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

35. The headteacher acts without consultings the teaching staff

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

36. The headteacher permits the teaching staff members to take it easy in their work

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

37. The headteacher gives advance notice of changes

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

38. The headteacher keeps the work moving at a rapid place

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

39. The headteacher is willing to make changes

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

40. The headteacher pushes teachers to work hard

☐ Yes, always ☐ Yes, sometimes ☐ Never

☐ Yes, often ☐ Yes, seldom

Many Thanks for Your Cooperation

APPENDIX B.2d

(Indonesian Version)

KUESIONER UNTUK KEPALA SEKOLAH

Yth. Bapak/Ibu guru Kepala Sekolah, di tengah kesibukan sehari-hari, kami mohon kesediaan bapak/ibu meluangkan waktu sejenak untuk mengisi angket ini. Mohon diisi menurut keadaan yang sebenarnya karena angket ini tidak berhubungan dengan penilaian dari atasan atau orang lain terhadap bapak/ibu. Angket ini semata-mata merupakan penelitian ilmiah untuk memperoleh gambaran sekolah sehari-hari.

Pertanyaan-pertanyaan berikut adalah mengenai diri bapak/ibu dan tentang sekolah ini. Semua jawaban dalam kuesioner ini dirahasiakan.

Cara Menjawab

1. Perhatikan petunjuk-petunjuk yang diberikan
2. Isilah bagian yang ditandai dengan titik-titik atau
3. Berilah tanda silang (X) pada jawaban yang merupakan pilihan yang paling tepat. Misalnya:

Jenis kelamin	☒ *Laki-laki*
	☐ *Perempuan*

Berarti: *Anda seorang laki-laki.*

4. Kalau masih ada sesuatu yang kurang jelas mohon segera menanyakan kepada Peneliti yang sedang berkunjung.

Semua pertanyaan yang diberikan bukan pertanyaan ujian. Jawablah setiap pertanyaan dengan jelas dan jujur dan menurut pendapat bapak/ibu. Mohon tidak ada pertanyaan yang dilewati.

---

1. Nama Sekolah: SDN .....

2. Jenis Kelamin: ❒ Laki-laki
   ❒ Perempuan

3. Usia : ..... tahun.

4. Pendidikan tertinggi
   - ❒ SD
   - ❒ SLTP
   - ❒ SLTA
   - ❒ Diploma pendidikan
   - ❒ BA
   - ❒ Sarjana
   - ❒ Lain: .....

5. Pengalaman mengajar: ..... tahun

6. Telah menjadi Kepala Sekolah selama ..... tahun

7. Pangkat/Golongan:
   - ❒ II.a
   - ❒ II.b
   - ❒ II.c
   - ❒ II.d
   - ❒ III.a
   - ❒ III.b
   - ❒ III.c
   - ❒ III.d
   - ❒ IV.a
   - ❒ .....

8. Di sekolah ini terdapat ..... ibu guru dan
   ..... bapak guru

9. Jumlah seluruh murid di sekolah ini: ..... putra
   ..... putri

10. Jumlah buku di perpustakaan sekolah ini: ..... buah buku.

Terima Kasih Atas Kerja Sama Anda

(English Version)

HEADTEACHER QUESTIONNAIRE

Dear Headteacher, in your daily busy work, I would like to ask you spend a spare time for filling out this questionnaire. I do believe that you will be honest because this questionnaire does not relate to evaluation of your superior or other people outside. This is merely for research to get a clear picture about you and your school.

Some of the following questions are about you yourself and others are about your school. Your answers are kept confidential.

Method of Answering Questions

1. Pay close attention to the instructions given.
2. Write your answer in the space provided
3. Put an X to the answer you choose as the best choice.
   For example:

Sex	:	☒ *Male*
		☐ *Female*

It means that: *You are a man.*

4. If a question is not clear to you, ask the researcher about it.

This is not a test (these questions are not test questions). Please answer each question clearly, honesty, and according to your opinion.

---

1. School Name/identity : .....
2. Sex ☐ Male
   ☐ Female
3. Age : ..... years

4. Your last educational qualification
   - ☐ primary level
   - ☐ junior secondary level
   - ☐ senior secondary level
   - ☐ diploma in education (below BA)
   - ☐ BA
   - ☐ Sarjana degree
   - ☐ Other: .....

5. Your teaching experience: ..... years

6. How long have you been School Headteacher?
..... years

7. Your rank promotion at the moment:
- ☐ II.a
- ☐ II.b
- ☐ II.c
- ☐ II.d
- ☐ III.a
- ☐ III.b
- ☐ III.c
- ☐ III.d
- ☐ IV.a
- ☐ .....

8. How many teachers are in this school?
..... female
..... male

9. How many pupils are in this school?
..... boys
..... girls

10. How many books are in in this school library collection?
..... books

Many Thanks for Your Cooperation

APPENDIX B.3a

The Baseline Tests for Indonesian Language

(Indonesian Version)

ULANGAN UMUM SD CATURWULAN III TAHUN PELAJARAN 1995/1996
KOTAMADYA MALANG

Pelajaran : Bahasa Indonesia **Kelas : III (Tiga)** **Nama: .....**
Hari, Tanggal: Selasa, 4 Juni 1996 **Waktu: 90 Menit** **Pukul: 07.30 - 09.00**

Bacalah bacaan di bawah ini dengan seksama!

ASAL-USUL DANAU BATUR

Pada jaman dahulu di Pulau Bali hiduplah manusia raksasa. Dia bernama Kbo Iwo. Kbo Iwo amat bodoh. Ia hanya membutuhkan makanan. Kebutuhan makanan Kbo Iwo pun melebihi manusia biasa. Oleh karena itu, penduduk Bali bergotong-royong menyediakan makanan untuk Kbo Iwo.

Suatu ketika, persediaan makanan penduduk Bali sudah habis. Kbo Iwo meminta disediakan makanan. Tetapi sayang, penduduk Bali tidak dapat memenuhi permintaannya. Kbo Iwo mengamuk. Semua bangunan suci dan rumah penduduk dihancurkan. Penduduk menjadi gempar.

Sepanjang jalan bekas tapak kaki Kbo Iwo, mengalir air yang akhirnya menjadi aliran sebuah sungai. Bekas tapak kaki itu terletak di sebuah desa, yaitu Tampak Siring yang berarti "tampak miring".

Penduduk Bali sangat marah. Mereka bersepakat menaklukkan Kbo Iwo tanpa kekerasan. Tindakan penduduk tidak berhasil, Kbo Iwo semakin mengamuk. Akhirnya penduduk sepakat memperlakukan Kbo Iwo sebaik mungkin.

Penduduk Bali meminta Kbo Iwo membuat sumur yang dalamnya setinggi Kbo Iwo. Kbo Iwo menerima permintaan penduduk dengan rela. Kbo Iwo mulai menggali tanah. Penduduk membantu dengan menyediakan bubuk kapur.

Hari demi hari Kbo Iwo membuat sumur itu. Pada suatu hari selesai makan Kbo Iwo turun ke sumur. Tetapi setelah sampai di dasar sumur Kbo Iwo tertidur karena kekenyangan. Penduduk Bali merasa heran, karena sudah seminggu Kbo Iwo tidak muncul ke atas.

Suatu ketika, penduduk mendengar suara yang aneh. Suara itu sebenarnya suara dengkuran Kbo Iwo. Kepala desa segera memerintahkan penduduk untuk menuangkan kapur ke dalam sumur. Bersamaan dengan penuangan kapur itu terdengarlah teriakan meminta tolong dari Kbo Iwo. Penduduk tetap saja melemparkan kapur sehingga Kbo Iwo tidak berdaya dan menghembuskan nafasnya yang terakhir.

Alangkah terharunya penduduk Bali menyaksikan Kbo Iwo tidak bernafas lagi. Perlahan-lahan air meninggi seolah-olah mengikuti perjalanan Kbo Iwo menghadap Tuhan.

Akhirnya air sumur raksasa itu mulai melimpah dan mengaliri segala penjuru. Lama-lama terbentuklah sebuah danau. Danau itu kemudian disebut Danau Batur. Danau Batur terletak di kaki Gunung Batur, daerah pegunungan Kintamani.

Dikutip dari buku
PT Kumala Aditya Aksara

I. BERILAH TANDA SILANG (X) PADA HURUF a, b, ATAU c YANG MERUPAKAN JAWABAN YANG PALING TEPAT!

Soal 1 s/d 5 berhubungan dengan isi bacaan.

1. Bacaan di atas terdiri dari ... alinea
   a. delapan
   b. sembilan
   c. sepuluh

2. Semua bangunan suci dan rumah penduduk hancur oleh Kbo Iwo.
   Kata hancur pada kalimat di atas seharusnya ... .
   a. menghancurkan
   b. dihancurkan
   c. kehancuran

3. Tempat terjadinya peristiwa cerita itu di ... .
   a. Bali
   b. Lombok
   c. Madura

4. Sikap penduduk Bali terhadap Kbo Iwo adalah ... .
   a. ramah
   b. acuh
   c. marah

5. Bacaan di atas dikutip ... buku PT. Kumala Aditya Aksara.
   a. di
   b. ke
   c. dari

6. Orang Jakarta senang ... Jali-jali.
   a. lagu
   b. tari
   c. seni

7. Kepala sekolah awal pidatonya dengan ucapan salam.
   Kata awal pada kalimat di atas seharusnya ... .
   a. mengawali
   b. diawali
   c. terawali

8. Penggunaan tanda baca kalimat di bawah ini yang benar adalah ... .
   a. Permisi Pak, saya minta izin ke belakang sebentar?
   b. Permisi Pak, saya minta izin ke belakang sebentar!
   c. Permisi, Pak, saya minta izin ke belakang sebentar.

9. Penggunaan huruf besar pada kalimat di bawah ini yang benar adalah ... .
   a. Bu guru, Saya minta izin pergi ke rumah paman.
   b. Bu Guru, Saya minta izin pergi ke rumah Paman.

c. Bu Guru, saya minta izin pergi ke rumah Paman.

10. Ia bercita-cita menjadi terbang. Kata terbang pada kalimat di atas seharusnya ... .
    a. penterbang
    b. menerbang
    c. peterbang

11. Tulis Ana kurang jelas.
    Kata Tulis pada kalimat di atas seharusnya ... .
    a. Tulisan
    b. Tulisannya
    c. Tulisnya

12. Kbo Iwo mulai menggali tanah.
    Pemenggalan kata menggali atas suku katanya pada kalimat di atas yang benar adalah
    a. me-ngga-li
    b. meng-ga-li
    c. meng-gga-li

13. Adik menangis karena pukul temannya.
    Kata pukul pada kalimat di atas seharusnya ... .
    a. memukul
    b. pemukul
    c. dipukul

14. Pemain ... terdiri dari sebelas orang.
    a. volly ball
    b. kasti bal
    c. sepak bola

15. Dengan olah raga badan kita menjadi ... Biasakan berolahraga, agar menjadi ...
    a. sehat
    b. lemah
    c. sakit-sakitan

16. Anak yang tingkah laku sopan-santun disayangi guru ... .
    Kata tingkah pada kalimat di atas seharusnya ... .
    a. bertingkah
    b. ditingkah
    c. tertingkah

17. ... orang itu sungguh sopan.
    a. Tindak-tindak
    b. tindak-tanduk
    c. tanduk-tanduk

18. Pak, ... keadaan Nenek?
    a. bagaimanakah
    b. di manakah
    c. ke manakah

19. ... kita kabulkan permintaannya.
    a. sebaiknya

b. sebaik-baiknya
c. sebaik

20. Penggunaan tanda petik (“) pada kalimat di bawah ini yang benar adalah ... .
a. “Bibi bertanya”, mengapa engkau menangis?
b. Bibi bertanya, ”Mengapa engkau menangis?”
c. Bibi bertanya,” Mengapa engkau menangis”?

II. ISILAH TITIK-TITIK PADA SOAL DI BAWAH INI DENGAN ISIAN YANG BENAR!

21. Upacara bakar mayat di Bali disebut Ngaben.
Kata bakar di atas seharusnya ... . _____

22. Upacara selamatan bagi anak tunggal dalam keluar suku Jawa disebut ruwatan.
Anak tunggal di atas artinya ... . _____

23. Hewan langka lindung pemerintah dari kepunahan.
Kata lindung di atas seharusnya ... . _____

24. Danau Batur terletak di khaki Gunung Batur, daerah Pegunungan Kintamani.
Kata Kintamani terdiri atas ... suku kata. _____

25. Kata lain yang maknanya sama dengan kata trotoar adalah ..... _____

26. Kbo Iwo menerima permintaan penduduk dengan rela.
Kata rela di atas sama artinya dengan kata ... . _____

27. Ayah bekerja membanting tulang.
Kata membanting tulang di atas sama artinya dengan kata ..... _____

28. Burung-burung berkicau riang. Kata berkicau pada kalimat di atas artinya ..... _____

29. Bekas tapak kaki Kbo Iwo terletak disebuah desa, yaitu Tampak Siring.
Kata disebuah seharusnya di tulis ..... _____

30. Mereka menaklukkan Kbo Iwo tanpa menggunakan keras.
Kata keras di atas seharusnya ..... _____

III. JAWABLAH PERTANYAAN ATAU KERJAKAN PERINTAH DI BAWAH INI DENGAN SINGKAT DAN BENAR!

31. raksasa itu - melimpah - air sumur - Akhirnya - mulai - segala penjuru - dan - mengaliri.
Susunlah kata-kata di atas menjadi sebuah kalimat yang baik, dimulai dengan yang bergaris bawah!

_____

32. Buatlah kalimat dengan menggunakan kata "menyaksikan"!

_____

33. Buatlah kalimat dengan menggunakan kata "kekenyangan"!

_____

34. Rin, dapatkah kamu menjelaskan rumus ini?
Buatlah kalimat lain yang menggunakan kata "menjelaskan"!

_____

35. Contoh: Adik bermain-main di halaman
Kalimat di atas terdiri dari:
Subjek: Adik
Predikat: bermain-main
Keterangan: di halaman
Buatlah seperti contoh, kalimat di bawah ini!
Kerbau itu berlarian di tanah lapang.

_____

IV. MENGARANG

Buatlah sebuah karangan dengan tulisan tegak bersambung. Pilihlah salah satu judul karangan di bawah ini.

1. Peringatan Hari Kartini di Sekolahku
2. Lomba Kebersihan Kelas
3. Kerja Bakti di Kampungku

Panjang karangan paling sedikit setengah halaman.

(English Version)

SUMMATIVE TEST FOR PRIMARY SCHOOLS
TERM III, SCHOOL YEAR OF 1995/1996
MALANG MUNICIPALITY

Subject : Indonesian Language Grade: III **Name: .....**
Day: Tuesday, 4 June 1996 Duration: 90 minutes **Time : 07.30 - 09.00**

Read the following passage carefully!

THE ORIGIN OF LAKE BATUR

Once upon a time there was a giant who lived on the island of Bali. His name was Kbo Iwo. Kbo Iwo was very stupid. The only thing he needed was food. His food exceeded the amount of people's usual needs. Therefore the Balinese cooperated together to prepare food for him.

One time, people in Bali ran out of food stock. Kbo Iwo insisted on food. Unfortunately, the Balinese could not fulfill his request. Kbo Iwo went berserk. All the sacred temples and resident houses were destroyed. Peoples were in an uproar by these unexpected events.

Along the Kbo Iwo's footprints flowed waters and finally it became a river. The traces of the footprints took place in a village called Tampak Siring which meant "looked askew".

The people became very upset. They agreed to subjugate Kbo Iwo without force. However, all the actions were not succeed. Kbo Iwo ran a more terrible amuck. At last they decided to treat him nicely.

The Balinese asked him to dig a well as deep as over his height. Kbo Iwo accepted this request voluntarily. He started to dig the ground. The people helped him by preparing the lime powder.

Day by day Kbo Iwo made the well. One day, after having a meal Kbo Iwo went down to the well. But when he arrived at the base of the well he felt asleep because of satiation. People were baffled, why did Kbo Iwo not appear to the surface in a week?

All of a sudden, they heard a strange sound. As a matter of fact, it was a snore of Kbo Iwo. Immediately the village chief commanded his people to pour the lime into the well. Coinciding with that lime pouring they heard Kbo scream for help. However, the people kept on pouring the lime untill he had no strength and at last died.

The Balinese peoples were so emotional when they testified Kbo Iwo passed away. Little by little the water became deeper and deeper as if it followed Kbo Iwo to the Lord.

Finally waters from the giant well overflowed and spread everywhere. Gradually it became a lake. It is named Lake Batur. Lake Batur is located in the foot of Mount Batur, the area of Kintamani mountain range.

Cited from book
PT Kumala Aditya Aksara

I. CROSS (X) THE ANY LETTER OF a, b, or c WHICH YOU CONSIDER AS THE MOST APPROPRIATE!

Questions 1 to 5 are related to the previous reading.

1. The previous reading consists of ..... paragraphs.
   a. eight
   b. nine
   c. ten

2. All the temples and houses were destroyed (hancur) by Kbo Iwo.
   The word hancur in this sentence should be .....
   a. menghancurkan (destroyed)
   b. dihancurkan (be destroyed)
   c. kehancuran (destruction)

3. The story happened in .....
   a. Bali
   b. Lombok
   c. Madura

4. The attitudes of Balinese peoples toward Kbo Iwo were .... .
   a. kind
   b. ignoring
   c. indignant

5. The previous reading is cited .... book of PT. Kumala Aditya Aksara.
   a. in
   b. to
   c. from

6. The Jakarta peoples are favoured in .... Jali-jali.
   a. song
   b. dance
   c. art

7. The headteacher awal (presede) her speech by greetings.
   The word awal in the sentence should be .....
   a. mengawali (precedes)
   b. diawali (being preceded)
   c. terawali (automatically being preceded)

8. The right use of punctuation mark in the following sentences is .... .
   a. Excuse me, I ask your permission to leave for a while?
   b. Excuse me, I ask your permission to leave for a while!
   c. Excuse me, I ask your permission to leave for a while.

9. The right use of capital letter in the following sentences is .... .
   a. Bu guru (special address for female teachers), i ask your permission to go to my uncle's house.

b. Bu Guru (as above), i ask your permission to go to my uncle's house.
c. Bu Guru (as above), I ask your permission to go to my uncle's house.

10. He longs for being terbang (fly). The word terbang on the sentence should be .... .
    a. penterbang (flyer, with wrong blending)
    b. menerbang (flying)
    c. penerbang (flyer)

11. Tulis (write) Ana is not clear.
    The word Tulis on the sentence should be .... .
    a. Tulisan (the writing)
    b. Tulisannya (one's writing)
    c. Tulisnya (she writes)

12. Kbo Iwo started menggali (digging) the ground.
    The fragmentation of word menggali, as appeared on the sentence, into right syllables is ....
    a. me-ngga-li
    b. meng-ga-li
    c. meng-gga-li

13. That younger sister cries because of pukul (hit) by her friend.
    The word pukul on the sentence should be .... .
    a. memukul (hitting)
    b. pemukul (hammer)
    c. dipukul (being hit)

14. Players in .... are eleven peoples.
    a. volly bal (volley ball)
    b. kasti bal (softball game)
    c. sepak bola (soccer)

15. By physical exercises we shall be .... . Being accustomed to sport, so that you shall be ....
    a. healthy
    b. weak
    c. sick

16. Children with good tingkah laku (behaviour) are liked by their teachers ... .
    The word tingkah on the sentence should be ....
    a. bertingkah (having behaviour)
    b. ditingkah (be behaved)
    c. tertingkah (not common expression)

17. ... that person is really polite.
    a. Tindak-tindak (actions, with wrong plural expression)
    b. Tindak-tanduk (actions)
    c. Tanduk-tanduk (horns)

18. Father, ... the situation of Grandmother?
    a. bagaimanakah (how is)
    b.di manakah (where is)
    c. ke manakah (to where)

19. ... we fulfill his request.
    a. sebaiknya (it is better)
    b. sebaik-baiknya (the best)
    c. sebaik (as good)

20. The use right of (") on the sentences below is ....
    a. "Auntie asked", why are you crying?
    b. Auntie asked, "Why are you crying?"
    c. Auntie asked, "Why are you crying"?

II. WRITE YOUR RIGHT ANSWER IN THE BLANK SPACE BESIDE EACH QUESTION!

21. The ceremony of corpse bakar (burning) in Bali is called Ngaben.
    The word bakar should be ... . _____

22. The ceremony of religious meal for anak tunggal (the only son)
    in the Javanese family is called "ruwatan".
    "Anak tunggal" means ... . _____

23. Rarely animals lindung (protect) by government from extinction.
    The word lindung on the sentence should be ... . _____

24. Lake Batur is located in the foot of Mount Batur,
    the area of Kintamani mountain range.
    The word Kintamani consists of .... syllables. _____

25. The other word with the same meaning of trotoar
    is ..... _____

26. Kbo Iwo accepted the request of the villagers
    rela (voluntarily).
    Word rela is a synonym to ... . _____

27. Father works membanting tulang (i.e to do all in his power).
    The word membanting tulang is a synonym to .... _____

28. Birds berkicau (warble) cheerfully.
    The word berkicau is a synonym to ..... _____

29. The traces of Kbo Iwo's footprints were located
    disebuah (in, with wrong writing) village,
    called Tampak Siring.
    The word disebuah should be written as ..... _____

30. They agreed to subjugate Kbo Iwo without using
    keras (hard).

The word keras should be .....

III. ANSWER THE QUESTION OR FOLLOWM THE INSTRUCTIONS BELOW!

31. the giant - overflow - well water - At last - start - all points of the compass - and - flow through.
Arrange a good sentence by using these words, starting with the underlined one!

32. Create a sentence by using "menyaksikan" (testify)!

33. Create a sentence by using "kekenyangan" (being satisfied)!

34. Rin, can you menjelaskan (explain) this formula?
Create another sententece by using "menjelaskan"!

35. Example: My younger brother is playing in the yard.
The sentence consists of:
Subject: My younger brother
Predicate: is playing
Location: in the yard
Do the same description for the following sentence!
The buffalo is running in an open field.

IV. COMPOSITION

Do a composition by using italic upright writing. Choose one of the following topics below.

1. The anniversary of Kartini Day in my school
2. The competition class tidiness
3. Service activities in my village

The minimum length is a half page.

(Indonesian Version)

ULANGAN UMUM SD CATURWULAN III TAHUN PELAJARAN 1995/1996
KOTAMADYA MALANG

Pelajaran : Bahasa Indonesia **Kelas : IV (Empat)** **Nama: .....**
Hari, Tanggal: Selasa, 4 Juni 1996 **Waktu: 120 Menit** **Pukul: 07.30 - 09.30**

Bacalah dengan cermat!

Gigiku Sayang

Hari Kamis Ririn tidak masuk sekolah. Surat yang dikirim ibunya ke sekolah menyatakan Ririn diperiksakan giginya ke Puskesmas. Dua hari kemudian Ririn sudah mengikuti pelajaran. Pagi-pagi ia sudah tiba di sekolah diantar kakaknya.

Rina : "Ririn, kamu sudah masuk? Kena apa gigimu, Rin?"
Ririn : "Sejak beberapa hari yang lalu sudah terasa sakit. Puncaknya pada saat ulangan matematika hari Selasa itu. Gara-gara gigi sakit itulah ulangan matematikaku hanya mendapat enam."
Rinto : "Alaah, biasanya dapat berapa. Gigi yang disalahkan!"
Rina : "Jangan digubris, Rin! Kamu disamakan dengan dirinya aja! Nilai matematika Rinto 'kan tak pernah lebih dari lima!"
Rinto : "Nah, marah 'kan? Begitu saja marah, 'kan cuma bercanda!"
Rina : "Tidak! Ada apa marah, To? Hanya kamu bandel!"
Rika : "Masalahnya 'kan Ririn sakit gigi. Nilai matematika yang diperdebatkan!"
Rinto : "Iya Rin, bagaimana gigimu sekarang?"
Ririn : "Gigiku yang sakit itu terpaksa dicabut. Kata dokter, kalau tak dicabut saya akan terus menerus sakit gigi. Aduh, gigiku sayang! Aku merasa kehilangan sesuatu yang sangat berharga. Aku yang semuda ini sudah harus menanggalkan gigi, walaupun hanya satu."

M. Wachid

I. BERILAH TANDA SILANG (X) PADA HURUF a, b, ATAU c YANG MERUPAKAN JAWABAN YANG PALING BENAR!

1. Judul percakapan di atas "Gigiku Sayang"!
   Siapa-ku pada "Gigiku"? .....
   a. Ririn b. Rina
   c. Rika d. Rinto

2. Hari Kamis Ririn tidak masuk sekolah.
   a. Jumat b. Sabtu
   c. Senin d. Selasa

3. Berapa orang yang terlibat dalam percakapan di atas? .....
   a. 2 b. 3
   c. 4 d. 5

4. Di mana percakapan di atas berlangsung? .....
   a. di rumah Ririn
   b. di Puskesmas
   c. di rumah sakit
   d. di sekolah

5. Mengapa gigi Ririn dicabut? .....
   a. Karena menyebabkan sakit
   b. Karena sudah rusak
   c. Karena sakit terus menerus
   d. Karena sudah berlubang

6. Di koperasi sekolah kita bisa membeli dengan mengangsur.
   "Mengangsur" artinya .....
   a. Tidak kontan
   b. Membayar sedikit-sedikit
   c. Membayar bertahap
   d. Sedikit demi sedikit

7. Ririn patuh pada peraturan sekolah. Makna "patuh" adalah .....
   a. Menjalankan aturan
   b. Melaksanakan aturan
   c. Suka menurut aturan
   d. Mengikuti aturan

8. Pak Ali sedang menggerakkan penggiling kedelai.
   "Penggiling" bermakna .....
   a. Perabot untuk penggiling
   b. Peralatan penggiling
   c. Orang yang menggiling
   d. Alat penggiling

9. Para transmigran telah mendapat 5 ha lahan.
   "Lahan" bermakna .....
   a. Tanah garapan
   b. Tanah pertanian
   c. Tanah pekarangan
   d. tanah perkebunan

10. Rika telah membayar angsuran terakhir pembelian kamusnya.
    Kata yang sama artinya dengan "angsuran" adalah .....
    a. Pelunasan
    b. Cicilan
    d. Mencicil
    d. Mengangsur

11. Sebelum masuk kelas mereka berbaris dengan teratur.
    Kata yang bermakna sama dengan "teratur" adalah .....
    a. Sejajar
    b. Berjajar
    c. Tertib
    d. Lurus

12. Penggilingan itu mampu memecah kedelai sampai lembut.
    "Lembut" bermakna sama dengan kata .....
    a. Lemas
    b. Encer
    c. Lunak
    d. Halus

13. Lahan pertanian Pak Suto di hulu sungai Kapuas.
    a. Udik
    b. Lembah
    c. Muara
    d. Hilir

14. Berbelanja di koperasi mendapat "untung" ganda.
    "Untung" sebaiknya disempurnakan menjadi .....
    a. Menguntungkan
    b. Keuntungan
    c. Untung-untungan
    d. Beruntung

15. Bertingkah lakulah yang baik, kamu "teladan" adik-adikmu.
"Teladan" seharusnya .....
a. Keteladanan
b. Berteladankan
c. Diteladani
d. Meneladani

16. "Putar" roda penggilingan itu kurang keras.
"Putar" lebih baik diubah menjadi .....
a. Memutarnya
b. Pemutaran
c. Berputarnya
d. Perputaran

17. Para transmigran "bahu" dalam menggarap tanah pertaniannya.
"Bahu" sebaiknya diubah menjadi .....
a. Bahu-membahu
b. Berbahu-bahuan
c. Berbahu-bahu
d. Membahu-bahu

18. Di samping mempunyai hutang, koperasi juga memiliki .....
Titik-titik dalam kalimat ini tepat jika diisi lawan kata "hutang", yakni .....
a. Keuntungan
b. Piutang
c. Pinjaman
d. Angsuran

19. Rina selalu mengindahkan nasehat ibunya. Lawan kata "mengindahkan" adalah .....
a. Mempedulikan
b. Melanggar
c. Mengabaikan
d. Memperhatikan

20. Putaran roda penggilingan itu tersendat-sendat. Lawan kata "tersendat-sendat" adalah .....
a. Keras
b. Kencang
c. Cepat
d. Lancar

II. ISILAH TITIK-TITIK PADA SOAL DI BAWAH INI DENGAN ISIAN YANG BENAR!

21. Pukul enam Pak Suto berangkat ke huma dan pada pukul enam sore baru ia .... tiba di rumah _____

22. Koperasi sekolah SD Rinto pernah dikunjungi pejabat Dekopin. "Dekopin" singkatan dari ..... _____

23. Tata tertib sekolah yang baru telah disampaikan kepada semua wali murid sertai juklaknya.
Kepanjangan "juklak" adalah ..... _____

24. Alat perontok padi yang diciptakan mahasiswa itu dikirim ke Puspitek untuk diteliti kecanggihannya.
"Puspitek" singkatan dari ..... _____

25. Para transmigran mendapat penataran tentang Wasantara.
Kepanjangan "Wasantara" adalah ..... _____

26. Setahun sekali koperasi sekolah membagikan SHU kepada semua anggotanya.
"SHU" singkatan dari ..... _____

27. Pemerintah mendirikan BPMD untuk meningkatkan kecerdasan masyarakat desa.
Kepanjangan "BPMD" adalah ..... _____

28. Tugas BPPT juga ikut mendorong tumbuhnya penciptaan alat-alat berteknologi sederhana.
"BPPT" singkatan dari ..... _____

29. Warga transmigran berkewajiban menjaga kelestarian DAS di dekat lahannya.
Kepanjangan DAS adalah ..... _____

30. "Rina selalu taat kepada peraturan sekolah!" tegas Pak guru
"Taat" sama artinya dengan kata ..... _____

31. Masalah pengairan di persawahan baru itu sudah diatur oleh petugas desa.
Kata yang sama maknanya dengan "pengairan" adalah ... _____

32. Pengurus koperasi sekolah Ririn masih perlu mendapat "bimbing" dari guru.
"Bimbing" sebaiknya disempurnakan menjadi ..... _____

33. Karena "macet" mesin itulah tiga hari saya tidak menjual tahu.
"Macet" seharusnya ..... _____

34. "Ririn di bawa Ibunya ke-Puskesmas untuk diperiksakan gigi-nya", kata bu Ita.
Penulisan kalimat di atas ini salah, yang benar ..... _____

35. Ririn memberi tahu Rinto. "Ibu Rinto sedang di-rawat di rsu, di-ta-ngani Dr.A.H.Nasution.
Kalimat di atas salah tulis, yang betul adalah ..... _____

III. JAWABLAH PERTANYAAN ATAU KERJAKAN PERINTAH DI BAWAH INI DENGAN SINGKAT DAN BENAR!

36. Kalian menjadi anggota koperasi sekolah 'kan?
Uraikan dalam beberapa kalimat bagaimana caranya menjadi anggota koperasi sekolahmu!

_____

_____

37. Kamu akan membeli sesuatu ke toko koperasi sekolahmu. Ceritakan apa yang kamu lakukan, dalam beberapa kalimat saja!

38. Kalian sering membaca buku-buku perpustakaan 'kan? Buku apa yang kalian baca? Nah, pasti ada bagian atau isi yang berkesan. Tulis kesan kalian itu dalam beberapa kalimat!

39. Di sekolah kalian pasti ada peraturan "tata tertib sekolah". Bacalah! Bagaimana kesan kalian? Tulis kesan kalian dalam beberapa kalimat saja!

40. Gigi kalian pernah diperiksa dokter gigi 'kan? Setelah itu, dokter memberi saran-saran agar gigi kalian tetap sehat. Sekarang, sampaikan gagasan kalian tentang kesehatan gigi ini kepada teman sekolah kalian! Cukup beberapa kalimat saja!

IV. MENGARANG

Kalian pernah berobat dan memeriksakan kesehatan 'kan? Yang diobati atau yang diperiksakan: gigi, mata, telinga, atau bagian-bagian tubuh kalian yang lain. Berobat atau periksanya bisa di Puskesmas, rumah sakit, atau tempat-tempat pemeriksaan atau pengobatan lainnya.

Sekarang ceritakan wujud bangunan beserta ruang-ruangannya sekaligus dengan kegunaan masing-masing. Jangan lupa keadaan lingkungan sekitar bangunan itu: halamannya, tamannya, pagarnya, dan sebagainya.

Catatan:

1. Panjang karangan 4-5 paragraf dengan 200-400 kata.
2. Jangan lupa memberi judul (nama) setelah karangan kalian jadi.
3. Tuliskan tegak bersambung dengan ejaan (penulisan) yang benar.
4. Perhatikan kerapihan dan kebersihan, serta jarak antara tepi kertas (atas, bawah, samping kiri dan kanan) dengan tulisan harus tepat.
5. Karangan bisa ditulis di kertas lain.

(English Version)

SUMMATIVE TEST FOR PRIMARY SCHOOLS
TERM III, SCHOOL YEAR OF 1995/1996
MALANG MUNICIPALITY

Subject : Indonesian Language Grade: IV **Name: .....**
Day: Tuesday, 4 June 1996 Duration: 120 minutes **Time : 07.30 - 09.30**

Read the following passage carefully!

OH MY SORE TOOTH

Ririn could not go to school on Thursday. Her mother sent a letter to school, explaining that Ririn went to clinic to see a dentist. Two days later Ririn entered the class. She arrived at school very early in the morning brought by her elder brother.

Rina : "Ririn, you have come in? What happened to your tooth, Rin?"
Ririn : "Some days ago it felt very painful. It culminated before the mathematics test on Tuesday. Because of that my mathematics result declined only six."
Rinto : "Hmm, what is your usual score. Are you blame your tooth!"
Rina : "Do not heed it, Rin! He compared you with his! Rinto's scores in mathematics have never been above five!"
Rinto : "So, are you upset? Being upset just like that, I am only teasing!"
Rina : "No! What for, being upset? You are only obstinate!"
Rika : "The problem is Ririn's toothache. Why do you dispute about mathematics score!"
Rinto : "Yes Rin, how is your tooth at the moment?"
Ririn : "At last my tooth was pulled. According to the dentist, it would be continuous pain if it were not pulled out. Oh my sore tooth! I lost a valuable thing at my age, although it is only one."

M. Wachid

I. CROSS (X) THE LETTER a, b, OR c WHICH YOU CONSIDER AS THE MOST APPROPRIATE!

1. The conversation title above is "Oh my sore tooth"!
   Who is "my" refered to in the title?
   a. Ririn b. Rina
   c. Rika d. Rinto

2. Ririn was absent on Thursday. What day did she attend the school again? ....
   a. Friday b. Saturday
   c. Monday d. Tuesday

3. How many peoples were involved on the conversation above? .....
   a. 2 b. 3
   c. 4 d. 5

4. Where did the conversation take place? .....
   a. in Ririn's house
   b. in clinic
   c. in hospital
   d. in school

5. Why should Ririn's tooth be pulled? .....
   a. Because of desease
   b. Because of corruption
   c. Because of continuous pain
   d. Because of a hole

6. In school union we may buy by "mengangsur" (pay in instalments)
   "Mengangsur" means ....
   a. Pay cash
   b. Pay little by little
   c. Step by step
   d. Few by few

7. Ririn "patuh" (obey) the school regulations. The meaning of "patuh" is .....
   a. Run the regulations
   b. Practicing regulation
   c. Like the regulatons
   d. Follow the regulations

8. Mr. Ali is moving the soy bean "penggiling" (mill)
   "Penggiling" means .....
   a. Accessories for milling
   b. Equipment of a mill
   c. Person who mills
   d. Instrument for milling

9. The transmigrants got 5 hectares "lahan" (area of land).
   "Lahan" means .....
   a. Tanah garapan (land for working)
   b. Tanah pertanian (land for agriculture)
   c. Tanah pekarangan (yard)
   d. Tanah perkebunan (land for horticulture)

10. Rika paind the dictionary "dengan angsuran" (in installments).
    The similar meaning for "dengan angsuran" is .....
    a. Pelunasan (discharging of a debt)
    b. Cicilan (installment)
    d. Mencicil (debts in installment)
    d. Mengangsur (paying continually)

11. Before entering the classroom they line up "dengan teratur" (orderly).
    The word "teratur" is the synonym to .....
    a. Sejajar (parallel)
    b. Berjajar (in a row)
    c. Tertib (in order)
    d. Lurus (straight)

12. The mill can break the soy beans to be "lembut" (smooth).
    "Lembut" means .....
    a. Lemas (weak)
    b. Encer (thin)
    c. Lunak (soft)
    d. Halus (delicate)

13. The farmland of Pak Suto situated in "hulu" (upper end) of River Kapuas.
    The "hulu" means .....
    a. Udik (upper course)
    b. Lembah (valley)
    c. Muara (estuary)
    d. Hilir (lower course)

14. Shopping in a union has a double "untung" (profit).
    "Untung" should be changed to .....
    a. Menguntungkan (favour)
    b. Keuntungan (profit)
    c. Untung-untungan (at random)
    d. Beruntung (lucky)

15. Be in good manner, you "teladan" (example) for your younger siblings.
"Teladan" should be .....
a. Keteladanan (modelling) b. Berteladankan (having example)
c. Diteladani (being followed) d. Meneladani (be following)

16. "Putar" (rotate) the mill wheel was not fast.
"Putar" should be changed to .....
a. Memutarnya (rotating) b. Pemutaran (rotation)
c. Berputarnya (turning) d. Perputaran (turn-over)

17. The transmigrants "bahu" (shoulder) in tilling the land.
"Bahu" should be changed to .....
a. Bahu-membahu (cooperate) b. Berbahu-bahuan (shoulder to shoulder)
c. Berbahu-bahu (shouldering) d. Membahu-bahu (carrying on shoulder)

18. Besides debt, the union also has .....
Fill in with the opposite meaning of "debt".
a. Keuntungan (profit) b. Piutang (credit)
c. Pinjaman (loan) d. Angsuran (installment)

19. Rina always heeds her mother's advices.
The opposite of "heeds" is .....
a. Mempedulikan (pay attention to) b. Melanggar (trespass)
c. Mengabaikan (ignore) d. Memperhatikan (mind)

20. The rotation of the mill wheel is slow.
The opposite of "slow" is .....
a. Keras (hard) b. Kencang (tight)
c. Cepat (fast) d. Lancar (fluent)

II. WRITE YOUR ANSWER IN THE BLANK SPACE BESIDE EACH QUESTION!

21. At six o'clock in the morning Pak Suto leaves for the office
and at six in the evening he ..... at home. _____

22. The union at Rinto's school had been visited by the officials
of Dekopin. "Dekopin" stands for ..... _____

23. The new school regulations have just been conveyed to all
the parents with "juklak" (the operational instructions).
"Juklak" stands for ..... _____

24. The instrument for dropping rice created by the university
student was sent to Puspitek to be examined.
"Puspitek" stands for ..... _____

25. The transmigrants were briefed about Wasantara
(the unity of the nation)
"Wasantara" stands for ..... _____

26. Once a year the school union divides the SHU (profits) to all the members.
"SHU" stands for ..... _____

27. The government established BPMD (centre for villagers) for sharpening the villagers' mind.
"BPMD" stands for ..... _____

28. The function of BPPT (centre for research and technology) is also motivating the development of applied technology.
"BPPT" stands for ..... _____

29. The transmigrants have to maintain the existence of DAS (the river's flow environment) dekat lahannya.
"DAS" stands for ..... _____

30. "Rina have to obey the school rules!" said the teacher
The synonym of "obey" is ..... _____

31. The irigation problems in the new rice field area have been sorted out by the village chief.
The synonym of "irigation" is ..... _____

32. The board of Ririn's school union has to "bimbing" (guide) by teachers.
"Bimbing" should be ..... _____

33. Because of the machine "macet" (stuck) I have not sold any tofu for three days.
"Macet" should be ..... _____

34. "Ririn was sent by her mother to-clinic for her-tooth examination", said Ita.
This wrong written sentence should be ..... _____

35. Ririn told Rinto. "Rinto's mother is-being treated at-the general-hospital-by Dr.A.H.Nasution.
This wrong written sentence should be ..... _____

III. ANSWER THE QUESTIONS OR FOLLOW THE INSTRUCTIONS !

36. You are a member of school union, aren't you?
Explain how you become a member of your school union!
_____
_____

37. You are going to buy something from your school union. Explain what you have to do.
_____
_____

38. You often read books from the library, don't you? What books are they? It must be some impressive parts of the book for you. Write your impression in some sentences.

39. There must have "school regulations" in your school. What is your opinion these regulations? Write in a few sentences.

40. Your teeth must have been examined by a dentist. After that the dentist gave some advice to keep them healthy. Now tell about the tooth health to your schoolmate in a few sentences.

IV. COMPOSITION

You once have been visiting a doctor, haven't you? The doctor examines your teeth, eyes, ears, and other parts of your body. It could be in a clinic, hospital, or other places.
Now tell the existence of the building, the rooms and their functions. Do not forget about the surroundings: front yard, garden, fence, and so on.

Note:

1. The lenght is about 4-5 paragraphs with 200-400 words.
2. Do not forget to give it a title.
3. Use longhand with the right spelling
4. Maintain the tidiness and the margin (top, bottom, left, and right)
5. You may use more than one piece of papers.

(Indonesian Version)

ULANGAN UMUM SD CATURWULAN III TAHUN PELAJARAN 1995/1996
KOTAMADYA MALANG

Pelajaran : Bahasa Indonesia **Kelas : V (Lima)** **Nama: .....**
Hari, Tanggal: Selasa, 4 Juni 1996 **Waktu: 150 Menit** **Pukul: 07.30 - 10.00**

BACALAH DENGAN CERMAT!

KINCIR AIR YANG SERBA GUNA

Sawah Paman Midun berbatas dengan bukit kecil. Bukit terawat baik. Hutannya masih lebat. Oleh karena itu, sungai kecil yang mengalir dari bukit itu tidak pernah kering pada musim kemaru dan tidak pernah banjir pada musim penghujan.

Dua puluh meter dari sawah paman Midun terdapat air terjun. Tingginya lebih kurang dua meter. Orang kampung sepakat untuk membuat kincir air di sana. Untuk itu, perlu dibuat saluran air yang dibuat dari papan, paku, dan seng. Air terjun mengalir menyatu, maka tekanannyalebih kuat. Karena itu, kincir air berputar lebih cepat.

Poros kincir diperpanjang dan dihubungkan dengan alu penumpuk padi. Poros yang satu lagi dihubungkan dengan dinamo pembangkit listrik. Air buangan dari kincir merupakan arus deras pada kolam ikan di pinggir sawah paman Midun. Ikan lebih cepat besar karena bergerak terus. Dari kolam ikan-ikan itu dibuat pintu air ke saluran air yang dialirkan ke sawah-sawah kampung paman Midun. Sisa makanan ikan dari dedak padi yang digiling menjadi pupuk alam pada sawah penduduk.

Demikianlah manfaat kincir air yang serbaguna. Penduduk kampung paman Midun memperoleh penerangan listrik. Menumbuk padi tidak perlu memakai tenaga manusia. Karena kincir dapat dihasilkan ikan yang cepat besar dan sawah yang subur.

Lancar Berbahasa Indonesia 3

I. PILIHAN GANDA, BERILAH TANDA SILANG (X) PADA SALAH SATU HURUF a, b, c ATAU d YANG MERUPAKAN JAWABAN PALING BENAR!

1. Sawah Paman Midun tidak jauh dari air terjun. Kalimat yang menyatakan hal itu ialah ....
   a. Air terjun tingginya kurang dari dua meter
   b. Sawah paman Midun berbatas dengan bukit
   c. Air terjun mengalir menyatu di sawah Paman Midun
   d. Dua puluh meter dari sawah Paman Midun terdapat air terjun

2. Kincir air dapat berputar cepat sebab .....
   a. Air terjun disatukan sehingga bertekanan kuat
   b. Tinggi air terjun itu kurang lebih dua meter
   c. Air terjun disalurkan melalui saluran buatan
   d. Letak air terjun hanya dua puluh meter dari sawah paman Midun

3. Sisa makanan ikan berguna untuk sawah penduduk karena .....
   a. Aliran air lancar
   b. Mengalir ke sawah
   c. Mencegah hama
   d. Menjadi pupuk alam

4. Kalimat yang menjadi inti paragraf keempat ialah .....
   a. Penduduk kampung paman Midun memperoleh penerangan listrik
   b. Karena kincir dapat dihasilkan ikan yang cepat besar dan sawah yang subur
   c. Demikianlah manfaat kincir air yang serba guna
   d. Menumbuk padi tidak perlu memakai tenaga manusia

5. Paragraf yang isinya sesuai benar dengan judul wacana di atas adalah .....
   a. Kesatu
   b. Kedua
   c. Ketiga
   d. Keempat

6. Indonesia terkenal dengan perahu bercadik. Persamaan kata cadik ialah .....
   a. Layar
   b. Tutup
   c. Katir
   d. Sampan

7. Kereta api Argo Bromo tidak berhenti di ..... Lamongan
   a. Terminal
   b. Stasiun
   c. Halte
   d. Bandara

8. Penulisan alamat surat di bawah ini yang benar ialah .....
   a. Kepada
      Yth. Saudara Dr. Budi
      di Surabaya
   b. Kepada
      Yth. Dr. budi
      di Surabaya
   c. Kepada
      Dr. Budi
      di Surabaya
   d. Kepada
      Yth. Dr. Budi
      di surabaya

9. Ayah Ali seorang pegawai pemerintah yang menduduki unsur pimpinan dan menduduki pangkat tertentu. Beliau terkenal sebagai seorang ..... yang amat jujur dan tekun bertugas. Kata yang tepat untuk menggantikan bagian yang bergaris bawah ialah .....
   a. Penjabat b. Petugas c. Kepala d. Pejabat

10. Selama hidupku telah banyak ..... rantau yang kuarungi.
    Kata yang tepat untuk melengkapi kalimat di atas ialah .....
    a. Pantai b. Selat c. Teluk d. Tanjung

11. Mobil yang tergelincir masuk ke sungai itu diangkat dengan menggunakan .....
    Kata yang tepat untuk melengkapi kalimat di atas ialah .....
    a. Truk b. Tali besar c. Dongkrak d. Katrol

12. Kehidupan Ny. Halimah sangat menderita. Ia sering duduk termenung. Hatinya sedih. Kesedihannya hanya dapat disimpannya sendiri. Ia tidak mau menceriterakannya kepada saudaranya apalagi kepada orang lain. Peribahasa yang tepat untuk melukiskan keadaan Ny. Halimah adalah .....
    a. Air diminum serasa duri
    b. Air pun ada pasang surutnya
    c. Air mata jatuh ke perut
    d. Menjilat air liur

13. Pak Guru menempelkan gambar perkembangan angkatan laut .... dinding kelas 5 (lima).
Kata yang tepat untuk melengkapi kalimat di atas adalah .....
a. di
b. pada
c. ke
d. kepada

14. Adik menangis
Adik jatuh dari sepada motor.
Penggabungan kalimat di atas yang benar ialah .....
a. Karena jatuh dari sepeda motor, Adik menangis
b. Ketika jatuh dari sepeda motor, Adik menangis
c. Meskipun jatuh dari sepeda motor, Adik menangis
d. Dengan jatuh dari sepeda motor, Adik menangis

15. Mira sedang membawakan ..... Jawa Klasik.
Kata yang tepat untuk melengkapi kalimat di atas ialah .....
a. menari
b. tari
c. bertari
d. tarian

16. Susunan kalimat di bawah ini yang benar ialah .....
a. Tetap belajar ia meskipun kesehatannya terganggu
b. Ia kesehatannya terganggu meskipun tetap belajar
c. Meskipun tetap belajar kesehatannya ia terganggu
d. Ia tetap belajar meskipun kesehatannya terganggu

17. Ayah berkata, "... secepatnya pamanmu agar segera datang!"
Kata yang tepat untuk melengkapi kalimat di atas ialah .....
a. Suratan
b. Suratkan
c. Menyurati
d. Surati

18. Penggunaan kata bergaris bawah pada kalimat di bawah ini yang benar ialah .....
a. Setelah puas mandi di laut, mereka <u>bilasi</u> dahulu sebelum bertukar pakaian
b. Setelah puas mandi di laut mereka <u>membilas</u> dahulu sebelum bertukar pakaian
c. Setelah puas mandi di laut mereka <u>berbilas</u> dahulu sebelum bertukar pakaian
d. Setelah puas mandi di laut mereka <u>dibilasi</u> dahulu sebelum bertukar pakaian

19. Pada hari Minggu siswa kelas lima .... bela diri di sekolahnya.
Kata yang benar untuk melengkapi kalimat di atas ialah .....
a. Latihan
b. Berlatih
c. Melatih
d. Berlatihan

20. Petugas lapangan berkata, "... tanah kosongmu dengan tanaman produktif!"
Kata yang tepat untuk melengkapi kalimat di atas ialah .....
a. Tanami
b. Di tanami
c. Tanaman
d. Tanamkan

21. Pak Guru <u>tugas</u> siswanya membersihkan halaman kelas.
Kata <u>tugas</u> seharusnya disempurnakan menjadi ...
a. Menugaskan
b. Menugasi
c. Bertugas
d. Ditugasi

22. Aditya berkata, "Ayahku sedang ke Jakarta".
Kalimat tidak langsung yang benar kalimat di atas ialah .....
a. Aditya berkata bahwa ayahnya sedang ke Jakarta
b. Aditya mengatakan ayahku sedang ke Jakarta
c. Aditya mengatakan bahwa ayahku sedang ke Jakarta
d. Aditya mengatakan bahwa ayah mereka sedang ke Jakarta

23. Pak Guru mengatakan bahwa kami naik kelas semua.
Kalimat langsung yang benar kalimat di atas ialah .....
a. Pak Guru berkata, "Kami naik kelas semua!"
b. Pak Guru berkata, "Kami semua naik kelas semua!"
c. Pak Guru berkata, "Mereka naik kelas semua!"
d. Pak Guru berkata, "Kami semua naik kelas!"

24. Kalimat di bawah ini yang mengandung kata bersisipan ialah .....
a. Buku Berhasil karena Terampil dikarang oleh Dahlan Djazik
b. Pak Dulah menggelindingkan drum ke tepi jalan
c. Setiap anggota pramuka mendapat pelajaran tali-temali
d. Karena jalan licin ia jatuh tergelincir

25. Hati-hati pompa udara ke dalam bola voli itu tidak mudah! Kata pompa seharusnya .....
a. Memompa
b. Memompakan
c. Dipompa
d. Dipompakan

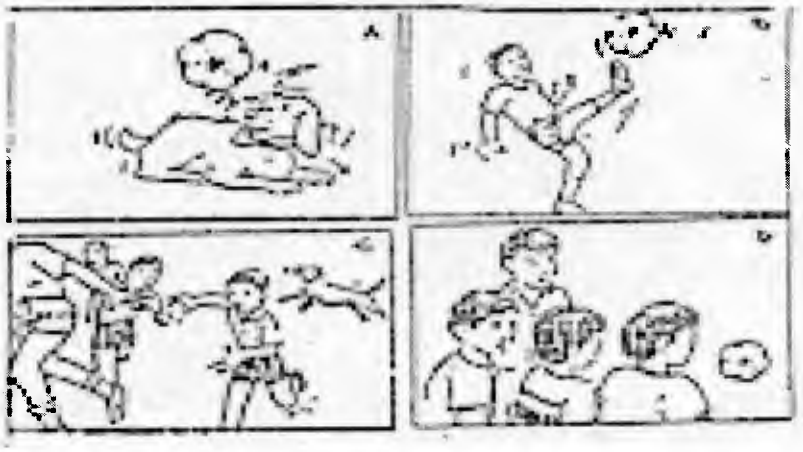
26. Penulisan kalimat di bawah ini yang benar ialah .....
a. "Angkat kopor itu ke sini!"
b. "Angkat kopor itu kesini"
c. "Angkat kopor itu ke sini"
d. "Angkat kopor itu kesini!"

27. Pada hari Sabtu sore itu, pukul 15.00 sampai dengan pukul 17.30 berlangsung pertandingan voli antara SD Karah dengan SD Rangkah. Pertandingan sore itu berlangsung amat seru karena kedua regu sama-sama tangguh.
Laporan di atas mempunyai kekurangan, yaitu tentang ..... pertandingan.
a. Waktu
b. Tempat
c. Jenis
d. Jalan

28. Kalimat yang menyatakan perintah ialah .....
a. Masakan kereta api Argo Bromo terlambat!
b. Saya tidak percaya ceritamu itu!
c. Tolong berikan presensi itu kepada kepala sekolah!
d. Bawa ke luar kursi ini!

29. Kalimat yang menyatakan suatu perasaan tertentu ialah .....
a. Gila! Pergi ke sana!
b. Masa makanan itu enak!
c. Gila! Murdi sekali suara Any!
d. Maaf, saya terlambat!

30. Perhatikan urutan gambar seri di bawah ini!



Urutan peristiwa yang paling baik dari gambar di atas adalah .....

a. DBCA
b. BACD
c. CDBA
d. DBAC

31. Apakah yang kupunya, anak-anakku
selain buku-buku dan sedikit ilmu
sumber pengabdianku kepadamu

Dari seorang Guru kepada Murid-muridnya, Hartoyo Andangdjaja

Ungkapan perasaan yang timbul pada puisi di atas ialah .....

a. Rasa bangga
b. Rendah diri
c. Rasa sombong
d. Kesederhanaan

32. Kalimat di bawah ini yang menyatakan ketidakpercayaan ialah .....

a. "Ambil gelas itu!"
b. "Tolong ambilkan gelas itu!"
c. "Betulkah gelas ini yang kuminta?"
d. "Kumohon kuambilkan gelas itu!"

33. "Kumohon kau rahasiakan pertemuan kita ini!"
Ucapan di atas menyatakan perasaan .....

a. Perintah
b. Kesungguhan
c. Perasaan/emosi
d. Ketidakpercayaan

34. Adik-adikku yang manis
janganlah bertanya ke mana ibu pergi
sebab ibu tak pernah pergi
dari rumah kita

Kepada Adik-adikku, *Arifin C.Noor*

Suasana yang muncul pada kutipan di atas ialah .....

a. Keharuan
b. Keakraban
c. Kegembiraan
d. Santai

35. "Pensil EDNA enak dipakai harga terjangkau".
Maksud kalimat di atas ialah .....

a. Perintah memakai pensil
b. Pengumuman tentang pensil
c. Agar orang mengetahui
d. Supaya kita membeli

II. ISIAN.
ISILAH TITIK-TITIK PADA SOAL DI BAWAH INI DENGAN JAWABAN YANG BENAR!

36. Saya tidak sedang menulis ... sedang menggambar. _____

37. Ayah Ratna seorang ..... emas yang terampil sehingga setiap karyanya disukai pembeli. _____

38. Rusdi bekerja di tempat kerajinan tangan.
Rusdi seorang ..... yang baik. _____

39. Untuk menarik minat pembeli, pedagang berlomba-lomba membanding ..... barang-barangnya. _____

40. Ketika bertemu kami ia mencecar pertanyaan tentang banyak hal. Mencecar artinya..... _____

41. Setiap orang tua harus ..... dada menghadapi kelakuan anaknya. _____

42. Lama nian berpangku tangan
Asyik terlena didaduh ombak
Mari kita sama serentak
Atur barisan kejar tujuan
(Bekerja, Mozaza)
Berpangku tangan artinya ..... _____

43. "Orang tua kakekku disebut orang Bugis", kata Adi kepada teman-temannya.
"..... disebut orang Bugis." kata Adi kepada teman-temannya. _____

44. Berakit-rakit ke hulu ..... ketepian. _____

45. Penduduk kampung Paman Midun memperoleh penerangan listrik. Penerangan listrik ..... oleh penduduk kampung Paman Midun. _____

III. URAIAN.
JAWABLAH PERTANYAAN DI BAWAN INI DENGAN SINGKAT DAN BENAR!

46. Kelap-kelip lampu di kapal
Anak kapal main sekoci

Lagi kecil rajin belajar
Sudah besar senanglah hati

Nasihat apakah yang tersirat pada nyanyian di atas?

_____

47. SDN Rangkah akan mengundang orang tua murid pada hari Minggu tanggal 19 Mei 1996. SDN Rangkah akan mengadakan persiapan perpisahan siswa kelas enam. Rapat dimulai pukul 09.00 di ruang kelas lima.
Selesaikanlah undangan ini berdasarkan keadaan di atas!

_____

Hari / Tanggal : _____
Waktu : _____
Tempat : _____
Acara : _____

48. Dari kata tari dapat dikembangkan menjadi: menari, menarikan, ditarikan, tarian, penari. Kembangkan kata kait sekurang-kurangnya menjadi lima buah kata!

_____

49. Selesaikan karangan pendek ini!
Sekarang saya berumur ..... tahun. Saya duduk di kelas ..... Tahun depan aku ..... ujian. Saya ingin meneruskan ke ..... Karena .....

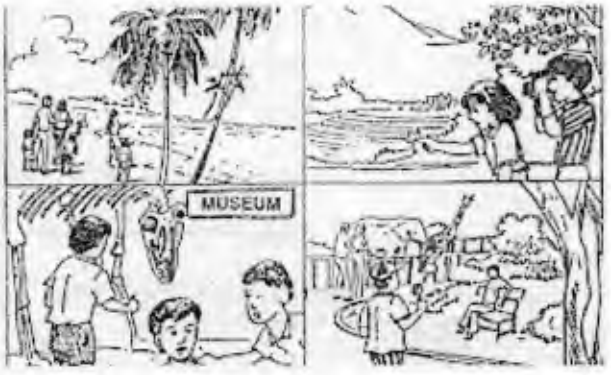
_____

50. Buatlah lima buah kalimat berdasarkan gambar di bawah ini!

_____
_____
_____
_____
_____
_____

IV. MENGARANG

Susunlah sebuah kerangka sepanjang satu halaman berdasarkan gambar seri di bawah ini. Jangan lupa memberi judul. Perhatikan tulisanmu, huruf besar dan ejaan!



(English Version)

SUMMATIVE TEST FOR PRIMARY SCHOOLS
TERM III, SCHOOL YEAR OF 1995/1996
MALANG MUNICIPALITY

Subject : Indonesian Language Grade: V **Name: .....**
Day: Tuesday, 4 June 1996 Duration: 150 minutes **Time : 07.30 - 10.00**

Read the following passage carefully!

VERSATILE WATER MILL

Uncle Midun's rice field bordered on a small hill. The hill is well covered with green forest. A small river flows out from the hill. The river never stops running during dry season and it does not flood during the rainy season.

There is a waterfall at a distance of two metres from uncle Midun's rice field. Its height is about two metres. The villagers agreed to make a water mill there. For this intention, they created a channel made of wood, nails, and corrugated iron. By this way, the pressure of waterfall is increased. As a result, the water wheel rotates faster.

The wheel's pivot is lengthened and connected to rice stamper. The other part of the pivot is in contact with a dynamo for generating electric power. The water from that wheel flows to a fishpond on the edge of uncle Midun's rice field. Fishes getting bigger because they keep on moving in a strong current. A sluice is put on the fishpond to flow through the whole rice field across the village. The leftovers from fish meals, the rice outer skin, are processed to be natural fertiliser for rice fields.

That is the versatility of watermill. The residents in uncle Miduns' village have electric lamps in their houses. They do not crush rice by using human power. Through the watermill they get faster-growing fishes and fertile rice fields.

Lancar Berbahasa Indonesia 3

I. MULTIPLE CHOICE.
CROSS OUT (X) A RIGHT OPTION OF a, b, c or d ON THE FOLLOWING QUESTIONS!

1. The uncle Midun's rice field is not far from the waterfall. The sentence which implies the meaning is .....
   a. The waterfall's height is about two metres.
   b. Uncle Midun's rice field bordered on a small hill.
   c. The waterfall flows to uncle Midun's rice field.
   d. There is a waterfall at a near two metre distance from uncle Midun's rice field.

2. The water mill can rotate fast because .....
   a. the water with strong pressures in a fall
   b. two metres the height of water fall
   c. the water is lead into a channel
   d. the location of the water fall only 20 metres from uncle Midun's rice field

3. The leftover from fish meals is useful for rice field because .....

a. the water flows fluenty
b. it flows to the rice field
c. it prevents plant disease
d. it becomes natural fertilizer

4. The main sentence in the fourth paragraph is .....
a. The residents in uncle Midun'n village have electric lamps
b. Through windmill they get faster-growing fishes and fertile rice fields
c. That is the versatility of water mill
d. They do not crush rice by using human power

5. The paragraph which fits the message of the topic is .....
a. The first
b. The second
c. The third
d. The fourth

6. Indonesia is well known for having bercadik (sailing) boat. The synonym of "cadik" is .....
a. Sailing
b. Cover
c. Outrigger
d. Small boat

7. The Argo Bromo train does not stop at ..... Lamongan
a. Terminal (last stop)
b. Setasiun (station)
c. Halte (bus stop)
d. Bandara (airport)

8. The correct address writing is .....
a. To
Dear Dr. Budi
in Surabaya
b. To
Dear Dr. budi
in Surabaya
c. To
Dr. Budi
in Surabaya
d. To
Dear Dr. Budi
in surabaya

9. Ali's father is a civil servant who holds a leading position with a certain rank. He is well known as an honest and diligent .....
The appropriate word to replace the underlined part is
a. Penjabat (official with wrong spelling)
b. Petugas (functionary)
c. Kepala (head)
d. Pejabat (official)

10. During my lifetime, I have sailed along many ..... (rantau=shoreline)
The appropriate word for completing the sentence is
a. seashore b. strait c. bay d. cape

11. The slipped car on the river was lifted by using .....
The appropriate word for this is
a. Truck b. Big cord c. Automobile jack d. Pulley

12. Lady Halimah suffered a lot. She often ponders while sitting. Her heart is sad. She keeps the sadness for herself. She never tells anybody even to her siblings. The appropriate proverb to portray Lady Halima's situation is .....
a. Air diminum serasa duri (drinking water feeling thorn)
b. Air pun ada pasang surutnya (even water has the tides)
c. Air mata jatuh ke perut (tears fall into the stomach)

d. Menjilat air liur (licking her own saliva)

13. The teacher sticked pictures on the development of the navy ..... grade 5 wall.
The appropriate word to complete the sentence is .....
a. in
b. on
c. to
d. for

14. The younger brother cried
The younger brother fell from the motorcycle.
The right fusion of the sentences is
a. Because of falling from the motor cycle, the young brother cried
b. When falling from the motor cycle, the young brother cried
c. Although falling from the motor cycle, the young brother cried
d. By falling from the motor cycle, the young brother cried

15. Mira is presenting the clasical Javanese .....
The appropriate word to complete the sentence is
a. menari (dance, as a verb)
b. tari (dance, as a word root)
c. bertari (dancing)
d. tarian (dance, as a noun)

16. The right order of words on the sentence below is
a. Keeps on he learning although his lealth is not well
b. His healt is not well although he keeps on learning
c. Although he keeps on learning his health is not well
d. He keeps on learning although his health is not well

17. Father said, "..... as soon as possible so your uncle come immediately!"
The right word to complete the sentence is
a. Suratan (fate)
b. Suratkan (writing)
c. Menyurati (write to)
d. Surati (write for)

18. The right use of underlined word is
a. After swimming on the sea, they bilasi (rinse the water) before changing the suit
b. After swimming on the sea, they membilas (rinse the body) before changing the suit
c. After swimming on the sea, they berbilas (rinsing) before changing the suit
d. After swimming on the sea, they dibilasi (being rinsed) before changing the suit

19. On Sunday the grade 5 pupils ..... martial art training at school.
The right word to complete the sentence is
a. Latihan (training)
b. Berlatih (exercise)
c. Melatih (do training)
d. Berlatihan (exercising)

20. The officer in charge said, "..... your empty land with productive plants!"
The right word for completing the sentence is
a. Tanami (plant ... with)
b. Di tanami (wrong spelling)
c. Tanaman (plant, noun)
d. Tanamkan (plant something)

21. The teacher tugas (assign) her pupils to clean the school yard.
The word tugas shound be
a. Menugaskan (assign someone with)
b. Menugasi (assign a task)
c. Bertugas (have the duty)
d. Ditugasi (be assigned)

22. Aditya said, "My father was going to Jakarta".
The indirect expression of the sentence is
a. Aditya said that his father was going to Jakarta
b. Aditya said my father was going to Jakarta
c. Aditya said that my father was going to Jakarta
d. Aditya said that their father was going to Jakarta

23. The teacher said that all of us were promoted.
The direct expression is
a. The teacher said, "All of us were promoted!"
b. The teacher said, "All of us have been promoted!"
c. The teacher said, "All of them were promoted!"
d. The teacher said, "Be promoted all of us!"

24. The following sentence with an infix word is
a. The book Berhasil karena Terampil is written by Dahlan Djazik
b. Mr. Dulah menggelindingkan (rolled) the drum to the edge of the road.
c. Each member of Boy Scout get lessons in tali-temali (using ropes)
d. Because of slippery road he tergelincir (slipped)

25. Be careful pompa (pump) the air into that volley ball!
The word pompa should be
a. Memompa (pump)
b. Memompakan (pumping)
c. Dipompa (be pumped)
d. Dipompakan (being pumped)

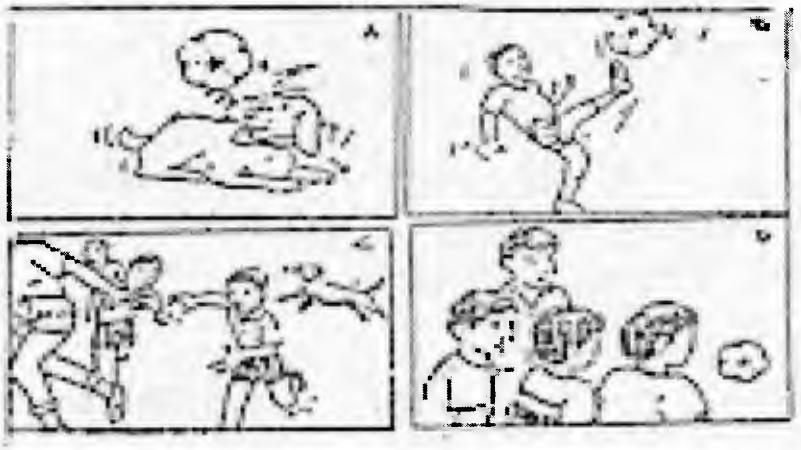
26. The right sentence writing is
a. "Bring the suitcase ke sini!" (here)
b. "Bring the suitcase kesini"
c. "Bring the suitcase ke sini!"
d. "Bring the suitcase kesini"

27. On Saturday, from 15.00 to 17.30 there was a volleyball championship between SD Karah and SD Rangkah. The competition was so critical because both groups was equal strong.
The shortcoming of the report is about
a. The time
b. The place
c. The sort
d. The process

28. The following imperative sentence is
a. How come the Argo Bromo train was late!
b. I do not believe your story!
c. Please give this list to the headteacher!
d. Take out this chair!

29. The following sentence with certain feeling is
a. Crazy! Out there!
b. Hi the food is delicious!
c. How come! Any's voice is so sweet!
d. I am sorry, I was late!

30. Note the serial order of the pictures below!



The best order of the events as shown on the pictures is
a. DBCA
b. BACD
c. CDBA
d. DBAC

31. What I have, my dear children
Besides books and a few knowledge
Source of my dedication for you
Dari seorang Guru kepada Murid-muridnya, Hartoyo Andangdjaja
The expression of the poetry above is
a. Proud
b. Inferiority
c. Arrogant
d. Humble

32. The following sentence expresses feeling lack of credibility is
a. "Bring me that glass!"
b. "Please bring me that glass!"
c. "Is that the glass I ask?"
d. "I asked you to bring me the glass!"

33. "I ask you to keep our meeting confidential!"
This is the expression of
a. Command
b. Seriousness
c. Emotion
d. Lack of credibility

34. My pretty siblings
Do not ask where mother goes
Because mother has never gone
From our home
Kepada Adik-adikku, *Arifin C.Noor*
The atmosphere as expressed above is
a. Sentiment
b. Intimate
c. Cheerful
d. Relax

35. "EDNA's pencil is nice in using and within a reached price ".
The purpose of the sentence is

a. Order to use pencil
b. Notice about pencil
c. For people to recognise it
d. For us to buy it

II. COMPLETION.
FILL OUT THE FOLLOWING QUESTIONS!

36. I do not write ..... while drawing. _____

37. Ratna's father is a gold ..... so most buyers like his works _____

38. Rusdi works in a handicraft place.
Rusdi is a good ..... _____

39. For attracting the buyers attention, the traders tries to compare ..... the goods. _____

40. When meeting us he mencecar (pester) questions on many things. "Mencecar" means ..... _____

41. All parents should ..... relief in facing their children behaviours. _____

42. Lama nian berpangku tangan (quite long time doing nothing)
Asyik terlena didaduh ombak (passionately being asleep of the waves)
Mari kita sama serentak (let us joint together)
Atur barisan kejar tujuan (set the march for the aim)
(Bekerja, Mozaza)
"Berpangku tangan" means ..... _____

43. "My father's grandfather is a Buginese", said Adi to his friends. man-temannya.
"..... is a Buginese", said Adi to his friends. _____

44. Berakit-rakit ke hulu ..... ketepian. (Proverb: having a raft to the upper end ..... river's edge) _____

45. Uncle Midun's neighbours get electricity.
The electricity ..... by the villagers. _____

III. EXPLANATION.
ANSWER THE FOLLOWING QUESTIONS RIGHTLY!

46. Kelap-kelip lampu di kapal (flickering the lamps on the ship)
Anak kapal main sekoci (shipmate plays on the boat)
Lagi kecil rajin belajar (since childhood being diligent in learning)
Sudah besar senanglah hati (in adulthood would be comfort)

What are the hidden message on the poetry?

47. SDN Rangkah will invite parents on Sunday, 19 May 1996. The school is going to say goodbye to the grade 6 pupils. It will start at 09.00 in classroom five.
Complete the invitation below

Day / Date	:	
Time	:	
Location	:	
Programme	:	

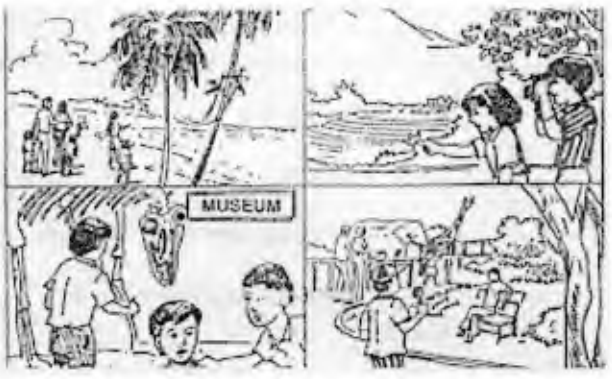
48. The root word of tari can produce: menari, menarikan, ditarikan, tarian, penari.
Produce at least 5 words from the root word kait (hook)!

49. Complete the following sentences!
I am .... year old. I have been in grade .... Next year I will .... examination. I want to continue to .... because .....

50. Create five sentences based on the picture below!

IV. COMPOSITION

Arrange a story as long as one page based on the serial pictures below. Do not forget the title. Use the right spelling and capital letters in your writing!



APPENDIX B.3b

Baseline Tests for Mathematics

(Indonesian Version)

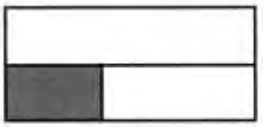
ULANGAN UMUM SD CATURWULAN III TAHUN PELAJARAN 1995/1996
KOTAMADYA MALANG

Pelajaran	**: Matematika**	**Kelas : III (Tiga)**	**Nama: .....**
Hari, Tanggal:	**Rabu, 5 Juni 1996**	**Waktu: 90 Menit**	**Pukul: 07.30 - 09.00**

I. BERILAH TANDA SILANG (X) PADA HURUF a, b ATAU c YANG MERUPAKAN JAWABAN PALING BENAR!

1. Tiga barang yang ditimbang, beratnya masing-masing ½ kuintal, 65 kg, dan 400 ons. Di antara ketiga barang tersebut yang paling berat adalah .....
   a. ½ kuintal b. 65 kg c. 400 ons

2. Jika sekarang pukul 7.15, maka setengah jam yang lalu pukul ....
   a. 6.45 b. 7.30 c. 6.30

3. 

   Gambar di atas, bagian yang berbayang-bayang menunjukkan pecahan ...
   a. 6/1 b. 1/5 c. 1/6

4. Ibu membagi jambu sebanyak 182 kepada 13 anak masing-masing, menerima sama banyak. Tiap anak menerima ..... buah.
   a. 12 b. 14 c. 16

5. Ayah membeli lampu listrik seharga Rp 2.350,- dibayar dengan 1 lembar lima ribuah rupiah. Ayah menerima uang kembali .....
   a. Rp 2.450,00 b. Rp 2.550,00 c. Rp 2.650,00

6. Dua ratus tiga puluh satu, apabila ditulis dengan lambang bilangan adalah .....
   a. 132 b. 213 c. 231

7. Pecahan 1/4 sama nilainya dengan .....
   a. 0,25 b. 0,50 c. 0,75

8. Kakak berjalan sejauh 2 km, lalu berjalan lagi 50 dam. Perjalanan yang ditempuh kakak sejauh ..... m.
   a. 2050 b. 2.500 c. 2.550

9. Pecahan 2 2/5 merupakan bentuk sederhana dari .....
a. 7/5 b. 9/5 c. 12/5

10. Sebuah blek diisi 15 liter minyak, diisi lagi 50 dl. Minyak dalam blek sebanyak ..... cl.
a. 1.500 b. 2.000 c. 2.500

11. Umur sebuah kota 8 windu lebih 3 tahun. Umur kota itu sama dengan ..... tahun.
a. 67 b. 76 c. 83

12. Hasil penjumlahan dari 0,27 dan 0,18 adalah .....
a. 0,25 b. 0,35 c. 0,45

13. Ibu membagi uang saku kepada ketiga anaknya sebesar Rp 10.500,- masing-masing menerima sama banyak. Tiap anak menerima .....
a. Rp 2.500,00 b. Rp 3.500,00 c. Rp 4.500,00

14. Pecahan 5/100 nama pecahan desimalnya adalah .....
a. 0,05 b. 0,5 c. 5,5

15. Beras jenis PB.5 beratnya 3 kuintal dan jenis PB.8 beratnya 195 kg. Jumlah berat kedua jenis beras tersebut adalah ..... kg.
a. 295 b. 395 c. 495

16. Di dalam gedung terdapat 20 deret kursi, tiap deret 25 buah kursi. Banyak kursi dalam gedung ..... buah.
a. 400 b. 500 c. 600

17. Nilai angka 9 pada bilangan 27,943 adalah .....
a. 9 b. 90 c. 900

18. Bentuk sederhana dari 6/4 adalah .....
a. 1 ½ b. 1 ¼ c. 1⅔

19. Ayah membeli 3 rem kertas, harga tiam rem Rp 4.500,00. Ayah harus membayar .....
a. Rp 11.500,00 b. Rp 12.500,00 c. Rp 13.500,00

20. Jarak Keluruhan Sidomulyo ke Mangunharjo 2 km, sedang dari Mangunharjo ke Tamansari 500 m. Jarak dari Sidomulyo ke Mangunjarjo terus ke Tamansari adalah ..... m.
a. 2.050 b. 2.500 c. 5.200

II. ISILAH TITIK-TITIK PADA SOAL DI BAWAH INI DENGAN ISIAN YANG BENAR!

21. 150 : (195-180) = ... _____

22. 20 dm + 3 m = ... cm _____

23. 1⅜ + ⅝ = ... _____

24. 2 kg + 2 hg + 20 dag = ... gram _____

25. 1 abad + 2 tahun + 24 bulan = ... tahun _____

26. 1 ribuan + 5 puluhan + 4 satuan = ... _____

27. 1,27 - 1,25 = ... _____

28. Uang 1 lembar ribuan rupiah + 15 lembar ratusan rupiah = ... rupiah _____

29. 50 liter + 5 dal + 1 kl = ... liter _____

30. 1⅔ - ⅓ = ... _____

III. KERJAKAN SOAL-SOAL DI BAWAH INI DENGAN SINGKAT DAN BENAR!

31. Gambarlah sebuah persegi panjang, yang panjang sisi-sisinya 3 cm dan lebarnya 2 cm.

32. (25x4) + (150:15) - 100 = ...

33. 12 / 252 \ .....

34. Harni mempunyai pita yang panjangnya 900 m. Pita tersebut akan dipotong-potong, tiap potong panjangnya 30 cm. Berapa banyak potongan pita itu?

35. Gambarlah sebuah empat persegi (bujursangkar), yang panjang sisi-sisinya 2 cm.

36. Kakak membeli sebuah radio seharga Rp 35.000,00. Berapa rupaiah kembalinya, apabila dibayar dengan uang 1 lembar lima puluh ribuah rupiah?

37. 1 kuintal + 150 kg = ... kg
1 ton + 1 kuintal = ... kg
_____
Jumlah = ... kg

38. Tulislah dengan kalimat = 875.
.....

39. 1¼ + 2/4 + 2¾ = ...

40. 2 windu + 10 tahun = ... tahun
1 abad + 20 tahun = ... tahun
_____
Jumlah = ... tahun

(English Version)

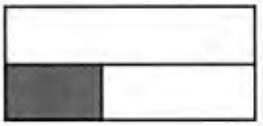
SUMMATIVE TEST FOR PRIMARY SCHOOL
TERM III, SCHOOL YEAR 1995/1996
MALANG MUNICIPALITY

Subject : Mathematics **Grade : III** **Name: .....**
Day : Wednesday, 5 June 1996 **Duration: 90 minutes** **Time : 07.30 - 09.00**

I. CROSS (X) ANY OF THE LETTER a, b, OR c WHICH YOU CONSIDER AS THE MOST APPROPRIATE!

1. Three things were weighted, each of them with ½ quintal, 65 kg, dan 400 ounce. Which one was the heaviest?
   a. ½ quintal b. 65 kg c. 400 ounce

2. If the time at the moment is 7.15. Half an hour ago it was
   a. 6.45 b. 7.30 c. 6.30

3. 

   The shadowed part of the picture above compared to the whole part is
   a. 6/1 b. 1/5 c. 1/6

4. Mother distributed 182 fruits to 13 children. Each of them got the same amount. Thus each child received ..... fruits.
   a. 12 b. 14 c. 16

5. Father bought a lamp Rp 2,350.- paid by using 5 thousand rupiah pieces. How much did he get back?
   a. Rp 2,450.00 b. Rp 2,550.00 c. Rp 2,650.00

6. Two hundred thirty one is writen as the following
   a. 132 b. 213 c. 231

7. The fraction of 1/4 is equal to .....
   a. 0,25 b. 0,50 c. 0,75

8. A boy walked for 2 km, then 20 dam again. How long the total disctance in metres?
   a. 2050 b. 2.500 c. 2.550

9. The fraction of 2 2/5 is equal to .....
   a. 7/5 b. 9/5 c. 12/5

10. A can with 15 l oil is added 50 dl more. The oil inside the can becomes ..... cl.
a. 1.500 b. 2.000 c. 2.500

11. The age of the city is 8 windu[1] plus 3 years. Thus the city has already ..... years old.
a. 67 b. 76 c. 83

12. The addition of 0,27 and 0,18 is .....
a. 0,25 b. 0,35 c. 0,45

13. Mother distributed Rp 10,500.00 to her three sons. Each of them got the same amount. How much did everyone got?
a. Rp 2,500.00 b. Rp 3,500.00 c. Rp 4,500.00

14. The fraction of 5/100 is written in decimal .....
a. 0,05 b. 0,5 c. 5,5

15. The sort of rice PB.5 is 3 quintal and PB.8 195 kg. How many kg is the weight of the total?
a. 295 b. 395 c. 495

16. There are 20 lines of chairs inside the building. Each line consists of 25 chairs. How many chairs inside the building?
a. 400 b. 500 c. 600

17. The symbol of 9 in the number of 27,943 is equal to .....
a. 9 b. 90 c. 900

18. The other expression of 6/4 is .....
a. 1 ½ b. 1 ¼ c. 1⅔

19. Father bought 3 rims of paper with Rp 4,500.00 each rim. How much did he pay?
a. Rp 11,500.00 b. Rp 12,500.00 c. Rp 13,500.00

20. The distance between Sidomulyo and Mangunharjo is 2 km, whereas between Mangunharjo and Tamansari 500 m. How is the distance between Sidomulyo and Tamansari in metres?
a. 2,050 b. 2,500 c. 5,200

II. ANSWER THE FOLLOWING QUESTIONS BY FILLING IN THE BLANK SPACE ON THE RIGHT SIDE!

21. 150 : (195-180) = ... _____

22. 20 dm + 3 m = ... cm _____

[1] A windu = 8 years

23. $1\frac{3}{8} + \frac{5}{8}$ = ... _____

24. 2 kg + 2 hg + 20 dag = ... gram _____

25. 1 century + 2 years + 24 months = ... years _____

26. 1 thousand + 5 tens + 4 unit = ... units _____

27. 1,27 - 1,25 = ... _____

28. A piece of one thousand rupiah + 15 pieces of one hundred rupiah = ... rupiah _____

29. 50 liter + 5 dal + 1 kl = ... liter _____

30. $1\frac{2}{3} - \frac{1}{3}$ = ... _____

III. DO THE FOLLOWING QUESTIONS !

31. Draw a picture of rectangle with 3 cm length and 2 cm width.

32. (25x4) + (150:15) - 100 = ...

33. 12 / 252 \ .....

34. Harni had a ribbon of 900 cm. She cut it into pieces with the same length, 30 cm each. How many pieces did she have?

35. Draw a quadrilateral, with 2 cm each side.

36. A boy bought a radio Rp 35,000.00. How much he got back if he used a fifty thousand rupiah piece?

37. 1 quintal + 150 kg = ... kg
1 tonne + 1 quintal = ... kg
Total = ... kg

38. Write 875 in words
.....

39. $1\frac{1}{4} + 2/4 + 2\frac{3}{4}$ = ...

40. 2 windu + 10 years = ... years
1 century + 20 years = ... years
Total = ... years

(Indonesian Version)

ULANGAN UMUM SD CATURWULAN III TAHUN PELAJARAN 1995/1996
KOTAMADYA MALANG

Pelajaran	**: Matematika**	**Kelas : IV (Empat)**	**Nama:.....**
Hari, Tanggal:	**Rabu, 5 Juni 1996**	**Waktu: 150 Menit**	**Pukul: 07.30 - 10.00**

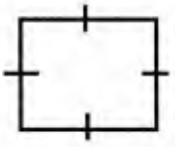
I. BERILAH TANDA SILANG (X) PADA HURUF a, b ATAU c YANG MERUPAKAN JAWABAN PALING BENAR!

1. Pada gambar di bawah ini yang berbayang-bayang adalah ..... bagian dari seluruh daerah.

a. 5/6 b. 3/4 c. 2/3 d. 1/2

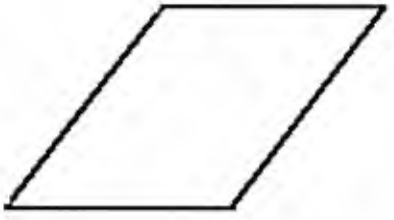
2. 0,3 0,033
Tanda yang paling tepat untuk membandingkan dua pecahan di atas adalah .....
a. = b. < c. ≥ d. >

3. Gambar bangun di bawah ini adalah .....

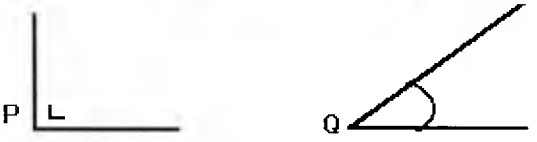


a. Segitiga b. Persegi c. Persegi panjang d. Segi lima

4. Bangun di sebelah ini adalah .....
a. Persegi
b. Jajaran genjang
c. Trapesium
d. Persegi panjang



5. Sudut Q sebagai sudut satuan.
Besar sudut P = ... sudut satuan.
a. 5 b. 4
c. 3 d. 2



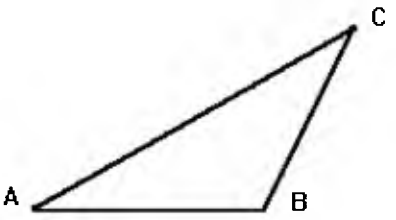
6. Sudut K sebagai sudut satuan.
Besar sudut L = ... sudut satuan

a. 2 b. 3
c. 4 d. 6

7. 2/3, 2/4, 2/5 urutan dari yang terkecil ke pecahan yang terbesar dari pecahan-pecahan di samping adalah .....
a. 2/5, 2/4, 2/3 b. 2/5, 2/3, 2/4 c. 2/3, 2/4, 2/5 d. 2/3, 2/5, 2/4

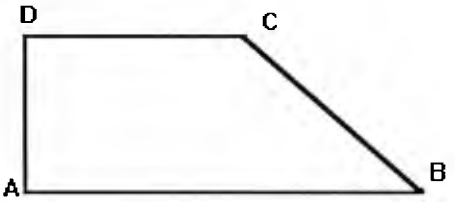
8. 0,24; 0,4; 0,42 urutan dari yang terbesar ke yang terkecil dari pecahan-pecahan di samping adalah .....
a. 0,42; 0,24; 0,4 b. 0,42; 0,4; 0,24
c. 0,24; 0,4; 0,42 d. 0,4; 0,24; 0,42

9. Pada segitiga ABC ini, sudut B disebut sudut .....



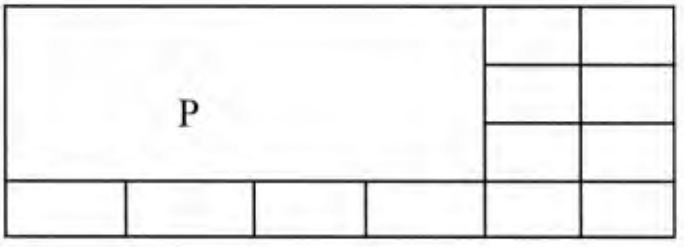
a. Tumpul b. Siku-siku
c. Lancip d. 180^0

10. Trapesium ABCD di samping adalah trapesium



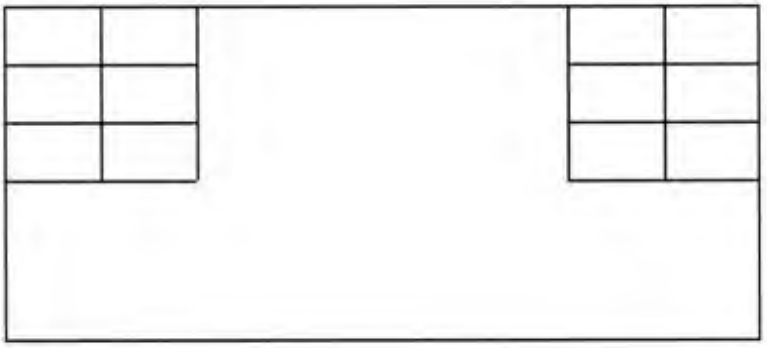
a. Sembarang b. Sama kaki
c. Siku-siku d. Sama sisi

11. Luas daerah P = ... satuan



a. 15 b. 14 c. 12 d. 10

12. Luas daerah H = ... satuan

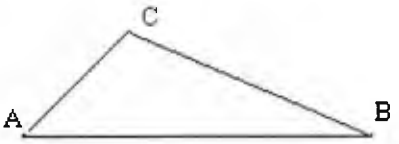


a. 30 b. 36 c. 42 d. 48

13. 2/5 + 3/7 = ...
a. 21/35 **b. 25/35** c. 28/35 d. 29/35

14. 3/4 - 2/5 - 1/2 = ...
a. 17/20 **b. 15/20** c. 13/20 d. 11/20

15. Segitiga ABC ini adalah segitiga .....



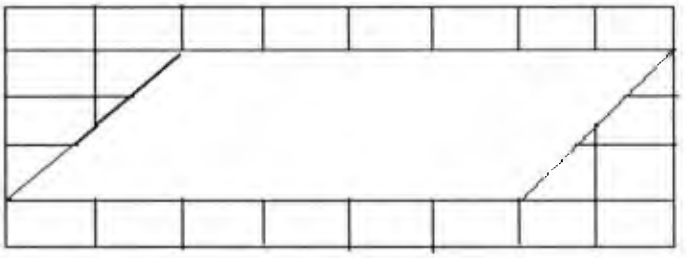
a. Lancip **b. Tumpul**
c. Siku-siku **d. Sama kaki**

16. Persegi ABCD di sebelah mempunyai ..... simetri lipat.

a. 5 **b. 4**
c. 3 **d. 2**

17. Luas jajar genjang KLMN = ... satuan

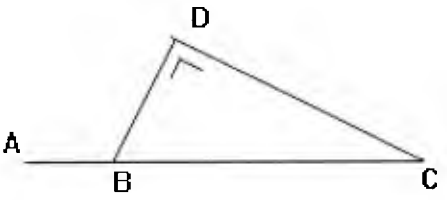
a. 18 b. 20
c. 21 c. 24



18. 1/6 + 3/4 - 2/3 = ...
a. 9/24 b. 7/18 c. 5/16 d. 3/12

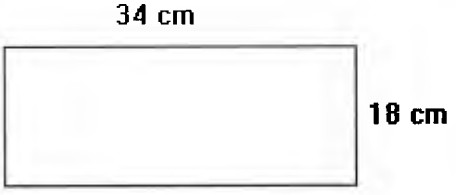
19. Pada gambar sebelah, sudut siku-siku pada .....

a. Sudut ABC b. Sudut DBC
c. Sudut BDC d. BCD



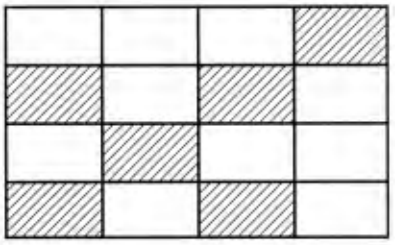
20. Luas persegi panjang ini = ... cm^2

a. 622 b. 612
c. 522 c. 512



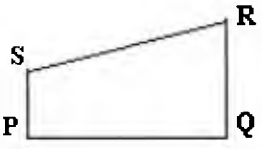
II. LENGKAPILAH TITIK-TITIK DALAM SOAL DI BAWAH INI DENGAN ISIAN YANG PALING TEPAT!

21. Daerah yang diarsir adalah .....

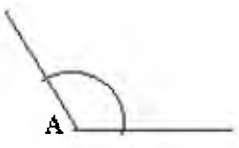


22. 2/5 ..... 6/15 Tanda yang tepat pada pasangan pecahan ini ialah _____

23. Pada trapesium PQRS garis PS sejajar dengan garis ..... _____



24. Sudut A disebut sudut ..... _____



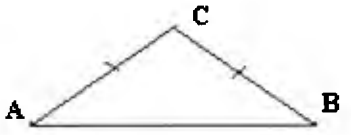
25. Sebuah persegi sisinya 3/4 m. Luas persegi = ... cm^2 _____

26. Kebun sekolah panjang 12 ½ m, lebarnya 5 m.
Luas kebun itu ..... dm^2 _____

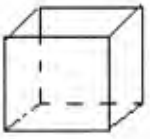
27. 1/3, 5/6, 5/9. Urutan pecahan-pecahan yang benar mulai dari yang terkecil adalah ..... _____

28. Pecahan desimal dari 21/25 adalah ..... _____

29. Segitiga ABC di sebelah sudut A sama dengan ..... _____



30. Jumlah sisi kubus di bawah ini ..... _____



31. Sebuah perahu memuat 7,5 ton barang dari 105 orang. Bila setiap orang rata-rata 50 kg beratnya, maka perahu itu bermuatan ..... kwintal. _____

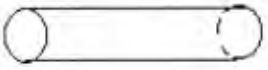
32. 274 cm + 1,8 dam + 6 m = ... dm _____

33. 0,4; 0,24; 0,124. Urutan pecahan-pecahan yang benar mulai dari yang terkecil, ... _____

34. Karto, Karim dan Kasman bekerja menyelesaikan suatu pekerjaan. Karto menyelesaikan 1/4 bagian, Karim 2/5 bagian dan Kasman ..... bagian. _____

35. Jajar genjang ABCD besar sudut ABC sama dengan sudut ..... _____

36. Model tabung tertutup ini memiliki ..... sisi _____



37. Harga 1 kg beras Rp 675,00. Jika ibu membeli 35 kg, maka ibu harus membayar ..... _____

38. Sebuah petikemas berisi 40 kaleng cat. Setiap kaleng beratnya 2 ½ kg. Berat petikemas itu ..... kwintal. _____

39. Sebidang tambak dipelihara 900 ekor bandeng, yang 3/4 bagian telah diambil. Yang masih ditambak ..... ekor. _____

40. Sebuah persegi panjang, panjang 89 cm dan lebar 67 cm. Kelilingnya adalah ..... cm. _____

III. JAWABLAH PERTANYAAN-PERTANYAAN DI BAWAH INI DENGAN BENAR!

41. Persediaan pupuk sebuah KUD ada 5/6 bagian kebutuhan seluruh petani. Pertama diambil 2/5 bagian, terakhir diambil 1/3 bagian. Berapa bagian sisa pupuk di KUD itu?

_____

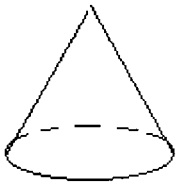
42. Tabungan Tutik pada bulan Januari Rp 125.000,00. Pada bulan April yang 2/5 bagian diambil. Berapa rupiah tabungan Tutik sekarang?

_____

43. Berapakah jumlah rusuk prisma segitiga di bawah ini?

_____

44. Berapakah jumlah sisi kerucut ini?



_____

45. Sebuah perusahaan garmen sehari dapat menghasilkan 11 kodi pakaian jadi. Pada bulan Mei 1996 ini, karyawannya kerja penuh tiap hari kecuali 4 hari minggu dan 1 hari libur. Berapa potong pakaian jadi dihasilkan pada bulan itu?

46. 5 lusin + 4 gros + 15 batang = ... batang

47. Uang saku sekolah Yanti Rp 500,00. Yang 2/5nya digunakan untuk membeli jajan dan sisanya ditabung. Berapa rupiah yang ditabung?

48. Sebuah kubus panjang rusuknya 2 dm. Berapa dm^2 luas seluruh sisi kubus itu?

49. Sebuah kantor tiap bulan rata-rata menggunakan kertas 6 ½ rim, 1 rim 400 lembar). Berapa lembar kertas dibutuhkan dalam 1 cawu?

50. 0,07 m^2 + 63 ½ dm^2 = ... cm^2

(English Version)

SUMMATIVE TEST FOR PRIMARY SCHOOL
TERM III, SCHOOL YEAR 1995/1996
MALANG MUNICIPALITY

Subject : Mathematics **Grade : IV (Four)** **Name: .....**
Day : Wednesday, 5 June 1996 **Duration: 90 minutes** **Time : 07.30 - 09.00**

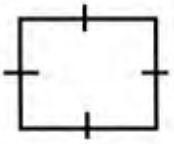
I. CROSS (X) ANY OF THE LETTER a, b, OR c WHICH YOU CONSIDER AS THE MOST APPROPRIATE!

1. The shaded parts of the picture below is ..... of the whole area.

a. 5/6 b. 3/4 c. 2/3 d. 1/2

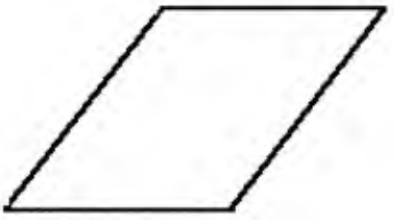
2. 0,3 0,033
The sign to compare the two fraction is .....
a. = b. < c. ≥ d. >

3. The sort of the picture below is .....



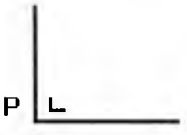
a. Triangle b. Square c. Rectangle d. Pentagon

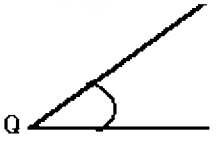
4. The sort of picture besides is .....



a. Cube
b. Parallelogram
c. Trapezium
d. Rectangle

5. The angle Q is the basic unit.
The angle P = ... unit
a. 5 b. 4
c. 3 d. 2





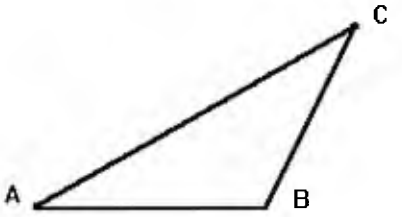
6. The angle K is the basic unit.
Angle L = ... units.

a. 2 b. 3
c. 4 d. 6

7. The sequence in descending order of 2/3, 2/4, 2/5 is .....
a. 2/5, 2/4, 2/3 b. 2/5, 2/3, 2/4 c. 2/3, 2/4, 2/5 d. 2/3, 2/5, 2/4

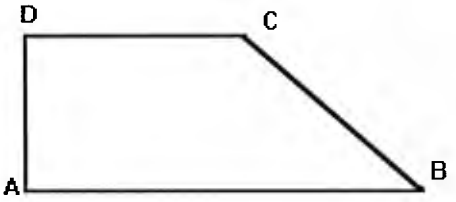
8. The sequence in ascending order of 0,24; 0,4; 0,42 is .....
a. 0,42; 0,24; 0,4 b. 0,42; 0,4; 0,24
c. 0,24; 0,4; 0,42 d. 0,4; 0,24; 0,42

9. In the triangle ABC, B is .....



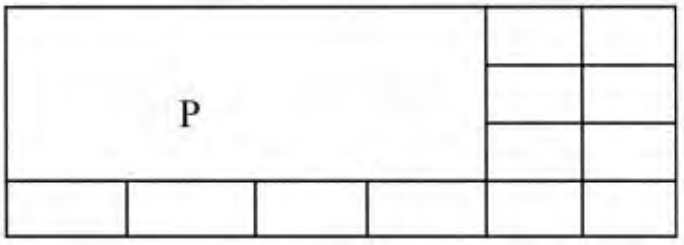
a. Blunt angle b. Right angle
c. Sharp angle d. 180^0

10. The trapezium ABCD is called .....



a. Random b. Isosceles
c. Right angled d. Equilateral

11. The area of P = ... squared units



a. 15 b. 14 c. 12 d. 10

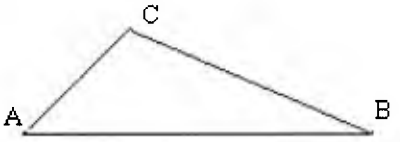
12. The area of H = ... squared units

a. 30 b. 36 **c. 42** d. 48

13. 2/5 + 3/7 = ...
a. 21/35 b. 25/35 **c. 28/35** d. 29/35

14. 3/4 - 2/5 - 1/2 = ...
a. 17/20 **b. 15/20** c. 13/20 d. 11/20

15. The ABC is a ..... triangle
a. sharp b. blunt
c. right angle d. isosceles

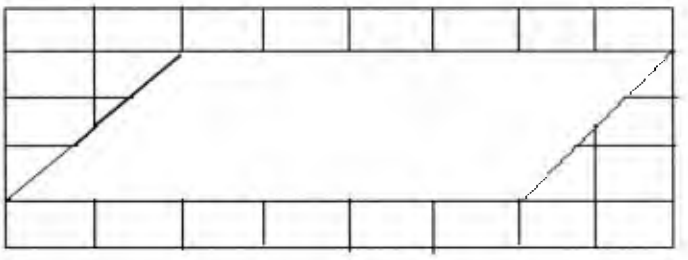


16. The ABCD has ..... axes of simetry.

a. 5 b. 4
c. 3 d. 2

17. The area of the parallelogram KLMN = ... squared units.

a. 18 b. 20
c. 21 c. 24

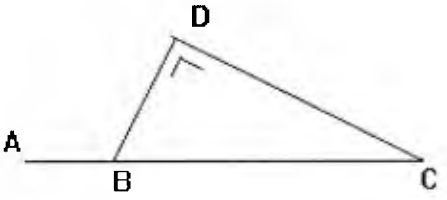


18. 1/6 + 3/4 - 2/3 = ...
a. 9/24 b. 7/18 c. 5/16 d. 3/12

19. In the picture besides, the right angle is at .....

a. the angle of ABC b. the angle of DBC

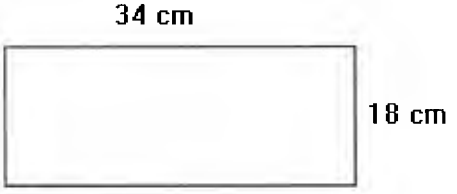
c. the angle of BDC d. the angle of BCD



20. The are of the rectangle = ... cm^2

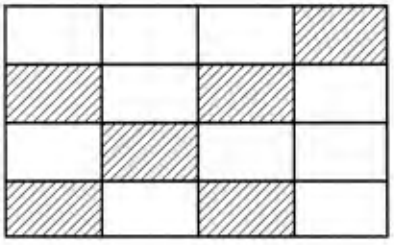
a. 622 b. 612

c. 522 c. 512



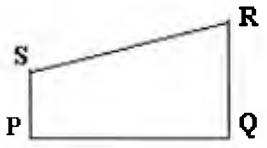
II. ANSWER THE FOLLOWING QUESTIONS BY FILLING IN THE BLANK SPACE ON THE RIGHT SIDE!

21. The shaded part of the whole is .....

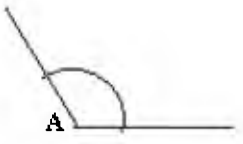


22. 2/5 ..... 6/15 The right symbol between these two fractions is .....

23. In the trapezium PQRS, PS is a paralleled with .....



24. The angle A is called .....



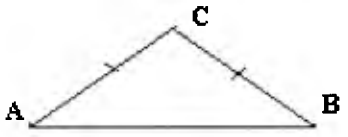
25. The length for one side of a square is 3/4 m.
The area of that square is ..... cm^2 _____

26. The length of a school garden is 12 1/2 m, and its widht is 5 m.
The area of the garden is ..... dm^2 _____

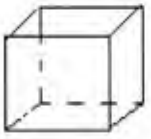
27. The fraction in ascending order for 1/3, 5/6, 5/9 is ..... _____

28. The decimal fraction of 21/25 is ..... _____

29. The angle A in triangle ABC is equal to ..... _____



30. The total number of sides of the cube below is ..... _____



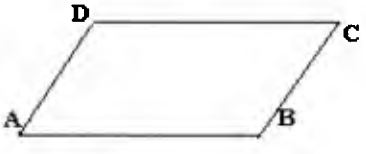
31. A ferry has 7.5 tonne things of 105 passangers.
If each passanger carries a baggage of an average weight of
50 kg, what is the total weight in quintal? _____

32. 274 cm + 1,8 Dm + 6 m = ... dm _____

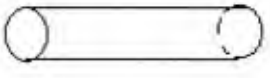
33. The sequence in ascending order of 0,4; 0,24; 0,124 is ..... _____

34. Karto, Karim and Kasman are carrying out a job.
Karto does 1/4 of the job, Karim 2/5 and Kasman ..... _____

35. In the parallelogram ABCD, the angle ABC is ..... _____



36. The following figure has ..... sides _____



37. The price of rice is Rp 675.00 per kg. If mother buys 35 kg, how much the payment? _____

38. A container is loaded 40 can of paint. The weight of each can is 2 1/2 kg. What is the total weight in quintal? _____

39. There were 900 bandengs in the fishpond. It was taken 3/4 of them. How many left? _____

40. A parallelogram with 89 cm lenght and 67 cm width. How is the circumference in cm? _____

III. ANSWER THE FOLLOWING QUESTIONS SHORTLY!

41. The provision of agricultural fertilizer for farmers was 5/6 of the needs. The first supply was 2/5 part and the second was 1/3. How much left?

_____

42. Tutik saved Rp 125,000.00 in January. In April she withdrew 2/5 of her saving. How much left in the bank?

_____

43. How many sides does the following prism have?

_____

44. How many sides does the following cone have?

_____

45. A garment enterprise produces 11 kodi[2] a day. In may 1996 the workers work for the whole month except 4 days. How many shirts will be produced in that month?

_____

[2] A kodi = 20 pieces

46. 5 dozen sticks + 4 gross of sticks + 15 sticks = ... sticks

47. Yanti has Rp 500.00 in her pocket. She uses 2/5 of it for meal and then save the rest. How much does she save?

48. A cube with 2 dm length of the side. How is the area of the cube in dm^2?

49. An office needs 6 ½ rim of papers each month. How many pieces of papers the office needs for a term?

50. 0,07 m^2 + 63 ½ dm^2 = ... cm^2

(Indonesian Version)

ULANGAN UMUM SD CATURWULAN III TAHUN PELAJARAN 1995/1996
KOTAMADYA MALANG

Pelajaran : Matematika **Kelas : V (Lima)** **Nama:.....**
Hari, Tanggal: Rabu, 5 Juni 1996 **Waktu: 150 Menit** **Pukul: 07.30 - 10.00**

I. BERILAH TANDA SILANG (X) PADA HURUF a, b ATAU c YANG MERUPAKAN JAWABAN PALING BENAR!

1. Bentuk desimal dari 3/4 adalah .....
   a. 0,70 b. 0,72 c. 0,73 d. 0,75

2. 60% = n, n = ...
   a. 0,6 b. 0,06 c. 0,006 d. 0,0006

3. Ibu menabung di BRI Rp 100.000,00. Ibu mendapat bunga 12% per tahun. Bunga 2 (dua) tahun .....
   a. Rp 12.000,- b. Rp 24.000,- c. Rp 112.000,- d. Rp 114.000,-

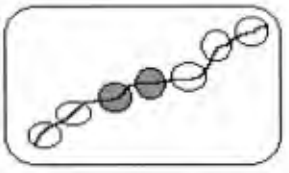
4. 0,7 + 0,6 = n, n = ...
   a. 1,3 b. 0,13 c. 0,013 d. 0,76

5. 0,32 + 0,86 = m, m = ...
   a. 0,0118 b. 0,118 c. 1,18 d. 11,8

6. 0,14 + 0,9 + 0,67 = ...
   a. 0,89 b. 1,41 c. 1,51 d. 1,61

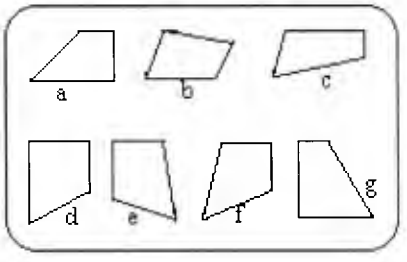
7. 0,8 - 0,6 = n, n = ...
   a. 0,2 b. 0,14 c. 0,014 d. 0,02

8. Gambar yang berbayang-bayang di samping ini menyatakan pecahan .....



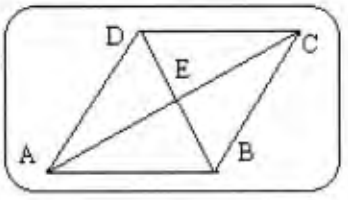
   a. 2/5 b. 2/7
   c. 5/2 d. 7/2

9. Gambar di samping ini yang menunjukkan bangunan trapesium adalah .....



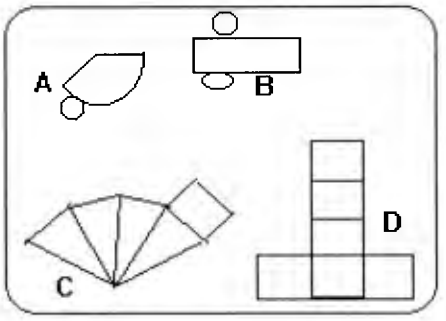
   a. a,b,c b. b,c,d
   c. d,e,f d. a,d,g

10. Pusat simetri jajar genjang pada gambar di samping ini adalah .....



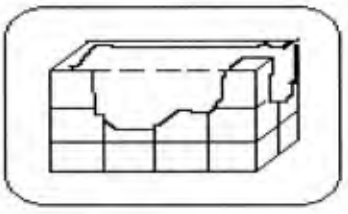
a. E b. D
c. A d. B

11. Pada gambar di samping ini jaring-jaring kerucut ditunjukkan dengan huruf .....



a. A b. B
c. C d. D

12. Volume (isi) balok pada gambar di samping ini adalah ..... kubus satuan.



a. 28 b. 26
c. 24 d. 12

13. 0,76 - 0,68 = k, k = ...
a. 8 b. 0,8 c. 0,08 d. 0,06

14. Pada awal bulan, bibi membeli beras 50 kg. Pada bulan itu banyak musibah sehingga bibi memberikan banyak sumbangan beras. Minggu pertama berasnya sudah berkurang 0,3 bagian. Beras bibi tinggal ..... bagian.
a. 0,7 b. 0,8 c. 15 d. 35

15. 12 x 0,7 = ...
a. 7,14 b. 0.84 c. 8,4 d. 64

16. 49% + 36% - 64% = ... %
a. 10 b. 20 c. 24 d. 30

17. 0,67 - 0,89 + 0,48 = ...
a. 0,26 b. 0,12 c. 0,2 d. 2,0

18 0,75 x 0,9 = ...
a. 675 b. 67,5 c. 6,75 d. 0,675

19. 0,48 x 0,97 = ...
a. 465,6 b. 46,56 c. 4,656 d. 0,4656

20. 0,96 : 12 = ...
a. 8 b. 0,8 c. 0,08 d. 0,008

21. 0,47 + 0,3 = a, a = ...
a. 0,473 b. 0,50 c. 0,77 d. 7,7

22. 0,9 - 0,78 = m, m = ...
a. 1,2 b. 0,12 c. -0,22 d. -0,69

23. 0,6 x 0,9 = n, n = ...
a. 0,054 b. 0,54 c. 5,4 d. 54

24. 0,348 : 0,4 =.....
a. 8,7 b. 0,87 c. 0,087 d. 0,0087

25. 0,8 x 0,67 x 0,34 = ...
a. 0,18224 b. 1,8224 c. 18,224 d. 182,24

26. 0,96 : 0,4 : 0,12 = ...
a. 20 b. 2,0 c. 0,2 d. 0,02

27. Panjang sisi suatu kubus = 16 cm
Volume kubus = ... cm
a. 2560 b. 4096 c. 4186 d. 4196

28. (0,96 + 0,48) : 0,25 = ...
a. 0,058 b. 0,0576 c. 0,576 d. 5,76

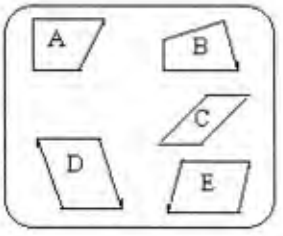
29. (0,99 - 0,18) : 0,03 = ...
a. 0,27 b. 2,7 c. 27 d. 270

30. (0,84 - 0,12) : (0,24 - 0,22) = ...
a. 36 b. 3,6 c. 0,36 d. 0,036

31. 3 m^3 + 4 dm^3 = ... dm^3
a. 7 b. 34 c. 3004 d. 3400

32. Sebuah balok kayu panjangnya 4 m, lebar 12 cm, dan tingginya 9 cm. Volume (isi) balok tersebut = ... cm^3
a. 432 b. 464 c. 4320 d. 43,200

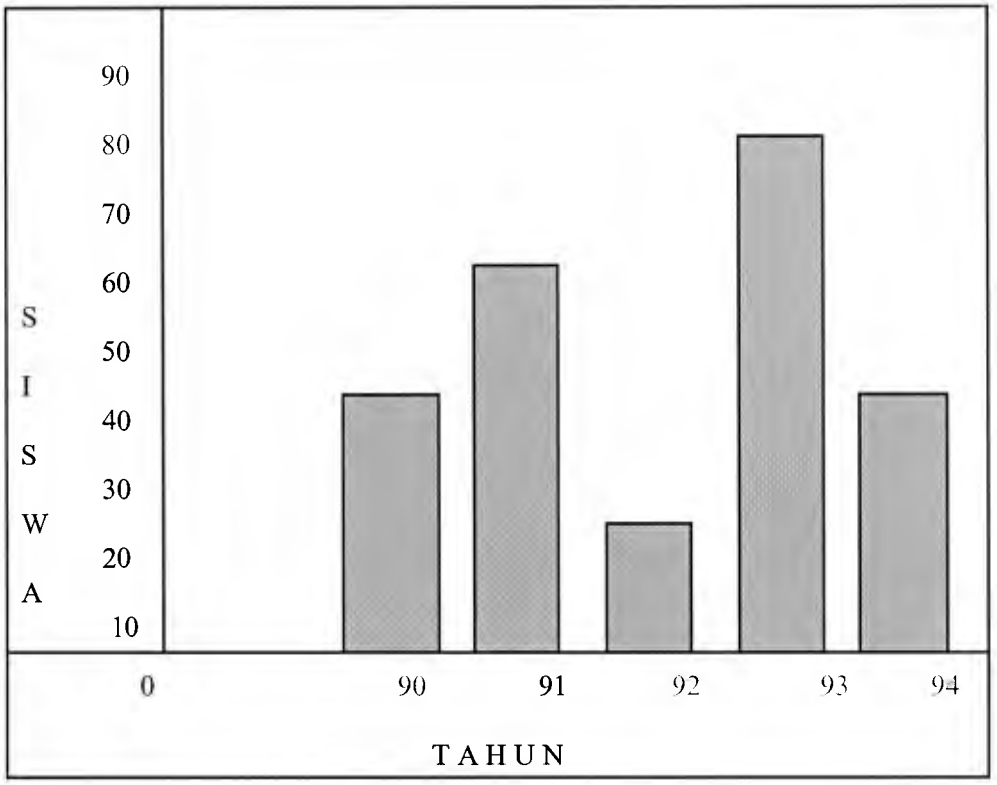
33. Pada gambar di samping ini bangun yang berbentuk jajaran genjang ditunjukkan oleh huruf .....
a. A,B,C b. B,C,D
c. C,D,E d. A,C,E



34. Pada gambar di bawah ini adalah diagram batang jumlah siswa kelas enam yang lulus. Jumlah siswa kelas enam yang lulus terbanyak pada tahun .....

a. 50 b. 65

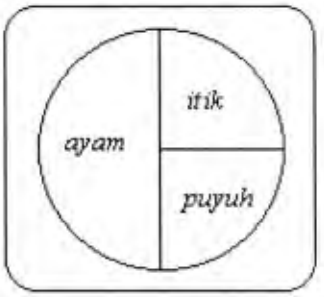
c. 80 d. 93



35. Pada gambar di samping ini adalah diagram lingkaran ternak di desa Suka Hewan tahun 1981. Banyaknya itik 275 ekor, sedangkan banyaknya ayam ..... ekor.

a. 275 b. 550

b. 825 d. 1100



II. ISIAN.

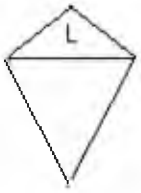
ISILAH TITIK-TITIK PADA SOAL DI BAWAH INI DENGAN JAWABAN YANG BENAR!

36. Jumlah dari 0,96 dan 0,251 adalah ..... _____

37. Pada gambar di bawah ini adalah gambar jaring-jaring ..... _____

38. Selisih antara 0,94 dan 0,68 adalah ..... _____

39. Di bawah ini adalah gambar ..... _____



40. 0,38 + 0,64 - 0,59 = ... _____

41. (0,75 + 0,18 - 0,09) : 0,12 = n, n = ... _____

42. Hasil bagi 0,96 oleh 0,24 = n, n = ... _____

43. Volume (isi) sebuah balok 4800 cm^3
Panjang dan lebar balok adalah 25 cm dan 12 cm.
Tinggi balok adalah = ... cm _____

44. (0,75 + 0,18 - 0,09) : 0,12 = n, n = ... _____

45. Jumlah panjang rusuk-rusuk sebuah kubus = 144 cm.
Volume (isi) kubus = ... cm^3 _____

III. URAIAN.
JAWABLAH PERTANYAAN DI BAWAH INI DENGAN SINGKAT DAN BENAR!

46. Seorang pedagang buah membeli buah-buahan 1 ton. Buah-buahan itu terdiri atas: apel 25%, rambutan 30%, mangga 20%, sisanya salak. Berapa kg berat salak?

_____

47. Seorang pengusaha perumahan membangun 150 unit rumah. 60% sudah siap pakai, 30% masih dalam taraf pengecatan dan sisanya baru dipasang atapnya. Berapa buah rumah yang masih dalam proses pemasangan atap?

_____

48. Berapakah 0,35 + 0,65 - 0,24 : 0,96 ?

_____

49. Tinggi badan 5 anak adalah 142 cm, 140 cm, 138 cm, 135 cm, dan 140 cm. Berapa tinggi rata-rata anak tersebut?

50. Luas sebuah kubus 25 cm^2. Hitunglah volumenya!

(English Version)

SUMMATIVE TEST FOR PRIMARY SCHOOL
TERM III, SCHOOL YEAR 1995/1996
MALANG MUNICIPALITY

Subject : Mathematics **Grade : V** **Name: .....**
Day : Wednesday, 5 June 1996 **Duration: 90 minutes** **Time : 07.30 - 09.00**

I. CROSS (X) ANY OF THE LETTER a, b, OR c WHICH YOU CONSIDER AS THE MOST APPROPRIATE!

1. 3/4 in decimal is .....
   a. 0,70 b. 0,72 c. 0,73 d. 0,75

2. 60% = n, n = ...
   a. 0,6 b. 0,06 c. 0,006 d. 0,0006

3. Mother saved Rp 100,000.00 at BRI. She gets 12% interest per year. How much does she get after 2 years?
   a. Rp 12,000.- b. Rp 24,000.- c. Rp 112,000.- d. Rp 114,000.-

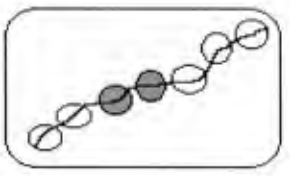
4. 0,7 + 0,6 = n, n = ...
   a. 1,3 b. 0,13 c. 0,013 d. 0,76

5. 0,32 + 0,86 = m, m = ...
   a. 0,0118 b. 0,118 c. 1,18 d. 11,8

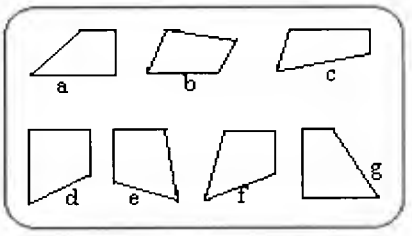
6. 0,14 + 0,9 + 0,67 = ...
   a. 0,89 b. 1,41 c. 1,51 d. 1,61

7. 0,8 - 0,6 = n, n = ...
   a. 0,2 b. 0,14 c. 0,014 d. 0,02

8. The shaded part of the whole picture can be represented in terms of fraction as
   a. 2/5 b. 2/7
   c. 5/2 d. 7/2

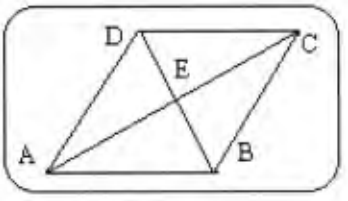


9. The trapezium in the picture besides are .....



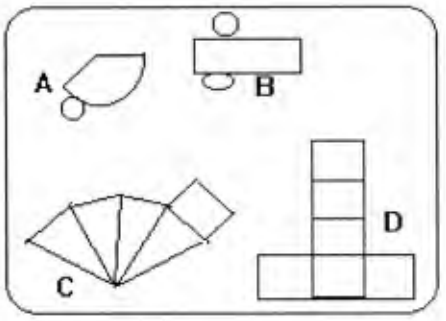
a. a,b,c b. b,c,d
c. d,e,f d. a,d,g

10. The centre of the parallelogram is .....



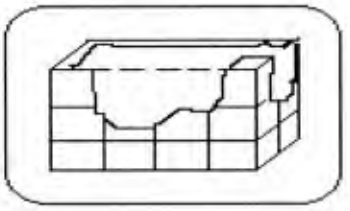
a. E b. D
c. A d. B

11. The conical net of the picture besides is



a. A b. B
c. C d. D

12. The total volume of the block in cubic units is .....



a. 28 b. 26
c. 24 d. 12

13. 0,76 - 0,68 = k, k = ...
a. 8 b. 0,8 c. 0,08 d. 0,06

14. At the beginning of each month the aunty buys 50 kg rice. Because of the doom in this month she contributes much amount of rice. On the first week the rice decreased 0.3 part. How much the left?
a. 0,7 b. 0,8 c. 15 d. 35

15. 12 x 0,7 = ...
a. 7,14 b. 0.84 c. 8,4 d. 64

16. 49% + 36% - 64% = ... %
a. 10 b. 20 c. 24 d. 30

17. 0,67 - 0,89 + 0,48 = ...
a. 0,26 b. 0,12 c. 0,2 d. 2,0

18 0,75 x 0,9 = ...
a. 675 **b.** 67,5 c. 6,75 d. 0,675

19. 0,48 x 0,97 = ...
a. 465,6 b. 46,56 c. 4,656 d. 0,4656

20. 0,96 : 12 = ...
a. 8 b. 0,8 c. 0,08 d. 0,008

21. 0,47 + 0,3 = a, a = ...
a. 0,473 b. 0,50 c. 0,77 d. 7,7

22. 0,9 - 0,78 = m, m = ...
a. 1,2 b. 0,12 c. -0,22 **d. -0,69**

23. 0,6 x 0,9 = n, n = ...
a. 0,054 **b. 0,54** c. 5,4 d. 54

24. 0,348 : 0,4 =.....
a. 8,7 **b. 0,87** c. 0,087 **d. 0,0087**

25. 0,8 x 0,67 x 0,34 = ...
a. 0,18224 **b. 1,8224** c. 18,224 d. 182,24

26. 0,96 : 0,4 : 0,12 = ...
a. 20 **b. 2,0** c. 0,2 d. 0,02

27. The length of a side of the cube = 16 cm
The volume of the cube = ... cm
a. 2560 b. 4096 c. 4186 d. 4196

28. (0,96 + 0,48) : 0,25 = ...
a. 0,058 **b. 0,0576** **c.** 0,576 d. 5,76

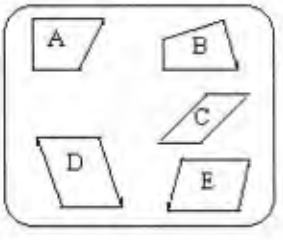
29. (0,99 - 0,18) : 0,03 = ...
a. 0,27 **b. 2,7** c. 27 d. 270

30. (0,84 - 0,12) : (0,24 - 0,22) = ...
a. 36 **b. 3,6** **c. 0,36** **d. 0,036**

31. 3 m^3 + 4 dm^3 = ... dm^3
a. 7 b. 34 c. 3004 d. 3400

32. A block with 4 m length, 12 m wide, and 9 cm height. Its volume is ..... cm^3
a. 432 b. 464 c. 4320 d. 43,200

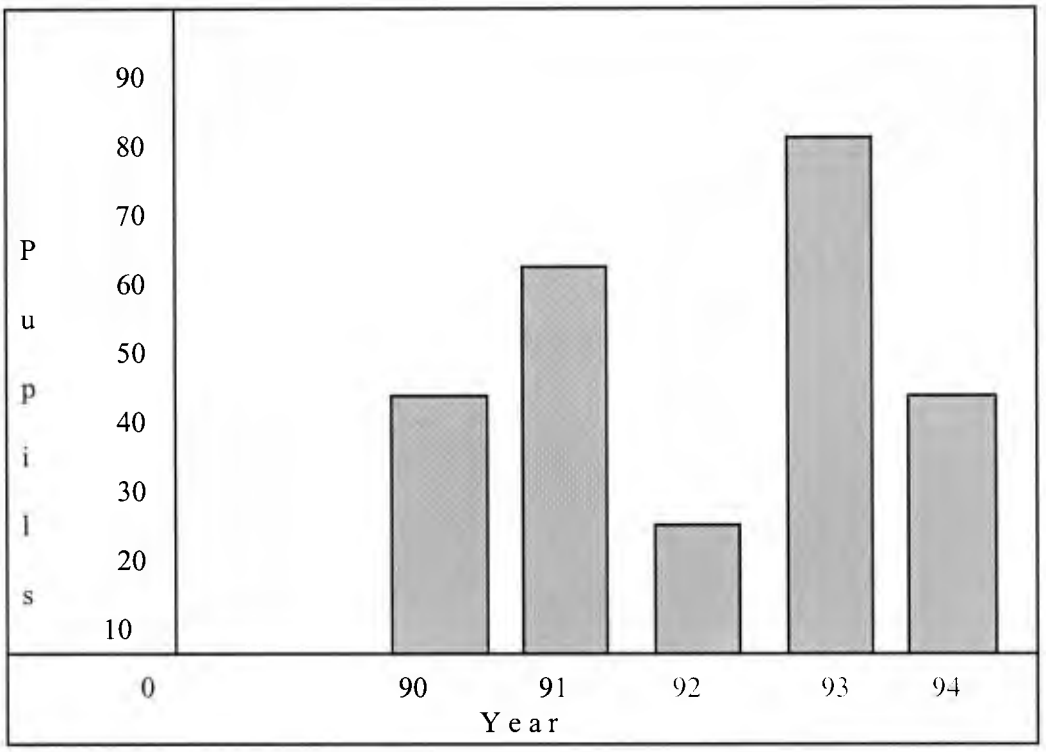
33. On the pictures besides the shape of parallelogram is .....
a. A,B,C b. B,C,D
c. C,D,E d. A,C,E



34. The figure below is a bar diagram on pupils graduated at grade 6. The biggest group of graduates was in year .....

a. 50 b. 65

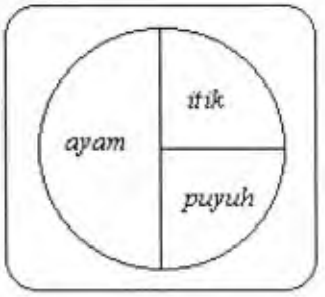
c. 80 d. 93



35. The figure besides is a diagram of livestock at village Suka Hewan in 1981. There were 275 itik (ducks). How many ayam (chickens)?

a. 275 b. 550

b. 825 d. 1100



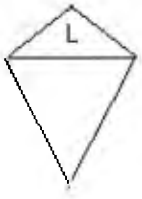
II. FILL IN THE BLANK SPACE ON THE RIGHT SIDE!

36. The total of 0,96 and 0,251 adalah ..... _____

37. The picture below is a net of ..... _____

38. The difference between 0.94 and 0.68 is ..... _____

39. The picture below is ..... _____



40. 0,38 + 0,64 - 0,59 = ... _____

41. (0,75 + 0,18 - 0,09) : 0,12 = n, n = ... _____

42. The result of 0,96 divided by 0,24 = n, n = ... _____

43. The volume of a block is 4800 cm^3
The length and the width are 25 cm dan 12 cm.
The height is = ... cm _____

44. (0,75 + 0,18 - 0,09) : 0,12 = n, n = ... _____

45. The total length of cubic sides is 144 cm.
The volume of the cube = ... cm^3 _____

III. DOING THE FOLLOWING QUESTIONS SHORTLY!

46. A trader bought 1 tonne of fruits. There were 25% apple, 30% hairy fruit, 30% mango, and the rest was salak. How many kg of salak?

_____

47. A real estate developer is building 150 units of house. There are 60% ready for use, 30% in painting, and the rest still without roof. How many need roof?

_____

48. What is the result of 0,35 + 0,65 - 0,24 : 0,96 ?

49. There are five children with the height of 142 cm, 140 cm, 138 cm, 135 cm, and 140 cm.
How is the average height?

50. The area of a cube is 25 cm^2. How is the volume?

APPENDIX B.4a

(Indonesian Version)

Post-Tests for Indonesian Language

ULANGAN UMUM SD CATURWULAN III TAHUN PELAJARAN 1996/1997
KOTAMADYA MALANG

Pelajaran : Bahasa Indonesia Kelas : IV (Empat) Nama: .....
Hari, Tanggal: Selasa, 10 Juni 1997 Waktu: 135 Menit Pukul: 07.00 - 09.15

Bacalah bacaan di bawah ini dengan seksama!

Terima Kasih Guruku

Setiap murid pasti mengenal gurunya. Apalagi murid-murid TK. Mereka paling dekat dengan gurunya, bahkan menganggapnya sebagai ibu dan ayahnya sendiri.

Hal yang sama masing berlanjut ketika mereka belajar di SD. Murid-murid SD menganggap bahwa gurunya adalah orang tuanya yang kedua. Dari gurulah mereka belajar, mendapatkan ilmu, dan keterampilan. Nasehat dan perintah yang diberikan oleh guru adalah untuk mereka semata.

Rasa hormat dan patuh kepada guru-gurunya, sama dengan yang mereka berikan kepada ayah dan ibunya di rumah. Oleh karena itu, apabila murid hormat dan patuh kepada guru, pasti akan disenangi dan disayangi oleh guru di sekolah.

Murid yang bagaimana yang paling diingat guru?
Murid yang paling diingat guru adalah murid yang paling pintar, yang paling bodoh, yang paling nakal dan yang paling rajin di kelas. Apakah kamu termasuk salah satu di antara yang "paling" ini? Bagaimana dengan murid yang lain? Nah, murid yang lain memang dikenal dan diingat guru, tetapi yang paling cepat diingat adalah yang "paling" tersebut.

Bagaimana pula ingatan murid akan gurunya? Seorang murid yang berbudi pasti mengingat jasa gurunya sampai kapanpun. Murid tersebut selalu teringat pada roman muka gurunya, kapan dia tersenyum, tertawa dan marah. Murid yang berbudi pasti tak lupa mengucapkan terima kasih dengan hati yang tulus, karena dia tidak akan bisa apa-apa tanpa gurunya. Ia pandai mengenal huruf, membaca, menulis, dan pengetahuan lain adalah berkat bimbingan gurunya.

Ada seorang murid yang telah berhasil menjadi seorang pengarang lagu yang terkenal. Ia sengaja mengarang lagu untuk gurunya. Ia mengucapkan terima kasih atas jasa gurunya lewat syair lagu yang digubahnya. Syair lagi yang digubahnya itu dikenal sebagai Himne Guru karya Sartono.

ERLANGGA

I. BERILAH TANDA SILANG (X) PADA HURUF a, b, c ATAU d YANG MERUPAKAN JAWABAN YANG PALING BENAR!

1. Ada berapa paragraf wacana di atas? .....
   a. empat
   b. lima
   c. enam
   d. tujuh

2. Murid dan guru mempunyai hubungan yang erat. Yang paling dekat dengan gurunya ialah murid .....
   a. TK
   b. SD
   c. SMP
   d. SMU

3. Jika kamu ingin menjadi murid yang paling diingat oleh Bapak dan Ibu Guru secara baik, kamu harus menjadi murid yang bagaimana?
   a. paling cantik
   b. paling pandai
   c. paling cakep
   d. paling kaya

4. Rasa hormat dan patuh kepada gurunya, sama dengan yang diberikan kepada .....
   a. kakek neneknya
   b. kakak adiknya
   c. ibu bapaknya
   d. Bibi dan pamannya

5. Murid yang berbudi akan mengingat gurunya secara baik. Salah satu di antaranya berterima kasih lewat syair lagu yang digubah oleh Sartono. Apakah nama lagu tersebut?
   a. Garuda Pancasila
   b. Indonesia Raya
   c. Terima Kasih Guruku
   d. Himne Guru

6. Murid-murid TK dekat dengan gurunya. Yang dimaksud dengan dekat adalah .....
   a. dekat tempat duduknya
   b. dekat hubungannya di rumah
   c. dekat tempat tinggalnya
   d. dekat hubungan hatinya/batinnya

7. Rasa patuh kepada guru-gurunya sangat tinggi. Kata lain yang sama dengan kata patuh adalah .....
   a. hormat
   b. sopan
   c. taat
   d. takut

8. Karena penyakitnya parah, orang itu ..... di rumah sakit.
   a. diperiksa
   b. dirawat
   c. disuntik
   d. diobati

9. Ajaran Ki Hajar Dewantara yang terkenal sebagai semboyan adalah "ing ngarso sung tuladha, ing madya mangun karso, tut wuru handayani". Yang dimaksud dengan ing madya mangun karsa adalah .....
   a. di depan memberi teladan
   b. di tengah membangkitkan semangat

c. di belakang memberi dukungan
d. di samping menjajari

10. Kita merayakan ..... kemerdekaan setiap 17 Agustus.
a. hari
b. bulan
c. pada
d. tanggal

11. Sartika bertanya kepada Udin, apa yang ingin ia beli.
Kalimat di atas dapat diubah menjadi kalimat langsung, yaitu seperti berikut .....
a. Sartika bertanya, "apakah yang akan kau beli Din?"
b. Sartika bertanya, "Apakah yang akan kau beli din?"
c. Sartika bertanya, "Apakah yang akan kau beli Din?"
d. Sartika bertanya, Apakah yang akan kau beli Din?

12. Nina duduk ..... depan membonceng Nini.
a. pada
b. di
c. ke
d. dari

13. Pikir itu pelita .....
a. jiwa
b. perawan
c. hati
d. natar

14. Ayah membeli sepeda Budi dengan cara angsuran.
Lawan kata angsuran pada kalimat di atas adalah .....
a. cicilan
b. bon-bonan
c. tahapan
d. tunai

15. Kegiatan KUD banyak sekali. Kepanjangan KUD adalah .....
a. Kantor Unit Desa
b. Koperasi Usaha Desa
c. Koperasi Unit Desa
d. Kantor Usaha Desa

16. Para transmigran harus ..... keras.
a. mencangkul
b. membajak
c. bekerja
d. rajin

17. Guntur selalu mencari kiat untuk memajukan koperasi.
Kata yang sama artinya dengan kiat adalah .....
a. cara
b. taktik

c. tujuan
d. usaha

18. Pemberian mesin perontok padi bersifat manasuka.
Lawan kata manasuka adalah .....
a. keputusan
b. sukarela
c. ketentuan
d. wajib

19. 1. Harga kincir air harus diangsur beserta bunganya.
2. Bunga itu mudah tumbuh.
Kata bunga pada kalimat di bawah ini yang bermakna seperti pada kalimat ke-1 adalah .....
a. Guntur sedang mencari bunga rampai di perpustakaan.
b. Indri memetik bunga melati di taman sekolah.
c. Kuburnya bertaburan bunga.
d. "Ani, bunga yang berceceran ini milik siapa?" tanya ibu.

20. Warung koperasi Indri juga menjual lauk pauk.
Kelompok kata di bawah ini yang berbentuk seperti "lauk pauk" adalah .....
a. kering kerontang
b. tunggang langgang
c. gelap gulita
d. hitam legam

21. "Tingkat" mutu panen kita juga diakibatkan adanya penggunaan alat perontok padi ini.
"Tingkat" seharusnya .....
a. Bertingkat
b. Meningkat
c. Peningkatan
d. Tingkatan

22. Pekerjaan di koperasi itu merupakan tugas rutin bagi Guntur.
"Rutin" artinya .....
a. utama yang harus dikerjakan
b. yang telah dikerjakan sehari-hari
c. pokok sehari-hari
d. yang biasa dikerjakan sehari-hari

23. Guntur dapat memimpin koperasi sekolahnya dengan sukses.
Kata yang berarti sama dengan "sukses" adalah .....
a. hebat
b. berhasil
c. jaya
d. unggul

24. Kalimat di bawah ini yang merupakan kalimat kepastian, adalah .....
a. "Wah, pasti selesai jika mesinnya tak macet!" kata Tino.
b. "Ah, selesai tugas ini asal kau bantu!" kata Tino.

c. "Alangkah senangnya, mendengar kepastian itu!" kata Tino.
d. "Wah, mesinnya macet, tak akan selesai tugas ini!" kata Tino.

25. Cara Bu Reni membina keluarga patut "teladan" oleh tetangganya.
"Teladan" seharusnya .....
a. diteladani
b. meneladani
c. meneladankan
d. berteladankan

26. Bu Sri sebagai pembimbing praktik memasak di kelas IV.
"Pembimbing" artinya .....
a. tukang membimbing
b. orang yang dibimbing
c. ahli membimbing
d. orang yang membimbing

27. Bu Reni tidak pernah berhutang.
Lawan kata "hutang" adalah .....
a. angsuran
b. piutang
c. pinjam
d. pinjaman

28. Mila menggambar kucing di halaman.
Kalimat di bawah ini yang bentuknya (polanya) sama tepat dengan kalimat di atas itu adalah .....
a. Pak Candra membiasakan diri tidak tidur siang.
b. Bu Reni melatih Mila memasak gulai
c. Bu Reni merakit kata-kata itu di ruang belajar.
d. Pak Candra menganjurkan setia belajar di kamar.

29. Mila sangat di sayangi Bu Indri, gurunya.
Kalimat di bawah ini yang bermakna sama dengan kalimat di atas itu adalah .....
a. Bu Indri sangat disayangi guru Mila.
b. Bu Indri, guru Mila, sangat menyayanginya.
c. Guru Mila sangat menyayangi Bu Indri.
d. Guru Mila, Bu Indri, sangat disayangi Mila.

30. Kalimat di bawah ini yang mengungkapkan keheranan adalah .....
a. Mila, tidak biasanya nilai matematikamu sejelek ini!
b. Bu Indri heran mengapa nilai matematika Mila jelek.
c. Apakah kami tak heran jika nilai matematika Mila jelek?
d. Mila, kamu tahu bahwa matematikamu jelek?

31. Polio oralit tetanus .....
Kata yang tepat untuk meneruskan rantai huruf tersebut adalah .....

a. sampah
b. selesma
c. sekolah
d. subur

32. Hasanah menanam bunga melati .....
Keterangan tempat yang sesuai untuk memperluas kalimat tersebut adalah
a. pada kebun
b. ke kebun
c. sampai kebun
d. di kebun

33. Sigit menyirami tanaman bunga pada sore hari.
Kalimat tersebut diperluas dengan keterangan .....
a. tempat
b. waktu
c. cara
d. alat

34. Penulisan kalimat langsung berikut yang benar adalah
a. Rudi berkata: "Saya ingin menjadi guru".
b. Rudi berkata, "Saya ingin menjadi guru".
c. Rudi berkata, "saya ingin menjadi guru".
d. Rudi berkata: "saya ingin menjadi guru".

35. 1) Akibat kekurangan hara, tanaman akan kekurangan makanan dan mati.
2) Persediaan hara dalam tanah kian berkurang dan mungkin habis diserap oleh tanaman.
3) Oleh karena itu, perlu ditambahkan unsur hara dalam tanaman melalui pemupukan.
4) Namun, tidak selamanya tanah mampu menyediakan semua unsur hara yang diperlukan oleh tanaman.
5) Untuk kelangsungan hidupnya, tanaman memerlukan unsur-unsur hara yang tersedia di dalam tanah.

Kalimat-kalimat tersebut akan menjadi alinea yang baik jika disusun dengan urutan .....
a. 3), 2), 1), 5), 4)
b. 4), 5), 1), 3), 5)
c. 5), 4), 1), 2), 3)
d. 2), 4), 5), 1), 3)

II. ISILAH TITIK-TITIK PADA SOAL DI BAWAH INI DENGAN ISIAN YANG BENAR!

36. Setia pergi ke sekolah selalu bersama Andri, Dino, dan Ito. "Setia" tepat jika diganti kata ganti ..... _____

37. Tenteram rumah tangga menjamin keberhasilan belajar anak-anak. "Tenteram" seharusnya ..... _____

38. "Kalian dilarang berpukul-pukulan", kata Pak Guru.
Contoh kata ulang yang bermakna sama dengan

"berpukul-pukulan" adalah .....

39. Ayah Guntur juga warga KUD di desanya.
Arti "warga" sama dengan kata .....

40. Koperasi petani buah juga sudah ada. Petani jeruk juga masuk menjadi anggotanya. Kata yang bermakna umum seperti "buah" dan bermakna khusus seperti "jeruk" adalah ..... dan .....

41. Di lereng gunung-gunung kincir air itu dipasang.
Kata ulang "gunung-gunung" bermakna .....

42. Tanggal 15 September diselenggarakan PIN di posyandu. Kepanjangan "posyandu" adalah .....

43. Rina dirawat Dokter Dono.
Kalimat ini bisa diubah bentuknya tanpa berubah maksudnya, menjadi: Dokter .....

44. "Ayah, nilai raporku rata-rata sembilan!" kata Rini.
Kalimat di atas ini menyatakan rasa .....

45. "Mendung tebal hitam, kita jadi berangkat atau tidak, Ayah?" tanya Dino.
Kalimat di atas ini menyatakan rasa .....

III. KERJAKAN SOAL DI BAWAH INI SESUAI DENGAN PERINTAH MASING-MASING!

46. Kalian baru saja menerima rapor.
Beritahulah kawan kalian bagaimana keadaan nilai-nilai rapor kalian!

47. Jelaskan dengan beberapa kalimat, bagaimana suasana di ufuk timur ketika matahari akan terbit!

48. Gambarkan dalam beberapa kalimat, bagaimana wujud warung koperasi sekolah kalian!

49. Teman kalian dirawat di rumah sakit. Kalian ingin menjenguk teman itu, bersama-sama teman kalian. Coba minta ijin ibu kalian. Gunakan bahasa yang baik, ucapan yang tepat, dan sopan santun berbahasa yang baik!

50. Kalian telah melihat keadaan teman, yang sedang terbaring sakit. Kasihankah kalian? Atau rasa yang lain, yang kalian rasakan! Ungkapkan apa yang kalian rasakan itu!

IV. MENGARANG

Apakah kamu pernah melihat orang atau anak yang kurus dan penyakitan? Coba perhatikan gambar di sebelah. Apakah kamu merasa iba? Buatlah karangan, andaikata di dekat rumahmu atau dekat sekolahmu kau temukan kehidupan semacam itu. Apakah yang kau lakukan? Ceritakan dalam beberapa paragraf. Jangan lupa memberi judul!

(Indonesian Version)

ULANGAN UMUM SD CATURWULAN III TAHUN PELAJARAN 1996/1997
KOTAMADYA MALANG

Pelajaran : Bahasa Indonesia Kelas : V (Lima) Nama: .....
Hari, Tanggal: Selasa, 10 Juni 1997 Waktu: 150 Menit Pukul: 07.00 - 09.30

Bacalah dengan cermat!

KERETA API MALAM

Tuit ..... Tuit ..... Tuit .....
Kereta itu yang selalu diucapkan Andik ketika datang ke Surabaya. Bulan lalu keluarga Paman Budi, Bibi Dewi, Andik dan Reri anaknya datang ke rumah nenek di Surabaya. Sejak kecil mereka tinggal di Balikpapan. Sedang ayahnya kerja di Banjarmasin. Baru pertama kali mereka naik kereta api. "Terasa tenang saya naik kereta api" Andik mulai cinta. Kereta api yang kutumpangi terdiri atas 7 (tujuh) gerbong. Setiap gerbong berisi $\pm$ 40 orang.

Di ruangan itu terdapat televisi 20 inci sebagai satu-satunya hiburan, meskipun acaranya tidak sempat kutonton secara tuntas. Kami tertidur ketika malam tiba dinginnya AC membuat kami ingin tidur. Kursi yang disediakan cukup besar terasa nyaman. Aku sempat tertegun begitu kuatnya mesin kereta ini deretan gerbong sepanjang ini mampu ditariknya. Jalannya cukup dua rel yang membujur sepanjang kota yang dilalui. Semua ini kami hanya mendengar namanya, kalaulah melihat hanya gambar di televisi.

Kali ini untuk pertama lainya kami menikmati perjalanan dengan kereta api. Sungguh menyenangkan. Pelayannya berpakaian rapi baik laki-laki maupun perempuan. Ketika malam tiba kami mendapat makan malam. Di sana juga dilengkapi restoran yang menyediakan aneka makanan dan minuman. "Pernahkah Kak Dono naik kereta api?" tanya Andik padaku. Sudah dua kali kami sekeluarga ke Jakarta naik kereta api tetapi belum secepat kereta Argobromo seperti sekarang ini. Jawabku.

I. BERILAH TANDA SILANG (X) PADA HURUF a, b, ATAU c YANG MERUPAKAN JAWABAN YANG PALING BENAR!

1. Bagaimana keadaan tempat duduk di kereta api?
   a. kurang memadai b. cukup besar
   c. cukup besar d. sangat besar

2. Pernyataan di bawah ini yang paling benar ialah .....
   a. Di daerah Andik banyak kereta api.
   b. Baru pertama kali Andik naik kereta api.
   c. Setiap kali pergi Andik naik kereta api.
   d. Keluarga Andik sering naik kereta api.

3. Di mana keluarga Andik tinggal?
   a. Surabaya b. Jakarta
   c. Balikpapan d. Banjarmasin

4. Bulan lalu.
Kalimat tanya yang tepat untuk jawaban di atas ialah .....
a. Kapan keluarga Andik ke Surabaya?
b. Apakah keluarga Andik ke Surabaya?
c. Ke rumah neneknya di Surabaya?
d. Dengan siapa Andik ke Surabaya?

5. Apa yang dapat dibeli di restoran kereta api?
a. minuman dingin dan panas
b. aneka makanan
c. makanan dan minuman
d. makanan ringan

6. Penulisan tanggal surat di bawah ini yang benar ialah .....
a. Surabaya 17-Mei-1997
b. Surabaya, 17 Mei 1997
c. Surabaya; 17 Mei 1997
d. Surabaya: 17 Mei 1997

7. 1. Tepat pukul 07.00 rencananya upacara bendera akan dimulai.
2. Tiba-tiba hujan turun sangat deras dan halamanpun penuh air.
3. Semua guru dan siswa SD telah hadir dengan pakaian seragam.
4. Hari itu hari Senin.
Bila kalimat di atas disusun menjadi paragraf yang baik. Susunan yang benar ialah .....
a. 2 - 3 - 1 - 4
b. 4 - 2 - 1 - 3
c. 4 - 3 - 1 - 2
d. 1 - 2 - 3 - 4

8. Kemarin sore.
Kalimat tanya yang tepat untuk jawaban di atas ialah .....
a. Dapatkah engkau datang sebelumnya?
b. Mengapa engkau datang secepat itu?
c. Pastilah engkau datang ke rumahku?
d. Kapan engkau datang dari Samarinda?

9. Sore itu ada seekor tikus kecil masuk rumah. Datanglah kucing yang siap menerkamnya. Agar tidak dimangsanya tikus menyapa kucing dengan pujiannya.
"Hai kucing kamu masih cakap saja bulumu harus warnamu bagus pula." "Tentu karena setiap hari aku tidur di kasur majikanku tidak sepertimu tempatnya di saluran yang kotor" jawab kucing.
Karena dipuji kucing lupa menerkam tikus.
Penggalan cerita di atas menceritakan .....
a. tipu muslihat tikus
b. kucing bodoh
c. binatang yang sombong
d. kerugian besar

10. Dina: "Hallo, selamat malan ini rumah Erni. ...."
Erni: "Hallo, Erni di sini ada yang bisa bantu Din?"
Kalimat yang tepat untuk melengkapi titik-titik di atas ialah .....
a. Bagaimana keadaan Erni
b. Apakah Erni dapat bicara dengan saya
c. Dapatkah bicara dengan Erni
d. Apakah Erni ada di rumah

11. Pengumuman di bawah ini yang jelas maksudnya ialah .....
a. Lomba lukis dilaksanakan hari Minggu tanggal 18 Mei 1997 pukul 07.30 bertempat di ruang serba guna. Dapat diikuti oleh semua siswa.
b. Lomba lukis dilaksanakan hari Minggu tanggal 18 Mei 1997 dapat diikuti semua siswa.
c. Lomba lukis dilaksanakan hari Minggu pukul 07.30 bertempat di SD kita dan dapat diikuti semua siswa.

d. Lomba lukis dilaksanakan hari Minggu pukul 07.30 dan boleh diikuti semua siswa.

12. Kata berawalan ber- yang berarti memakai terdapat pada kalimat .....
a. Adik bersepeda ke sekolah
b. Paman berkebun sayur di belakang rumahnya
c. Ayamku bertelur dua belas butir
d. Orang yang berbaju biru itu guruku.

13. Anton pergi tamasya hari minggu. ia pergi kepegunungan. udara di sana sangat sejuk. Kata yang seharusnya diawali huruf besar ialah .....
a. Anton, minggu
b. Anton, ia, udara
c. Anton, ia, minggu
d. Anton, hari, ia

14. Topi seragam dicuci kakak, padahal hari ini upacara harus memakai topi. Kalimat tanya agar memperoleh saran dari Kakak ialah .....
a. Mengapa topi saya dicuci?
b. Apa yang harus saya lakukan, Kak?
c. Ikut upacarakah saya?
d. Bagaimana Kakak mencucinya?

15. Burung Camar terbang berputar
melihat ikan asyik berenang.
.....
Jaminan hidup menjadi senang.
Kalimat yang tepat untuk melengkapi pantun di atas ialah .....
a. Kalau adik menjadi cerdik
b. Kalau adik menjadi pandai
c. Kalau adik menjadi cerdas
d. Kalau adik menjadi pintar

16. Dia tidak sombong ..... setiap tahun menjadi juara kelas.
Kalau penghubung yang tepat untuk mengisi titik-titik di atas ialah .....
a. asalkan
b. karena
c. tetapi
d. walaupun

17. Dina berangkat ke sekolah dengan naik sepeda yang berwarna merah.
Kalimat di atas bila disederhanakan menjadi .....
a. Dina berangkat sekolah bersepeda.
b. Dina ke sekolah naik sepeda merah.
c. Dina ke sekolah bersepeda.
d. Dina berangkat naik sepeda merah.

18. Hari itu sekolah libur. Dina mengatakan kepada ibunya akan bangun lebih pagi karena telah berencana bersekolah dengan temannya. ternyata ia bangun pukul 07.00. Ibunya mengira ia telah pergi.
Kalimat yang menyatakan sindirian ialah .....
a. Pagi sekali kamu bangun, Dina.
b. Mengapa kamu terlambat bangun.
c. Ibu mengira kamu sudah pagi.
d. Tidak jadi bersepeda.

19. Kalimat di bawah ini yang mengandung kata bermakna sesungguhnya ialah .....
a. Di kotaku ada pemutihan surat kelahiran.
b. Perkara itu telah dimejahijaukan bulan lalu.
c. Mukanya merah padam setelah tahu adiknya yang bersalah.
d. Dicucinya baju merah itu dengan sabun mandi.

20. 1. Orang berlari menuju arah suara tadi.
2. Dua orang luka parah, tetapi tidak ada korban meninggal.
3. Kecelakaan telah terjadi antara bis dan mobil penumpang ulung.
4. Sore itu terdengar benturan cukup keras.

Urutan kejadian yang tepat ialah .....

a. 1 - 3 - 4 - 2 b. 4 - 2 - 1 - 3
c. 4 - 1 - 3 - 2 d. 1 - 3 - 2 - 4

21. Setiap Rabu petugas pos dan giro datang ke sekolah kami. Mereka berseragam putih dengan celana biru tua. Dengan mobil orang mereka melayani tabungan siswa sekolah kami.
Kalimat tanya yang jawabnya dalam bacaan di atas ialah .....

a. Kapan petugas Pos datang ke sekolah? b. Mengapa mereka seragam?
c. Apakah petugas pos naik sepeda motor? d. Dengan siapa mereka datang?

22. Kalimat iklan di bawah ini yang baik ialah .....

a. Dibuat oleh tenaga ahli.
b. Tape kuning sangat murah harganya.
c. Tape "Kuning" cocok untuk hidangan keluarga.
d. Belilah tape kuning.

23. Ia mengenakan kerudung putih tapi aku tak tahu.

a. memakai b. memanfaatkan
c. menggunakan d. menutupkan

24. Tinggi kawat jemuran itu supaya tidak mengenai kepala!
Kata bergaris bawah seharusnya .....

a. Tinggian b. Tinggilah
c. Tinggikah d. Tinggikan

25. Kalimat di bawah ini yang mengandung kata berakhiran -i ialah .....

a. Ia memakai baju putih ketika datang.
b. Ditanami kebunnya pohon ketela.
c. Di sepanjang jalan itu tumbuh bunga teratai.
d. Setiap hari ibu memberi uang saku.

26. Kalimat di bawah ini yang tepat diakhiri tanda seru (!) ialah .....

a. Mariani ambil baju b. Diambilkan minum aku
c. Lebarkan jalan itu d. Ibu mengajak kita akan

27. Adik belajar giat karena ingin lulus dengan nilai bagus. Setiap malam ia bangun shalat Tahajud.
Kalimat di bawah ini yang merupakan ungkapan harapan ialah .....

a. Nilai yang bagus tentu memudahkan memilih sekolah.
b. Mudah-mudahan nilai adik bagus sehingga diterima di Sekolah Negeri.
c. Ujian memang harus dipersiapkan dengan baik.
d. Seharusnya belajar giat agar lulus.

28. Roni : "Halo selamat malam" ingin bicara dengan Anton.
Anton: "Ya, saya sendiri. Ada yang bisa saya bantu."
Roni : "Saya mau tanya ....."
Anton: "Ya, jadi Roni, pukul 08.30"
Kalimat yang tepat untuk melengkapi percakapan di atas .....

a. Apakah besok jadi ulangan?
b. Apa yang harus saya pelajari?

c. Kapan ulangan dilaksanakan?
d. Apa saya harus belajar?

29. Temanmu mengajak latihan voli dan kamu menyanggupinya.
Kalimat yang kamu ucapkan ialah .....
a. Baiklah, akan kuusahakan.
b. Baiklah saya akan datang.
c. Insyallah bila tidak repot
d. Mungkin saya akan datang.

30. Ardi kakak Toni telah lama mengikuti latihan beladiri. Seluruh ajaran telah dikuasainya dengan baik. Suatu hari ada pencopet di pasar yang sedang menggerayangi tas ibu yang belanja. Maka ditendangnya pencopet itu meskipun ia tidak membawa senjata ia dapat membekuk pencopet itu.
Sifat yang dimiliki Ardi ialah .....
a. rajin belajar
b. bijaksana
c. sombong
d. pemberani

31. Hari itu Ina sakit. Karena itu ia tidak masuk sekolah.
Pagi harinya Ina menghadap Bu Tati untuk menyampaikan alasannya.
Kalimat yang diucapkan .....
a. Ibu saya sakit saya tidak masuk sekolah.
b. Maaf ibu saya tidak sempat memberitahu ibu.
c. Saya kurang enak badan maaf ya Bu.
d. Saya kemarin sakit karena itu saya tidak masuk, Bu.

32. Iwan mendengar adiknya meraih juara I lemba mengarang padahal selama ini tidak pernah ia terlihat mengarang.
Iwan : "....."
Irma : "Benar, saya melihat hadiahnya."
Kalimat yang tepat untuk melengkapi titik-titik di atas ialah .....
a. Tidak pernah ia mendapat juara
b. Benarkah adik juara I?
c. Mungkinkah ia juara?
d. Saya tidak percaya.

33. Ibu menjelaskan cara membersihkan noda pada baju.
a. memberitahukan
b. menerangkan
c. memberitahu
d. mengartikan

34. Saya angkat tangan bila disuruh menjaga anak nakal itu.
Angkat tangan artinya .....
a. tidak sanggup
b. sanggup
c. menyatakan siap
d. mengangkat tangan

35. Kalimat yang penulisannya tepat ialah .....
a. Latihan olah raga setiap hari minggu.
b. Minggu depan kami ke Sumatera.
c. Dari tengah lautan mereka melihat Gunung.
d. Candi Borobudur di Jawa Tengah.

II. ISIAN

36. Surya tersenyum puas dapat membantu temannya.
Ia menyadari berbuat baik tidak perlu ditonjolkan.
Dilupakan jasa pada orang lain.
Pesan cinta di atas bahwa berbuat baik kepada
orang lain ..... _____

37. Anak : "Saya ingin bekerja, Pak?"
Bapak: "..... upah yang kau minta?" _____

38. "Tampaknya hujan akan turun karena ..... hitam
telah memenuhi langit." _____

39. Rumah pak adi sangat sederhana, padahal orang itu
sangat kaya.
Tulisan di atas yang salah ejaannya ialah ..... _____

40. Kaum cerdik ..... sedang membicarakan penelitian. _____

41. Ia mengantar makanan ke rumah Nenek.
Makanan ..... ke rumah Nenek. _____

42. ..... saluran air itu tidak lancar?
Kata tanya untuk mengisi titik-titik di atas ..... _____

43. Oni : "Hallo, selamat sore, saya ingin bicara dengan Yesi".
Yesi : "Ya saya sendiri."
Oni : "Yesi dapatkah saya dibantu mengerjakan PR
Yesi : "Baiklah saya ..... semampu saya."
Titik-titik tepat diisi ..... _____

44. Anak itu pandai kami menyenanginya.
Kata menyenangi dapat ditangi dengan kata ..... _____

45. Dia tidak tahu membalas budi seperti air susu dibalas
dengan ..... _____

III. URAIAN
JAWABLAH PERTANYAAN DI BAWAH INI DENGAN SINGKAT DAN BENAR!

46. Petunjuk penggunaan pupuk bunga 2x sebulan 1 sendok makan dicampur air 5 liter.
Maksud penggunaan pupuk itu ialah .....
_____

47. hari itu hari minggu
keluarga budi pergi tamasya
ke Surabaya, tak ketinggalan
Susunlah sehingga menjadi suatu kalimat yang benar!
_____

48. Lengkapi surat di bawah ini (pada huruf a, b, dan c)

Madiun, ... (a)

..... (b)
.....Juni
Di Banyuwangi

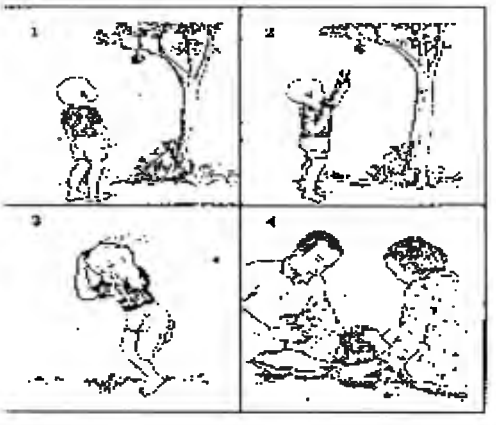
untuk mengingkatkan persaudaraan kita, kami mengundang teman-teman untuk hadir pada: (c) ....., Senin, 19 Mei 1997
....., pukul 19.00
....., Jl. Juanda 5

Sahabatmu
Dino

49. Susunlah cerita sedikitnya 3 kalimat dari gambar di bawah ini!

50. Rusa jantan tertembak mati
Rusa betina masuk jurang
Hai pelajar teguhkan hati
Mengasah otak bekal mendatang
Maksud pantun itu adalah agar pelajar .....

IV. MENGARANG



(Indonesian Version)

DOKUMEN NEGARA
SANGAT RAHASIA

UTAMA 5

Departemen Pendidikan dan Kebudayaan
Evaluasi Belajar Tahap Akhir Nasional
Tahun Pelajaran 1996/1997

LEMBARAN SOAL

Mata Pelajaran : Bahasa Indonesia
Jenis Sekolah : Sekolah Dasar
Hari/Tanggal : Senin, 26 Mei 1997
Alokasi Waktu : 150 menit
Dimulai pukul : 09.30
Diakhiri pukul : 12.00

PETUNJUK UMUM:

1. Tidak boleh mengerjakan soal dengan pensil/spidol, melainkan dengan tinta warna hitam/biru.
2. Tulislah lebih dahulu nomor kode sekolah dan nomor kode pesertamu pada kolom 4 di sudut kanan atas pada lembar jawaban yang disediakan.
3. Periksa dan bacalah soal-soal dengan teliti sebelum kamu menjawabnya.
4. Jumlah soal sebanyak 50 (lima puluh) butir terdiri atas:
   a. Soal Pilihan Ganda = 35 butir
   b. Soal Isian Singkat = 10 butir
   c. Soal Uraian Terbatas = 5 butir
   d. Mengarang
5. Laporkan kepada Pengawas EBTANAS kalau terdapat tulisan yang kurang jelas atau ada yang rusak.
6. Dahulukan menjawab soal-soal yang kamu anggap mudah.
7. Kerjakanlah pada lembar jawaban yang telah disediakan.
8. Mintalah kertas buram kepada Pengawas EBTANAS bila diperlukan.
9. Berilah tanda silang (X) pada huruf jawaban yang kamu anggap benar.
10. Apabila ada jawaban yang kamu anggap salah pada pilihan ganda dan kamu ingin memperbaiki, coretlah dengan dua garis lurus mendatar pada jawaban yang salah kemudian beri tanda (X) pada huruf jawaban lain yang kamu anggap benar.
    CONTOH: a b X d diperbaiki menjadi X b X d
11. Setelah selesai dan masih ada waktu, periksa kembali pekerjaanmu sebelum diserahkan kepada Pengawas EBTANAS.

BACAAN

Gerakan Kali Bersih

Tono, Tini, Rudi, dan Ruli murid SD Dukuh. Hari Senin pagi-pagi benar mereka bersama-sama berangkat ke sekolah. Mereka bertetangga. Hari itu mereka mengikuti upacara bendera.

Murid-murid SD Dukuh termasuk murid-murid yang tertib, patuh kepada guru. Hal ini tampak pula dalam pelaksanaan upacara hari Senin tersebut.

Pembina upacara saat itu Pak Alwan. Beliau guru kelas VI. Pak Alwan mendapat tugas dari Kepala Sekolah agar dalam acara itu disampaikan masalah Gerakan Kali Bersih.

Upacara berlangsung sangat khidmat. Pak Alwan menyambut dengan penuh semangat. Pesan Kepala Sekolah disampaikan beliau, dan didengarkan oleh semua peserta, termasuk Bapa Ibu Guru dan Kepala Sekolah.

Sambutan Pak Alwan yang menarik perhatian anak-anak dan para guru. Beliau mengatakan bahwa Gereka Kali Bersih dipelopori oleh Gubernur, Bupati atau Walikota. Gerakan ini harus dilaksanakan seluruh warga. Daerah yang mempunyai selokan, sungai, maupun tidak mempunyai, kebersihannya harus dijaga semua warga.

"Murid-murid SD Dukuh jangan sampai ada yang ketinggalan," kata Pak Alwan. "Nanti secara bertahap semua ikut melaksanakan Gerekan Kali Bersih," kata Pak Alwan.

Selanjutnya Pak Alwan menjelaskan bahwa kali bersih itu besar manfaatnya. Lingkungan kita menjadi indah, udara bersih. Kali yang lebar bisa dimanfaatkan untuk lomba dayung, mencegah banjir, bahan air minum, mengairi sawah, dan ikan-ikan dapat hidup dengan tenteram. Nenek pernah mengatakan "Air jernih ikannya jinak". Akibatnya semua warga kita menjadi ikut tenteram, sejahtera. Jangan dibiasakan membuang sampah di selokan, atau di kali. Termasuk kebiasaan berak dan kencing di kali harus dilarang.

Tugas dan pelaksanaan Gerakan Kali Bersih ini akan dipersiapkan dulu oleh Bapak Ibu Guru bersama Kepala Sekolah. Yang penting anak-anak siap mengikuti gerakan ini.

Dari
Buku Paket

I. PILIHAN GANDA

BERILAH TANDA SILANG (X) PADA SALAH SATU HURUF a, b, c ATAU d YANG MERUPAKAN JAWABAN PALING BENAR!

1. Tentang Gerakan Kali Bersih
   Pertanyaan berikut ini yang sesuai dengan jawaban di atas ialah .....
   a. Apa yang menarik perhatian anak tentang gaya Pak Alwan?
   b. Apa alasan yang anak-anak tertarik kepada Pak Alwan?
   c. Apa tugas Pak Alwan pada hari itu?
   d. Apa isi sambutan Pak Alwan yang menarik perhatian anak-anak?

2. Seluruh warga
Pertanyaan berikut ini yang sesuai dengan jawaban di atas ialah .....
a. Siapa saja yang hadir dalam Upacara tersebut?
b. Siapa yang memperesiapkan gerakan kali bersih?
c. Siapa yang harus melaksanakan Gerakan Kali Bersih?
d. Dalam sambutan tersebut siapa yang menjadi pelopor Gerekan Kali Bersih?

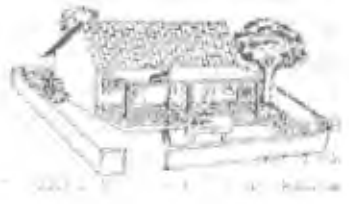
3. Di mana Gerakan Kali Bersih harus dilaksanakan?
Kalimat yang tepat untuk menjawab pertanyaan di atas ialah .....
a. Di seluruh daerah
b. Di kali kampunt Tono, sampai semua kali sepropinsi.
c. Pada kali kampung Pak Alwan, sampai kali tingkat kabupaten.
d. Kali kampung Ruli, sampai kali tingkat kota.

4. Bagaimana caranya agar kali dapat menjadi bersih?
Jawaban pertanyaan di atas ialah .....
a. Tidak membuang sampah ke kali.
b. Tidak memelihara ikan di kali.
c. Tidak menutup aliran air.
d. Tidak menggunakan kali sebagai air minum.

5. Mengapa Gerakan Kali Bersih harus dilaksanakan semua warga?
Jawaban pertanyaan di atas ialah .....
a. Karena semua warga setuju membersihkan kali.
b. Semua warga harus bertanggung jawab menjaga kebersihan.
c. Karena Gerakan Kali Bersih perlu dilaksanakan.
d. Karena Kali harus di jaga kebersihannya.

6. Dari hasil penjualan koran, Amin, dapat membeli sepeda yang bagus, karena Amin rajin menabung, seperti dalam peribahasa, "Sedikit demi sedikit, lama-lama menjadi bukit."
Maksud peribahasa di atas ialah .....
a. Yang menabung amat beruntung.
b. Mula-mula banyak, lama-lama menjadi sedikit.
c. Sesuaty yang sedikit, jika dikumpulkan akan menjadi banyak.
d. Siapa yang rajin akan beruntung.

7.



Kalimat poster yang baik dan menarik untuk gambar di atas ialah .....
a. Sekolah tempat belajar yang indah
b. Sekolahku adalah istanaku.
c. Peliharalah kami agar tetap asri!
d. Sekolah yang bersih tanggung jawab kita.

8. Andina membeli buku dan pensil di toko buku.
Kata yang bergaris bawah pada kalimat di atas menyatakan tempat.
Kalimat di bawah ini yang mengandung gabungan kata yang menyatakan tempat, terdapat pada kalimat .....
a. Kakat pergi ke Surabaya saat Ayah di kantor.
b. Ibu menjahit baji ketika adik tidur.
c. Ayah membaca surat kabar Jawa Pos pada pagi hari.
d. Adik membaca buku di ruang tengah.

9. 1. Rajapun terheran-heran melihat jago Panji waktu itu.
2. Diam-diam Panji meninggalkan tempat persabungan ayam.
3. Dia tidak mengambil semua uang emas yang dimenangkannya.
4. Semua orang terkejut mendengar kokok jago Panji.

Kalimat-kalimat di atas bila disusun menjadi suatu paragraf yang benar ialah .....
a. 1 - 2 - 4 - 3
b. 2 - 3 - 4 - 1
c. 4 - 1 - 2 - 3
d. 3 - 4 - 2 - 1

10. Budi memenangkan lomba mengarang antar sekolah.
Dia menjadi juara dan menerima hadiah. Teman-temannya memberi ucapan selamat atas keberhasilannya, dengan rasa bangga Budi menerima ucapan itu sambil berucap, "alangkah lega hatiku dapat memenangkan lomba ini!"
Kalimat di bawah ini yang menyatakan rasa kepuasan adalah .....

a. "Alangkah lega hatiku dapat memenangkan lomba ini!", kata Budi.
b. Teman Budi merasa bangga atas keberhasilannya.
c. Dia menerima hadiah dan ucapan selamat.
d. Dia menjadi juara dan menerima hadiah.

11. Rina anak yang patuh pada orang tua, dia adalah anak tertua keluarga Karno. Pak Karno yakin Rina dapat memberi contoh yang baik pada adik-adiknya.
Kalimat di bawah ini yang menyatakan pengharapan ialah .....

a. Pak Karno mengharapkan Rina menjadi anak yang baik.
b. Tingkah laku yang baik adalah harapan Rina.
c. "Rin, kamu anak tertua harus bisa menjadi contoh bagi adik-adikmu", kata Pak Karno.
d. "Setiap orang tua pasti mengharapkan anaknya menjadi baik", kata Pak Karno.

12. Mamat anak yang pandai, setiap tahun selalu menduduki peringkat I di kelasnya, sejak ayahnya meninggal semangat belajarnya menurun, sehingga tahun ini dia tidak menjadi bintang kelas.
Kalimat yang mengungkapkan rasa kecewa, ialah .....

a. Ibu sudah mengingatkan, tapi kau abaikan maka itulah hasilnya.
b. Ibu merasa sedih setelah mengetahui Mamat tidak menjadi bintang kelas.
c. Karena ayahnya meninggal Mamat malas belajar.
d. Semangatnya menurun sehingga tidak menjadi bintang kelas.

13. Ketika pulang sekolah baju Nina basah kuyub karena kehujanan.

Kata bergaris bawah pada kalimat di atas dapat diganti dengan kata .....
a. baju kami
b. bajunya
c. baju kita
d. baju mereka

14. Ani dan Juli bersama-sama pergi ke rumah nenek.
Kata bergaris bawah pada kalimat di atas dapat diganti dengan kata .....
a. Kita
b. Kamu
c. Kami
d. Mereka

15. Kemarin Ibu membeli meja makan.
Kalimat di bawah ini yang mempunyai pola seperti kalimat di atas ialah .....
a. Ibu pagi-pagi membeli sayur di depan rumah.
b. Bapak membaca surat dari paman pagi itu.
c. Tadi pagi Kakak mengantar adik.
d. Andi menjuak koran di terminal Kertojoyo.

16. "Semua siswa dan guru SD Jatirejo melaksanakan penghijauan di sekolah", kata Budi.
Kata yang bergaris bawah pada kalimat di atas dapat diganti dengan .....
a. Kami
b. Kamu sekalian
c. Kalian
d. Mereka

17. Penggunaan tanda seri pada kalimat di bawah ini yang tepat ialah .....
a. Lihatlah pemandangan di atas sama sangat indah!
b. Inikah yang kau maksud tempat indah!
c. Sedia payung sebelum hujan!
d. Bagaimana dapat mengerjakan soal, kamu tidak belajar!

18. Kata yang bergaris bawah pada kalimat di bawah ini yang berimbuhan -i ialah .....
a. Ketika tamasya ke pantai Pasir Putih kami mengendarai mobil Dento.
b. Adikku bersepeda ke warung itu membeli gulai kesukaannya.
c. Anjing yang galak itu setelah dirantai dimasukkan ke dalam mobil.
d. Untuk mendapatkan karcis kereta api kami menghubungi kepala Stasiun.

19. "Pak Udin ketua koperasi", bila diperluas dengan keterangan tempat menjadi "Pak Udin ketua koperasi desa Sukamaju".
Kalimat di bawah ini yang polanya serupa dengan kalimat di atas ialah .....

a. Titik menabung sebagian uang sakunya.
b. Rahma membali buku tulis di koperasi sekolah.
c. Simpanan wajib dibayar Nina melalui Bu Guru.
d. Harga alat tulis di koperasi kami lebih murah daripada di toko.

20. Kata bergaris bawah pada kalimat di bawah ini yang berimbuhan me- ialah .....
a. Ibu tampak merana semenjak tokonya tergusur.
b. Hasil panen cabai melimpah akibatnhya harganya merosot.

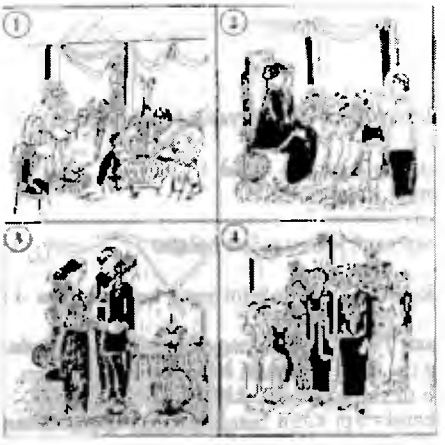
c. Demi keamanan kampunngnya warga desa itu secara bergilir meronda tiap malam.
d. Akibat kebakaran di pasar itu harga bahan pokok membumbung tinggi.

21. Ibu mengatakan bahwa saya harus rajin belajar!
Kalimat di atas jika dijadikan kalimat langsung penulisan yang benar ialah .....

a. Ibu kerkata "Kamu harus rajin belajar!"
b. Ibu berkata. "Kamu harus rajin belajar!"
c. Ibu berkata: "kamu harus rajin belajar!"
d. Ibu berkata, "Kamu harus rajin belajar!"

22. Anak yang berbaju biru itu anak Pak Sugeng.
Awalan ber- yang berarti sama dengan kata bergaris bawah pada kalimat di atas ialah .....
a. Ayah bertopi jika ke sawah.
b. Ani bersepeda jika ke sawah.
c. Ibu beruang banyak.
d. Adik sudah pandai berjalan.

23. Agar menjadi cerita yang baik gambar di samping diurutkan menjadi .....
a. 1 - 2 - 3 - 4
b. 1 - 3 - 2 - 4
c. 3 - 2 - 4 - 1
d. 1 - 4 - 3 - 2



24. Berdasar gambar pada soal nomor 23 di atas, gambar nomor 4 menunjukkan kegiatan .....
a. Mempelai berjabat tangan dengan tamu.
b. Mempelai ditemukan yang disaksikan para tamu dan keluarga.
c. Mempelai berjabat tangan dengan keluarga.
d. Mempelai berjabat tangan dengan kedua orang tua.

25. Ayah : "Ari, besok kita melihat pertunjukan wayang orang di Balai Desa."
Ani : " Saya besok akan menghadapi UUB, Ayah!"
Ayah : "Kalau begitu kita tunda lusa?, supaya tidak mengganggu pelajaranmu."
Ani : "Baik Ayah saya mau ikut untuk melihat."
Ayah : "Memang kita perlu untuk melihat wayang orang agar kita mengenal cerita pewayangan."
Kesimpulan dari percakapan tersebut di atas ialah .....

a. Melihat wayang orang.
b. Ani menghadapi UUB.
c. Ani tidak siap ikut.
d. Ani menyetujui ajakan ayahnya.

26. Dewi Galuh Candra Kirana adalah putri raja yang memerintah kerajaan Daha. Tutur katanya lemah lembut, parasnya cantik jelita. Belum lama Candra Kirana dipertunangkan Raden Inu Kertapati, putra mahkota Kerajaan Kahuripan.
Kebanyakan orang ikut bergembira menyambut pertunangan agung itu. Namun, tidak demikian dengan Galuh Ajeng. Gadis yang juga berdarah biru serta mempunyai hubungan dekat dengan Candra Kirana itu agaknya merasa cemburu. Hal itu disebabkan ia juga bercita-cita menjadi istri Raden Inu Kertapati.

Dalam penggalan cerita di atas terdapat kata berdarah biru.
Makna kiasan tersebut ialah .....
a. keturunan bangsawan
b. keturunan orang kaya
c. keturunan orang miskin
d. mempunyai darah warna biru.

27. Sifat Dewi Galuh Candra Kirana berbeda dengan Galuh Ajeng.
Sifat Galuh Candra Kirana ialah .....
a. lemah lembut
b. suka menolong
c. jahat
d. cemburu

28. Penulisan judul karangan di bawah ini yang benar ialah .....
a. Kampung kami yang bersih
b. Kampung kami yang Bersih
c. Kampung Kami Yang Bersih
d. Kampung Kami yang Bersih

29. Penggunaan kata depan terdapat pada kalimat .....
a. "Orang sabar kekasih Tuhan", kata Kakak.
b. Kakak dipilih menjadi ketua kelas bulan lalu.
c. Ibu mengantar tamu sampai ke tepi jalan itu.
d. Adik menekan nomor-nomor ke pesawat telepon.

30. Di pinggir jalan itu beribu-ribu orang ..... kedatangan Presiden Soeharto.
Kata yang paling tepat untuk melengkapi kalimat di atas adalah .....
a. menyaksikan
b. menerima
c. melihat
d. menyambut

31. Anak kelas enam membaca buku perpustakaan.
Guru-guru sedang rapat.
Kalimat di atas dapat digabungkan dengan kata .....
a. ketika
b. meskipun
c. walaupun
d. karena

32. Saat Ibu berbelanja di pasar, Kakak mengasuh Adik.
Saat Ibu berbelanja di pasar merupakan induk kalimat.

Fitri memetik bunga mawar di taman, ketika Ibu melepas lelah di ruang tamu.
Kalimat di bawah ini yang merupakan induk kalimat dari kalimat di atas ialah .....
a. Fitri memetik bunga mawar.
b. Fitri memetik bunga mawar di taman.
c. ketika Ibu melepas lelah di ruang tamu.
d. Ibu melepas lelah di ruang tamu.

33. Pertemuan ketua kelas dimulai pukul 10.00, tapi Antok ketua kelas III baru datang pukul 11.00, serentak temannya mengatakan, "Tepat sekali kedatanganmu saat pertemuan ini akan diakhiri."
Kalimat di bawah ini yang merupakan kalimat sindiran ialah .....

a. Pagi benar engkau datang, sekarang baru pukul 11.00
b. Setelah pukul 10.00 pertemuan akan dimulai
c. Kemacetan lalu lintas membuat datangnya terlambat
d. Hari masih pagi, tapi Antok sudah siap berangkat

34. "Marilah kita belajar sungguh-sungguh", kata Ida.
Kalimat di atas termasuk jenis kalimat .....

a. ajakan
b. berita
c. perintah
d. permintaan

35. Berakit-rakit ke hulu
berenang-renang ke tepian
Bersakit-sakit dahulu
bersenang-senang kemudian

Tema pantun di atas ialah .....

a. transportasi
b. pendidikan
c. kehidupan di laut
d. lapangan kerja

II. ISIAN.

ISILAH TITIK-TITIK PADA SOAL DI BAWAH INI DENGAN JAWABAN YANG BENAR!

36. Raja ingin meminang gadis Minangkabau yang cantik itu.
Kemudian beliau mengirim utusan untuk melamar Pinang Mas.
Dasar Pinang Mas gadis yang serakah, ketika rombongan raja melamarnya, terpikir olehnya untuk mendapatkan kekayaan raja.
Ia kemudian mengajukan satu syarat yaitu menerima lamaran asal raja sanggup membuatkan istana yang indah dalam waktu semalam.
Pinang mas menurut cerita di atas adalah seorang gadis yang memiliki watak .....

37. Meskipun Amir mendapat predikat siswa teladan, tetapi ia tetap saja rendah hati.
Kata bergaris bawah di atas merupakan ungkapan yang artinya .....

38. Makanan yang dihidangkan hendaknya ditutup, agar tidak dihinggapi lalat yang membawa bibit penyakit.
Kata yang bergaris bawah di atas persamaan katanya ialah .....

39. Sebaiknya orang muda selalu menghormati kepada orang yang lebih tua.
Kata yang bergaris bawah di atas lawan katanya adalah .....

40. Irna sedang memetik ..... bunga mawar merah di halaman rumah.
Kata yang tepat untuk melengkapi kalimat di atas ialah .....

41. Ibu menggunting baju Adik dengan hati-hati kemarin.
Kata yang menerangkan cara pada kalimat di atas ialah .....

42. Adik menggambar kucing dengan cat air di kamar.
Kata yang menerangkan alat pada kalimat di atas ialah .....

43. "Banyak-banyaklah mencari ilmu supaya tidak seperti katak di bawah .....", kata ibu.
Kata yang tepat untuk melengkapi peribahasa di atas ialah .....

44. "Banyak-banyaklah menggambar pedati dengan sapinya .....", Wiwin menggendong boneka kesayangannya.
Kata yang tepat untuk menggabungkan kalimat di atas ialah .....

45. Ketika saya terbangun Ayah baru datang ... Bogor.
Kata yang tepat untuk melengkapi kalimat di atas adalah ....

III. URAIAN.

JAWABLAH PERTANYAAN DI BAWAN INI DENGAN SINGKAT DAN BENAR!

46. Dalam rangka memperingati Hardiknas siswa kelas VI menghadap Kepala Sekolah untuk menyatakan persiapan peringatan tersebut. Untuk itu mereka mengajukan beberapa pertanyaan.
Buatkan 4 kalimat tanya dengan kata tanya:
- Kapan
- Siapa
- Bagaimana
- Mengapa

47. Nirmala putri ketiga dari Bapak Hasan. Sekarang ia duduk di kelas VI SDN Bumiasri I, Kecamatan Dau, Kabupaten Malang. Dalam rapornya tercatat, ia lahir tanggal 9 Oktober 1984 di tempat tinggalnya sekarang. Nirmala sering ikut ibunya, Siti Asiah ke Masjid Al Huda. Bapak ibunya berdiam di Pondok Blimbing Indah Blok B I nomir 39 Malang. Nirmala beberapa kali mendapatkan juara tari di kotanya. Ibunya mempunyai sanggar tari.
Nirmala harus mengisi formulir data pribadi siswa.
Coba kalian bantu memasukkan dalam formulir di bawah ini!

Data Pribadi Siswa

1. Nama : .....
2. Jenis kelamin : .....
3. Tanggal lahir : .....
5. Tempat lahir : .....
6. Agama : .....
7. Nama Ayah : .....
8. Nama Ibu : .....
9. Anak ke : .....
10. Alamat
    a. Sekolah : .....
    b. Rumah : .....
11. Kegemaran (hobi) : .....

48. - Aku akan berusaha untuk mematuhi dan melaksanakannya.
- Terima kasih atas semua nasehat dan petunjukmu, Kak
- Seluruh keluarga di rumah sehat-sehat
- Hallo bagaimana kabarnya Kak
- Untuk itu aku mohon Kakak usahakan buku siap ebtanas
- Agar persiapanku lebih baik lagi
- Bila nilaiku memadai aku akan masuk SMP I
- Doakan aku sukses, ya Kak dan terima kasih
- Adikmu Beni

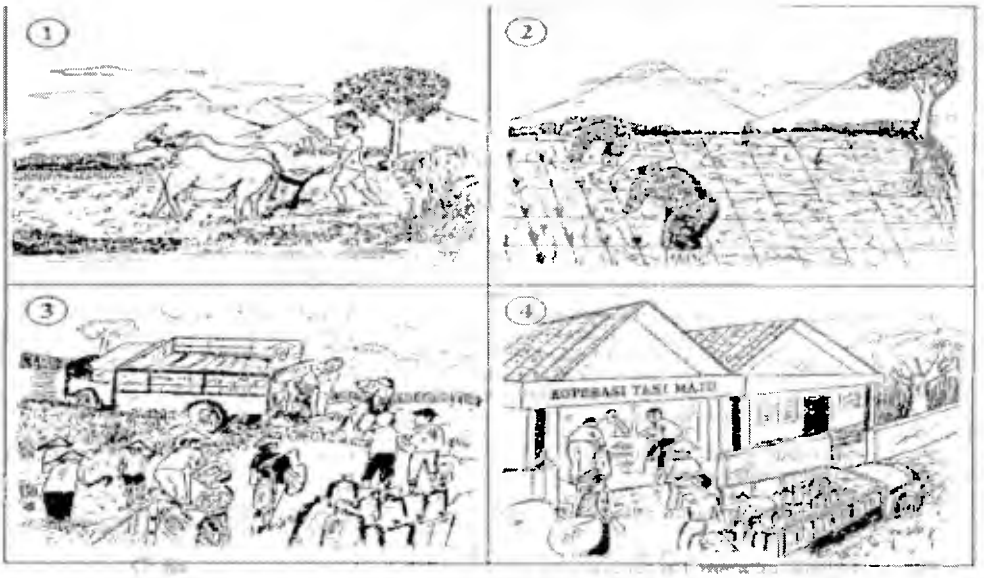
Susunlah kalimat-kalimat di atas, sehingga menjadi sepucuk surat yang lengkap dengan tanda bacanya!

49. Pada botol kemasan obat batuk tertulis:
Aturan minum:
Dewasa : 3 x sehari 2 sendok
Anak-anak : 3 x sehari 1 sendok
Jelaskan aturan minum di atas ini!

50. Ceritakan apa yang aku ketahui dari gambar di samping!
Cukup empat kalimat saja.

IV. MENGARANG

1. Perhatikan gambar seri di bawah ini!
2. Susunlah sebuah karangandengan gambar seri sebagai penuntun pikiranmu.
3. Tentukan judul karanganmu.
4. Panjang karangan paling sedikit satu halaman folio (± 250 kata)
5. Pergunakan bahasa Indonesia yang baik dan benar, dengan memperhatikan tanda baca, huruf besar.
6. Waktu yang tersedia 45 menit.



APPENDIX B.4b

(Indonesian Version)

Post-Tests for Mathematics

ULANGAN UMUM SD CATURWULAN III TAHUN PELAJARAN 1996/1997
KOTAMADYA MALANG

Pelajaran : Matematika **Kelas : IV (Empat)** **Nama: .....**
Hari, Tanggal: Rabu, 11 Juni 1997 **Waktu: 120 Menit** **Pukul: 07.30 - 09.30**

I. BERILAH TANDA SILANG (X) PADA HURUF a, b ATAU c YANG MERUPAKAN JAWABAN PALING BENAR!

1. 1/2 + 1/3 = ...
   a.2/5 b. 2/6 c. 2/3 d. 5/6

2. Gambar di bawah ini yang berbentuk trapesium adalah .....

   a. b. c. d.

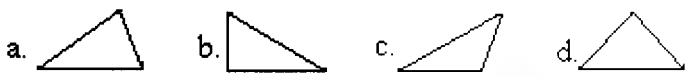
3. Ibu membeli 3 dosin gelas atau ..... biji.
   a. 42 b. 36 c. 30 d. 24

4. 3/4 - 1/8 = ...
   a. 2/4 b. 2/8 c. 3/8 d. 5/8

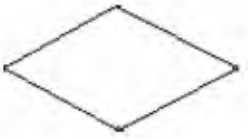
5. 4/5 - 3/6 + 2/3 = ...
   a. 29/30 b. 1/3 c. 11/36 d. 1/15

6. Besar sudut siku-siku adalah .....
   a. sama dengan sudut tumpul
   b. lebih besar dari sudut lancip
   c. lebih besar dari sudut tumpul
   d. lebih kecil dari sudut lancip

7. Segitiga di bawah ini yang semua sudutnya lancip adalah .....

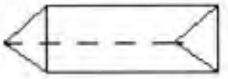


8. Gambar di samping disebut .....
   a. layang-layang
   b. trapesium
   c. jajaran genjang
   d. belah ketupat



9. Bangun ruang di samping memiliki rusuk sebanyak .....

a. 12 b. 10 c. 8 d. 6

10. Bangun ruang di samping memiliki sisi sebanyak .....

a. 3 b. 5 c. 6 d.9

11. 2 rim kertas = ... lembar.
a. 1000 b. 800 c. 200 d. 24

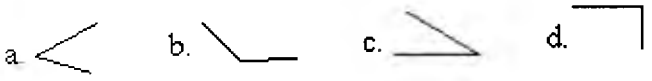
12. Tatik membeli 2 ½ dosin piring atau ..... buah.
a. 10 b. 25 c. 30 d. 36

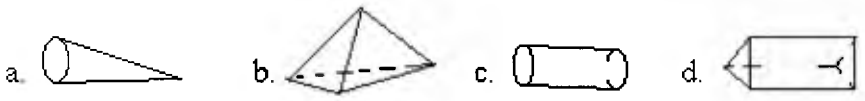
13. 1/3 ..... 1/4 Tanda yang paling tepat untuk kalimat matematika di samping adalah .....
a. < b. > c. = d. ≤

14. 1/2; 1/3; 1/6; 1/5 Pecahan biasa di samping bila diurutkan dari yang urutan terkecil ke besar yang benar adalah .....
a. 1/2; 1/3; 1/5; 1/6
b. 1/3; 1/2; 1/5; 1/6
c. 1/6; 1/3; 1/2; 1/5
d. 1/6; 1/5; 1/3; 1/2

15. Gambar persegi panjang yang benar adalah .....

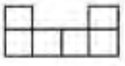
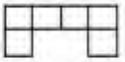
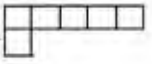
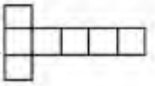
a. b. c. d.

16. Sudut di bawah ini yang siku-siku adalah .....

a. b. c. d.

17. Bangun ruang di bawah ini yang disebut prisma adalah .....

a. b. c. d.

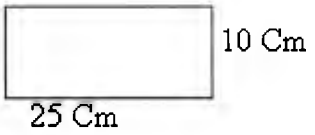
18. Bangun ruang yang memiliki tiga sisi adalah .....
a. kerucut terbuka
b. kerucut tertutup
c. tabung terbuka
d. tabung tertutup

19. Gambar di bawah yang merupakan jaring-jaring kubus adalah .....

a.  b.  c.  d. 

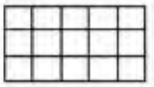
20. Luas daerah persegi panjang di samping adalah ..... Cm^2

a. 250 b. 150 c. 70 d. 35



II. ISILAH TITIK-TITIK PADA SOAL DI BAWAH INI DENGAN BENAR!

21. Luas daerah bangun datar di samping adalah .... x .... satuan = ... satuan



22. 2 dm^2 = ... Cm^2

23. 1 dm^2 + 5 Cm^2 = ... Cm^2.

24. ½ dm^2 = ... dm^2

25. 1 m^2 = ... dm^2

26. 3 m^2 + 50 dm^2 = ... dm^2

27. 600 Cm^2 = ... dm^2

28. 1500 Cm^2 + 1 dm^2 = ... dm^2

29. 5 dosin = ... biji

30. 60 lembar kain sarung atau ..... kodi.

III. KERJAKAN SOAL-SOAL DI BAWAH INI DENGAN MENULISKAN JAWABANNYA DENGAN SINGKAT!

31. Sebidang tanah panjang 25 m, lebar 16 m. Hitung luas tanah!
Tempat mengerjakan: _____
_____

32. Sebuah persegi sisinya 16 Cm. Berapa luasnya?
Tempat mengerjakan: _____
_____

33. ½ dosen = a biji
½ kodi = b biji
½ gros = c biji
---------- +
d biji
Berapakah a, b, c, dan d?
Tempat mengerjakan: _____

34. 1/3 + 3/4 = e + f = g Berapakah e, f dan g?
Tempat mengerjakan: _____

35. 1/4 - 1/6 = h - I = j Berapakah h, i dan j?
Tempat mengerjakan: _____

36. Panjang benang layang-layang Amir 35 m. Putus yaang 15 ½ m. Hitung sisa benang layang-layang Amir.
Tempat mengerjakan: _____

37. Jarak kota Singosari ke Malang 9 ½ Km. Malang ke Kepanjen 18 ½ Km. Berapa jarak Singosari ke Kepanjen?
Tempat mengerjakan: _____

38. Jarak rumah saya ke sekolah 3/4 Km. Dari sekolah ke alun-alun ½ Km. Hitung jarang antara rumah saya ke alun-alun.
Tempat mengerjakan: _____

39. Ruang kelas V panjang 8 m, lebar 7 m. Berapa dm^2 luasnya?
Tempat mengerjakan: _____

40. Rina membeli kain merah 1/6 m dan putih 1/4 m. Berapa meter jumlahnya?
Tempat mengerjakan: _____

ULANGAN UMUM SD CATURWULAN III TAHUN PELAJARAN 1996/1997
KOTAMADYA MALANG

Pelajaran : Matematika **Kelas : V (Lima)** **Nama: .....**
Hari, Tanggal: Rabu, 11 Juni 1997 **Waktu: 150 Menit** **Pukul: 07.00 - 9.30**

I. BERILAH TANDA SILANG (X) PADA HURUF a, b ATAU c YANG MERUPAKAN JAWABAN PALING BENAR!

1. Lambang bilangan seratus ribu enam belas adalah .....
   a. 100.016 b. 100.116 c. 111.116 d. 116.000

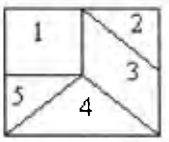
2. 2345 x 218 = ...
   a. 511.220 b. 511.210 c. 510.220 d. 510.210

3. 28 x (124 + 376) : (9.756 - 9.506) = ...
   a. 46 b. 46.8 c. 48.6 d. 56

4. Setiap hari Andi mulai tidur pukul 19.45 dan bangun pukul 05.15 esok harinya. Andi tidur selama ..... jam.
   a. 9 1/6 b. 9 1/5 c. 9 1/4 d. 9 1/2

5. Pada pukul 03.30 jarum jam panjang dan pendek membentuk sudut ..... derajat.
   a. 45 b. 60 c. 75 d. 90

6. Gambar di samping adalah Pancagram atau Tangram 5 bagian. Jika potongan nomor 2.4 dan 5 dirangkai, bangun geometri yang tidak dapat terbentuk adalah .....

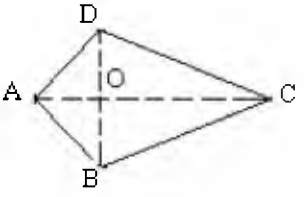


   a. persegi b. segitiga
   c. jajarangenjang d. layang-layang

7. 29/5 = ...
   a. 4 4/5 b. 5 c. 5 4/5 d. 5 9/5

8. 5 ½ + 2/3 = ...
   a. 5 3/5 b. 5 3/6 c. 6 1/6 d. 6 3/5

9. Sumbu simetri gambar di samping adalah ruas garis .....
   a. AC b. BD
   c. OA d. OB



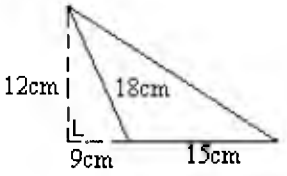
10. 4/15 + ½ + 2/5 = ...
    a. 11/30 b. 7/22 c. 35/30 d. 1 ½

11. Bentuk desimal dari 1/50 adalah .....
a. 0,2 b. 0,02 c. 0,002 d. 0,0002

12. Bibi mempunyai gula 12 kg, 3 kg dari gula itu diberikan kepada ibu. Sisanya .... %
a. 0,75 b. 9 c. 25 d. 75

13. 0,45 + 0,3 = ...
a. 0,48 b. 0,75 c. 4,8 d. 7,5

14. Luas segitiga di samping = ... cm



a. 180 b. 135
c. 120 d. 90

15. Halaman sekolah berbentuk persegi panjang. Panjang halaman 62,5 m dan lebarnya 18 m. Luas halaman sekolah .... m^2
a. 1225 b. 137.280 c. 612,5 d. 562,5

16. Ibu Guru kelas V menyimpan tabungan siswanya di BRI sebesar Rp 120.000,00. Bunga 0.8% per bulan. Jika Bu Guru setor tanggal 2 Januari 1995 dan tanggal 31 Agustus 1996 diambil, maka Bu Guru menerima uang dari BRI Rp .....
a. 139.200 b. 137.280 c. 134.400 d. 127.680

17. Selisih antara 0,92 dan 0,4 adalah .....
a. 0,96 b. 0,88 c. 0,52 c. 0,42

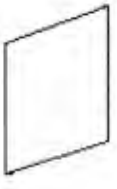
18. 0,97 - 0,38 - 0,4 = ...
a. 0,95 b. 0,63 c. 0,55 d. 0,19

19. 0,76 - 0,98 + 0,54 = ...
a. 0,32 b. 0,42 c. 0,66 d. 0,76

20. Pak Sumadi tiap bulan menerima gaji Rp 450.000,00. Ia mendapat uang lembur rata-rata 5% dari gaji yang diterimanya. Ia membayar asuransi 15%, untuk uang belanja 70%, sisanya ditabung. Tiap bulan Pak Sumadi menabung Rp .....
a. 22.500 b. 67.500 c. 70.875 c. 472.500

21. Umur Farid dibanding umur Huda adalah 3:4. Selisih umur Faridd dan Huda 5 tahun. Jumlah umur mereka .... tahun.
a. 15 b. 20 c. 35 d. 60

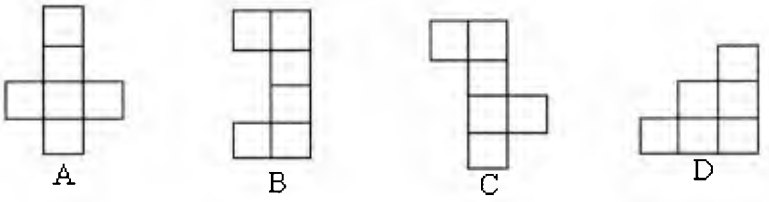
22. Gambar di samping adalah .....
a. jajaran genjang
b. belah ketupat
c. layang-layang
d. trapesium



23. Panjang sebuah balok = 4 m, lebar 15 cm dan tingginya 60 cm. Volume balok = ... cm^3
a. 360 b. 3600 c. 18000 d. 360000

24. $1{,}5\ m^3 + 150\ dm^3 + 1250\ cm^2 = ...\ cm^3$
a. 1.415 b. 1.550 c. 201.250 d. 1.651.250

25.



Gambar di atas yang merupakan jaring-jaring kubus adalah gambar .....
a. A dan B b. A dan C c. B dan C d. B dan D

26. 4500 x 12,5% = ...
a. 562,5 b. 5625 c. 56250 d. 562500

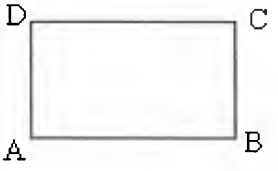
27. 0,9 x 0,6 = ...
a. 0,0054 b. 0,054 c. 0,54 d. 5,4

28. 0,65 x 0,89 = ...
a. 0,5785 b. 0,5685 c. 57,85 d. 56,85

29. 0,5 x 0,63 x 0,89 = ...
a. 280,35 b. 28,035 c. 0,28035 d. 0,028035

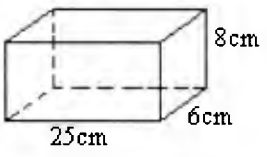
30. Jumlah murid SD Tambak 240 anak. Tiap siswa membayar Rp 2.500,00. Sisa uang tahun lalu Rp 50.000,00. Dari jumlah uang itu dibelikan almari Rp 150.000,00 dan 5 bangku @ Rp 75.000,00. Kalimat matematika dari soal di atas adalah .....
a. 240 x 2500 + 50.000 - (150.000 - 5 x 75.000)
b. 240 x (2500 + 50.000) - 150 - 5 x 75.000
c. (240 x 2500 + 50.000) - (150.000 + 5 x 75.000)
d. 240 x 2500 + (50.000 - 150.000) - (5 x 75.000)

31. Persegi panjang DCBA di samping ini bila diputar 180^0, kedudukannya menjadi .....
a. BDCA
b. DCAB
c. CABD
d. ABCD



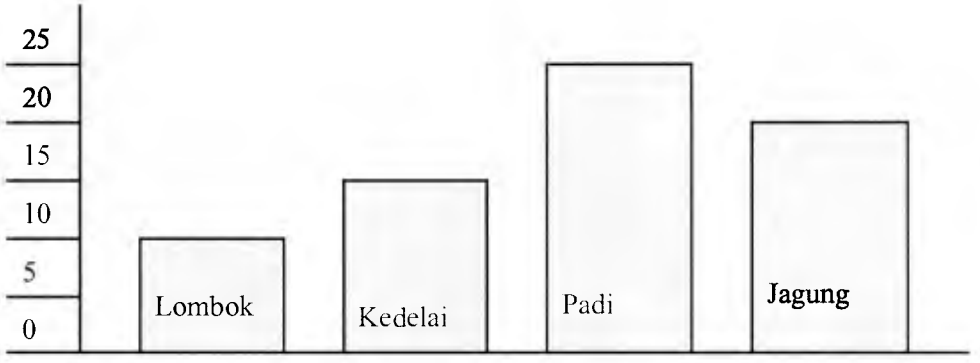
32. Panjang satu rusuk kubus 36 cm. Volum kubus .... cm^3.
a. 108 b. 216 c. 1296 d. 46656

33. Volum bangun pada gambar di samping ... cm^3.
a. 39
b. 78
c. 468
d. 1200



34. 1,2 : 0,25 = ...
a. 4.8 b. 4.6 c. 0,48 d. 0,46

35. Hasil pertanian Desa Wuni selama tahun 1996 (dalam ton)

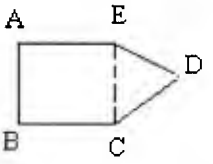


Pada diagram batang di atas, selisih hasil jagung dan kedelai adalah .... ton
a. 5 b. 7,5 c. 10 d. 12

II. ISILAH TITIK-TITIK PADA SOAL DI BAWAH INI DENGAN JAWABAN YANG BENAR!

36. Luas suatu persegi 625 cm^2. Keliling persegi .... cm. _____

37. Luas ABCE = 225 cm^2
CDE = segitiga sama sisi



Keliling bangun ABCDE = ... cm.
_____

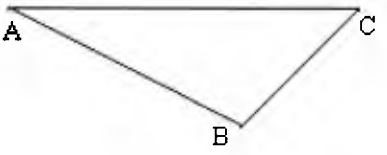
38. $1 + 3 + 5 + 7 = n^2$,
n = ... _____

39. Lawan dari -45 adalah ..... _____

40. (-13) - (-9) = ... _____

41. 46 - (-25) = ... _____

42. Dari segitiga ABC, sudut yang besarnya lebih dari 90^0 adalah sudut .....

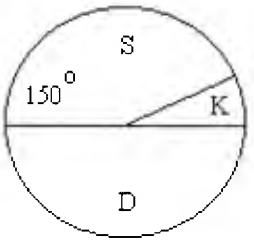


_____

43. 3 3/4 + 2 2/5 = ...

44. Paman mempunyai 2 petak tambak, masing-masing luasnya 75 are dan 145 are.
Jumlah luas kedua tambak itu .... m^2.

45. Gambar di samping adalah data tentang banyaknya ternak di suatu desa.
S = Sapi
K = Kerbau (30 ekor)
D = Domba/kambing
Banyaknya domba menurut diagram lingkaran di samping adalah .... ekor.



III. KERJAKAN SOAL DI BAWAH INI DENGAN SINGKAT DAN BENAR!

46. Ibu berbelanja di TOSERBA. Di sana setiap produk mendapat diskon 15%. Ibu membeli 20 kg beras @ Rp 1.350,00; 5 kg gula @ Rp 1.400,00; dan 2 kg kacang mete @ Rp 13.000,00. Berapa rupiah ibu harus membayar?

47. Umur Ibu 4 kali umur anaknya yang sulung. Jumlah umur mereka 30 tahun. Berapa tahun umur mereka masing-masing?

48. Sebuah tangki minyak berbentuk balok. Panjang tangki 3 meter, lebar 2 meter dan tinggi 1,2 meter. Berapa liter volum tangki tersebut?

49. Hasil pertanian di desa Nongkojajar: apel 7,5 ton; kentang 5 ton dan kobis 2,5 ton. Gambarlah diagram lingkaran untuk data itu (tulis juga cara mengerjakannya)!

50. Pengunjung Perpustakaan SDN PLOSO Dalam Satu Minggu

Hari	Pengunjung
Senin	15 siswa
Selasa	20 siswa
Rabu	40 siswa
Kamis	30 siswa
Jum'at	45 siswa
Sabtu	40 siswa

Hitunglah jumlah pengunjung perpustakaan dalam 1 minggu

DOKUMEN NEGARA
SANGAT RAHASIA

UTAMA 5

Departemen Pendidikan dan Kebudayaan
Evaluasi Belajar Tahap Akhir Nasional
Tahun Pelajaran 1996/1997

LEMBAR SOAL

Mata Pelajaran : Matematika
Jenis Sekolah : Sekolah Dasar
Hari / Tanggal : Rabu, 28 Mei 1997
Alokasi Waktu : 150 menit
Dimulai : 07.30
Diakhiri : 10.00

PETUNJUK UMUM:

1. Tidak boleh mengerjakan soal dengan pensil/spidol, melainkan dengan tinta warna hitam/biru.
2. Tulislah lebih dahulu nomor kode sekolah dan nomor kode pesertamu pada kolom 4 di sudut kanan atas pada lembar jawaban yang disediakan.
3. Periksa dan bacalah soal-soal dengan teliti sebelum kamu menjawabnya.
4. Jumlah soal sebanyak 50 (lima puluh) butir terdiri atas:
   a. Soal Pilihan Ganda = 35 butir
   b. Soal Isian Singkat = 10 butir
   c. Soal Uraian Terbatas = 5 butir
5. Laporkan kepada Pengawas EBTANAS kalau terdapat tulisan yang kurang jelas atau ada yang rusak.
6. Dahulukan menjawab soal-soal yang kamu anggap mudah.
7. Kerjakanlah pada lembar jawaban yang telah disediakan.
8. Mintalah kertas buram kepada Pengawas EBTANAS bila diperlukan.
9. Berilah tanda silang (X) pada huruf jawaban yang kamu anggap benar.
10. Apabila ada jawaban yang kamu anggap salah pada pilihan ganda dan kamu ingin memperbaiki, coretlah dengan dua garis lurus mendatar pada jawaban yang salah kemudian beri tanda (X) pada huruf jawaban lain yang kamu anggap benar.
    CONTOH: a b ~~X~~ d diperbaiki menjadi ~~X~~ b ~~X~~ d
11. Setelah selesai dan masih ada waktu, periksa kembali pekerjaanmu sebelum diserahkan kepada Pengawas EBTANAS.

I. PILIHAN GANDA

BERILAH TANDA SILANG (X) PADA HURUF a, b ATAU c YANG MERUPAKAN JAWABAN PALING BENAR!

1. Nama bilangan 11.375 adalah .....
   a. sebelas tiga tujuh lima
   b. satu-satu tiga tujuh lima
   c. sebelas ribu tiga tujuh lima
   d. sebelas ribu tiga ratus tujuh puluh lima

2. Nilai tempat 7 pada 174.325
   a. puluh ribuan
   b. puluhan ribu
   c. ratus ribuan
   d. ratusan ribu

3. Hasil panen sawah Paman selama 5 tahun: 4756 kg; 1467 kg; 4605 kg dan 2142 kg. Jumlah hasil panel selama 5 tahun = ... kg.
   a. 15.107
   b. 15.207
   c. 14.107
   d. 13.207

4. Dari angka 4, 5 dan 6 dapat disusun perkalian bilangan 2 angka dan 1 angka. Jika tidak terdapat angka kembar pada bilangan itu, maka hasil kali yang terbesar adalah ....
   a. 270
   b. 324
   c. 645
   d. 654

5. Dalam perkemahan terdapat 125 tenda, tiap tenda terdapat 10 orang anak. 6250 buah sawo dibagikan kepada semua anak dengan jumlah yang sama. Tiap anak akan mendapat .... buah.
   a. 625
   b. 50
   c. 5
   d. 3

6. Ibu membeli kain 3/5 m, kemudian membeli lagi 7/8 m. Jumlah kain yang dibeli Ibu seluruhnya .... m.
   a. 2 10/40
   b. 1 19/40
   c. 21/40
   d. 10/13

7. Di warung ibu Ani ada sisa tepung terigu 5 3/4 kg dan 3 ½ kg. Sisa tepung terigu di warung ibu Ani seluruhnya .... kg.
   a. 8 4/6
   b. 9 1/9
   c. 9 1/4
   d. 15 3/8

8. 434,73 + 368,89 = ...
   a. 793,62
   b. 802,62
   c. 803,52
   d. 803,62

9. (-27) + 421 = ...
   a. 493
   b. 448
   c. 394
   d. 393

10. 7,25 x 5,43 = ...
   a. 3936,75
   b. 3836,75
   c. 39,3675
   d. 38,3675

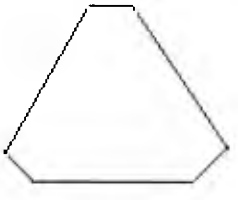
11. Ibu membeli panci susun seharga Rp 16.575,00 dan kompor Rp 10.300,00
   Apabila ibu membawa uang Rp 28.500,00; sisa uang ibu Rp .....
   a. Rp 1.625,00
   b. Rp 2.625,00
   c. Rp 2.635,00
   d. Rp 26.875,00

12. p/17 = 36/51, p = ...
   a. 3
   b. 9
   c. 11
   d. 12

13. Faktor Persekutuan Terbesar (FPT) dari bilangan 68 dan 85 adalah .....
   a. 4
   b. 5
   c. 13
   d. 17

14. Panjang sebuah jalan 192 m. Pada tepi kiri dan kanan jalan ditanami pohon pelindung dengan jarak 8 m antara pohon yang satu dengan pohon yang lain.
   Banyak pohon seluruhnya .... batang.
   a. 24
   b. 25
   c. 50
   d. 51

15. Banyak simetri lipat bangun datar di samping adalah .....
   a. 2
   b. 3
   c. 4
   d. 6



16. 6/7 - 1/3 = ...
a. 5/4
b. 11/21
c. 5/21
d. 3/6

17. Sebuah bak mandi berisi air 2/3 bagian. Pada pagi hari diisi 1/8 bagian pada sore harinya digunakan untuk mandi 3/4 bagian bak mandi.
Sisanya .... bagian.
a. 1/24
b. 1/15
c. 2/7
d. 1/4

18 Andi diberi uang ayahnya Rp 75.000,00. Kemudian ia diberi lagi tiga kali uang pemberian semula.
1/5 bagian dari jumlah uangnya di tabung di bank. Besar uang yang ditabung adalah Rp .....
a. 15.000,00
b. 45.000,00
c. 60.000,00
d. 75.000,00

19. Ibu mempunyai uang Rp 450.000,00. Sepertiga bagian disimpan di bank. Kalau ayah memberi Rp 25.000,00 maka uang ibu yang tidak ditabung adalah .....
a. Rp 175.000,00
b. Rp 225.000,00
c. Rp 300.000,00
d. Rp 325.000,00

20. 16^2 = ...
a. 4096
b. 256
c. 156
d. 32

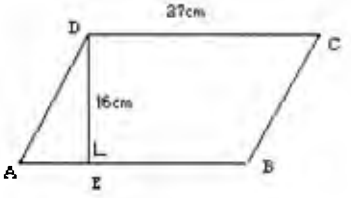
21. $\sqrt{361} + \sqrt{289}$ = ...
a. 34
b. 36
c. 38
d. 72

22. 3 jam + 55 menit + 24 detik = ... menit
a. 119
b. 209
c. 239
d. 259

23. Besar sudut terkecil yang dibentuk oleh kedua jarum jam di samping adalah .....

a. 45
b. 62 ½
c. 65
d. 75

24. Kebun ayah berbentuk seperti gambar di samping dengan ukuran panjang DC = 27 cm dan DE = 16 cm.

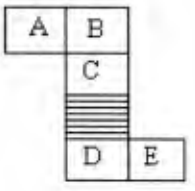


Luasnya adalah .... cm^2.
a. 144
b. 216
c. 432
d. 864

25. Suatu ruang pertemuan berukuran panjang 12 m dan lebar 7 m. Akan ditutup dengan ubin yang berbentuk persegi dengan sisi 25 cm.
Banyak ubin yang diperlukan adalah .... biji.
a. 4.800
b. 2.800
c. 1.440
d. 1.344

26. Luas suatu taman yang berbentuk lingkaran adalah 346,5 m^2 ($\pi = 22/7$)
Diameter dari taman itu = ... m
a. 21
b. 42
c. 55 1/8
d. 110 1/4

27. Jika jaring-jaring gambar di samping disusun menjadi kubus, sisi yang berhadapan dengan sisi yang diarsir adalah sisi .....



a. E
b. D
c. C
d. B

28. 376,25 : 25 = ...
a. 155,0
b. 151,50
c. 150,50
d. 15,05

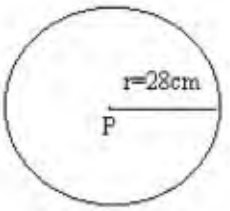
29. 39/84 : 13/42 = ...
a. 1 ½
b. 1
c. 3/4
d. 2/3

30. FPB dari 216 dan 288 adalah .....
    a. 17
    b. 36
    c. 48
    d. 72

31. 26^3 = ...
    a. 17.586
    b. 17,576
    c. 676
    d. 78

32. Di Gudang Pak Usman ada gula 3 ½ ton, beras 7 ½ kuintal dan tepung 75 kg. Jumlah isi gudang Pak Usman seluruhnya adalah .... kg.
    a. 86
    b. 1.176
    c. 3.650
    d. 4.325

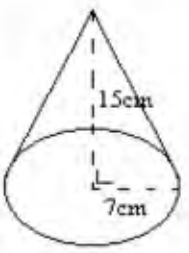
33. Jari-jari sebuah lingkaran pada gambar di samping 28 cm. Kelilingan lingkaran .... cm. ($\pi = 22/7$)
    a. 56
    b. 88
    c. 176
    d. 2.404



34. Diagram di samping adalah area pertanian di suatu desa. Tanaman yang paling kecil areanya adalah .....

    a. padi
    b. jagung
    c. kedelai
    d. ubi kayu

35. Gambar di samping jari-jarinya 7 cm dan tingginya 15 cm, maka volumnya .... cm^3. ($\pi = 22/7$)
    a. 110
    b. 220
    b. 770
    d. 1155



II. ISIAN.

ISILAH TITIK-TITIK PADA SOAL DI BAWAH INI DENGAN JAWABAN YANG BENAR!

36. Bentuk desimal dari 12/24 adalah .....

37. (9.767 - 868) x (150 - 105) = ...

38.

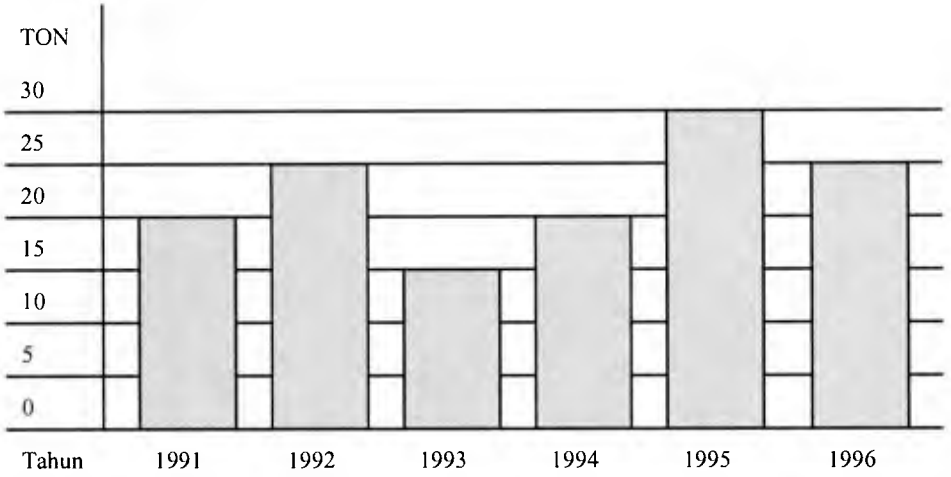


Diagram di atas menunjukkan hasil panen padi di desa "Suka Makmur". Hasil rata-rata setiap tahun = ... ton.

39. (7 2/3 - 2 1/2) : (1 1/2 + 3 1/4) = ...

40. 14,035 + 11,149 + 12,37 = ...

41. 23 3/4 - 9 5/6 = ...

42. $\sqrt{1.600} + \sqrt{1.764}$ = ...

43. (8,35 x 2,51) : 2,5 = ...

44. 2 1/2 hm^2 + 1 3/4 dam^2 + 75 m^2 = ... Ca

45. Pak Bakir memperoleh hasil panen padi 4 ½ ton, jagung 4 ½ kuintal dan keledai 75 kg. Hasil panen Pak Bakir seluruhnya .... kg.

III. URAIAN.

KERJAKAN SOAL-SOAL URAIAN DI BAWAH INI DENGAN MENULISKAN CARA PENGERJAANNYA DAN HASIL AKHIRNYA PADA LEMBAR JAWABAN YANG TERSEDIA!

46.

Amir berangkat dari kota Q mengendarai sepeda menuju ke kota R pukul 07.00. Kecepatan rata-rata Amir 25 km/jam. Pada waktu yang sama, Bahri berangkat dari kota R ke kota Q berkendaraan sepeda. Kecepatan rata-rata Bahri setiap jam 20 km. Jarak antara kota Q dan R 112,5 km. Pada pukul berapa mereka berpapasan?

47. Sebuah drum berisi minyak penuh. Tinggi drum 1,2 m. Garis tengahnya 70 cm.
Berapa liter sisa minyak yang ada dalam drum jika 1/3 dari isinya diambil? ($\pi = 22/7$)

48. A, B dan C membentuk usaha dagang dengan perbandingan saham = 3 : 4 : 5
Saham yang terkumpul seluruhnya Rp 24.000.000,00
Berapa rupiah saham milik B?

49. Denah kebun digambar berbentuk persegi panjang dengan skala 1 : 500
Panjang kebun pada denah 13 cm dan lebar = ½ dari panjangnya
Berapa m^2 luas kebun sebenarnya?

50. Data Berat Badan Murid SD Maju Kelas VI

No.	Nama	Berat (kg)
1	A	40
2	B	39,5
3	C	39
4	D	38,5
5	E	38
6	F	37,5
7	G	37
8	H	36,5
9	I	36
10	J	35

Dari data berat badan murid kelas VI SD Maju di atas, berapa berat badan rata-rata?

APPENDIX B.5

OFFICIAL LETTERS

Child Development and Learning
Head Professor Kathy Sylva

INSTITUTE OF EDUCATION
UNIVERSITY OF LONDON

20 BEDFORD WAY
LONDON WC1H 0AL
Telephone 0171-612 6588
Fax 0171-612 6230
Director Professor Peter Mortimore OBE

TO WHOM IT MAY CONCERN

Laurens Kaluge is a lecturer at FIP IKIP Surabaya and has been registered as a full-time PhD student in the Child Development and Learning Group, Institute of Education, University of London since 1994. In order to achieve the PhD he has to carry out a substantial research report. His study, which is enclosed here, is funded by the Primary School Teacher Development Project, Directorate General of Higher Education, Ministry of Education and Culture, Indonesia.

Laurens Kaluge has chosen to carry out his research in Malang Municipality from July 1996 to February 1997, and then again from May to September 1997. In relation to this, I hope that you will assist him in carrying out his study of factors related to pupil attainment at ages 9, 10 and 11.

Laurens Kaluge will be pleased to discuss his research with you if you have questions. We hope that the research will contribute to the development of primary education in Indonesia and also to research methodology in education.

Your attention and cooperation is greatly appreciated.

London, 22 May 1996

Professor Kathy Sylva
Supervisor

Dr Iram Siraj-Blatchford
Supervisor

Pursuing Excellence in Education

DEPARTEMEN PENDIDIKAN DAN KEBUDAYAAN
INSTITUT KEGURUAN DAN ILMU PENDIDIKAN SURABAYA

LEMBAGA PENELITIAN

Kampus IKIP Surabaya, Ketintang Tilp. 8280675 Pes 106, 141

Nomor : 350/PT33.H9/N/1996 Surabaya, 4 Juli 1996
Lampiran : 1 berkas
Perihal : **Bantuan Pelaksanaan Penelitian**

Kepada : **Yth. Kepala Kantor Depdikbud**
Kotamadya Malang
Jl. Veteran 19
Malang

Dengan hormat,

Dalam rangka pelaksanaan penelitian program PhD di Institute of Education University of London

Nama	:	Drs. L. Kaluge, M.A
N I P	:	131 125 345
Unit Kerja	:	FIP IKIP Surabaya
Judul Penelitian	:	**Beberapa Faktor yang Mempengaruhi Pencapaian Pendidikan di Sekolah Dasar (Some Factors Related to Educational Attainment in Indonesian Primary Schools)**
Sasaran dan lokasi:		Sekolah Dasar di Kotamadya Malang
Waktu penelitian :		Juli 1996 s.d September 1997

Kami mohon kesediaannya mengizinkan dan membantu kelancaran pelaksanaan penelitian tersebut. Atas bantuan kerja samanya kami ucapkan terima kasih.

Ketua,

Prof. Dr. Sunarto, M.Sc.
NIP 130 286 983

DEPARTEMEN PENDIDIKAN DAN KEBUDAYAAN WILAYAH PROPINSI
JATIM
KANTOR KOTAMADYA MALANG
Jl. Veteran Nomor 19 Malang Telp. 551333

REKOMENDASI PENELITIAN
NOMOR: 1560/IO4.2/A/1996

Menunjuk surat Saudara Ketua Lembaga Penelitian IKIP Surabaya, tanggal 4 Juli 1996, Nomor: 350/PT33.H9/N/1996 tentang izin penelitian maka dengan ini, kami berikan izin untuk mengadakan penelitian kepada:

a. Nama	:	Drs. L. Kaluge, M.A
NIP	:	131 125 345
b. Tempat	:	Sekolah Dasar di Kotamadya Malang
c. Waktu/lamanya	:	Juli 1996 s.d September 1997
d. Dalam rangka	:	Penyelesaian tugas penyusunan tesis dengan judul "Beberapa faktor yang mempengaruhi pencapaian pendidikan di Sekolah Dasar" (Some factors related to educational attainment in Indonesian primary schools).

Dengan ketentuan:
1. Sampai di tempat, agar melapor ke Kepala Sekolah yang bersangkutan.
2. Berlaku selama tidak mengganggu Proses Belajar Mengajar serta tidak menyimpang dari peraturan yang berlaku.
3. Selesai melaksanakan penelitian, wajib menyampaikan laporan tertulis dan menyerahkan duplikat hasil penelitian kepada Kepala Sekolah yang bersangkutan dan Kepala Kantor Depdikbud Kotamadya Malang.

Malang, 11 Juli 1996
Kepala

DEPARTEMEN PENDIDIKAN DAN KEBUDAYAAN
KANTOR KOTAMADYA MALANG
JAWA TIMUR

Drs. WIGNYO
NIP 130517634

TEMBUSAN YTH:
1. Ketua Lembaga Penelitian IKIP Surabaya
2. Kepala Sekolah Dasar Sekotamadya Malang
3. Kepala Kandep Dikbudcam Ybs.
4. Kepala Seksi Dikdas Kandep Dikbud Kodya Malang

APPENDIX B.6

RESULTS FROM THE PILOT STUDY

Table 1
Pilot Data from Pupil
(N = 144)

	Category	Frequency	Percentage
1. Gender	Male	75	52.1
	Female	69	47.9
2. Religion	Moslem	139	96.5
	Christian	5	3.5
	Hindu	-	
	Buddha	-	
3. Ethnicity	Javanese	139	96.5
	Madurese	2	1.4
	Other	3	2.1
4. Sibling order	1	47	32.6
	2	34	29.9
	3	22	15.3
	4	24	16.7
	5	8	5.6
5. Home language (using Indonesian Language)	Always	7	4.9
	Often	26	18.1
	Sometimes	58	40.3
	Seldom	53	36.8
6. Learning time	< 30 minutes	6	4.2
	30 min. - 1 hr	49	34.0
	1-2 hours	47	32.6
	over 2 hours	42	29.2
7. Study place at home	None	45	31.3
	Not good	9	6.3
	Good	84	58.3
	Very good	6	4.2
8. Printed books at home	None	23	16.0
	1-10	65	45.1
	11-20	28	19.4
	> 20	28	19.4
9. Presence of newspaper	Yes	32	22.2
	No	112	77.8

------- Continue

	Category	Frequency	Percentage
10. Parent's control over homework (in a week)	Never	16	11.1
	Once a week	6	4.2
	2-3 times	5	3.5
	4-5 times	3	2.1
	Always	114	79.2
11. Parent's help on homework	Never	21	14.6
	Once a week	4	2.8
	2-3 times	10	6.9
	4-5 times	9	6.3
	Always	100	69.4
12. Parent's control over schoolwork	Never	31	21.5
	Once a week	1	0.7
	2-3 times	12	8.3
	4-5 times	7	4.9
	Always	93	64.6
13. Parent's reaction to good report	Nothing	19	13.2
	Praising	93	64.6
	Awarding	32	22.2
14. Siblings in junior high school	0	72	50.0
	1	48	33.3
	2	24	16.7
15. Siblings in senior high school	0	104	72.2
	1	25	17.4
	2	15	10.4
16. Siblings in higher education	0	135	93.8
	1	6	4.2
	2	3	2.1
17. Grade of pupils	4	37	25.7
	5	55	38.2
	6	52	36.1

Table 2
Pilot Data from Parents
(N = 144)

	Category	Frequency	Percentage
1. Pupil age (in months)	below 120 months	37	25.7
	121-132 months	34	23.6
	133-144 months	49	34.0
	145-156 months	22	15.3
	157 months and over	2	1.4
2. Family size	3	4	2.8
	4	19	13.2
	5	38	26.4
	6	31	21.5
	7	22	15.3
	8	21	14.6
	9	9	6.3
3. Number of children at home	1	8	5.8
	2	32	22.2
	3	38	26.4
	4	52	36.1
	5	14	9.7
4. Father's occupation	Becak (tricycle) driver	5	3.5
	Public car driver	7	4.9
	Sidewalk business	61	42.4
	Small merchant	6	4.2
	Catering	1	0.7
	Handicraft	2	1.4
	Farmer	1	0.7
	Bricklayer	11	7.6
	Carpenter	6	4.2
	Technician/mechanic	1	0.7
	Labourer at factory	5	3.5
	Clerk at private sector	1	0.7
	Civil servant	16	11.1
	Police/military	5	3.5
	Moonlighting	1	0.7
	No indication / response	15	10.4

	Category	Frequency	Percentage
5. Father's education	None	7	3.6
	Some primary school	36	19.8
	Completed primary	30	27.6
	Some junior high sc	4	5.5
	Completed junior hs	23	14.1
	Some senior secondary	3	2.3
	Completed senior secondary	29	16.2
	Some higher education	4	2.5
	Completed higher education	8	8.4
6. Mother's occupation	Sidewalk business	35	24.3
	Handicraft	2	1.4
	Baker/cake maker	3	2.1
	Catering	5	3.5
	Tailor	8	5.6
	Labourer at factory	8	5.6
	Teacher	2	1.4
	Civil servant	2	1.4
	Police/military	1	0.7
	House cleaner	6	4.2
	Housewive/unemployed	72	50.0
7. Mother's education	None	20	13.9
	Some primary school	35	24.3
	Completed primary	34	23.6
	Some junior high sc	14	9.7
	Completed junior hs	12	8.3
	Some senior secondary	2	1.4
	Completed senior secondary	19	13.2
	Some higher education	3	2.1
	Completed higher education	5	3.5

Table 3
Pilot Data from Teachers
(N = 18)

	Category	Frequency
1. Gender	Female	12
	Male	6
2. Age	≤30 years	3
	31-35 years	5
	36-40 years	7
	41-45 years	2
	46-50 years	1
3. Marital status	Married	16
	Single	2
4. Educational qualification	Senior secondary level	8
	Dip.Ed (below BA)	2
	BA	3
	Sarjana degree	5
5. Teaching experience	5-10 years	6
	11-15 years	6
	16-20 years	4
	21-25 years	2
6. Rank of promotion order	II-a	2
	II-b	-
	II-c	3
	II-d	-
	III-a	8
	III-b	4
	III-c	1
7. Inservice-training for Indonesian Language	None	3
	A little	9
	A lot	6
8. Inservice-training for Mathematics	None	3
	A little	8
	A lot	7

	Category	Frequency
9. Class size	21-30	4
	31-40	8
	41-50	6
10. Books for Indonesian Language	<10	8
	11-20	4
	21-30	-
	31-40	2
	41-50	1
	51-60	1
	61-70	-
	71-80	2
11. Books for Mathematics	<10	7
	11-20	4
	21-30	2
	31-40	2
	41-50	1
	51-60	-
	61-70	1
	71-80	1

Instructional methods:

Dimensions	Items	Response options[3]				
		1	2	3	4	5
1. Traditional	- standardised textbooks	15	3			
	- lecturing	4	10	4		
	- memorising	4	6	6	2	
	- no pupil's talk	4	3	8	2	1
	- uniform task	5	9	2		2
2. Innovative	- using visual aids	1	11	6		
	- discussing in the classroom		5	13		
	- assigning group project		8	10		
	- using experiment		2	12	3	1
	- individualised home work	8	10			

[3] Notes: 1 = always, 2 = often, 3 = sometimes, 4 = seldom, 5 = never.

Perceived leadership:

Dimensions	Items	Response options[4]				
		1	2	3	4	5
1. People oriented	- friendly and approachable	6	4	3	1	4
	- using staff suggestions	7	7	2	2	
	- treating staff as his/her equals	15	2	1		
	- looking for teacher's welfare	10	6			2
	- acts without consultation	1		3	1	13
	- giving advance notice of changes	5	5	6	2	
	- willing to make changes	11	5	1	1	
2. Task oriented	- staff competition	10	6	2		
	- needling staff for great effort	6	5	7		
	- pushing to increase outcome	5	3	7	2	1
	- keep working maximally	6	5	6	1	
	- allowing to work at easy			7	5	6
	- working rapidly	4	9	4	1	
	- emphasising hard work	3	4	10	1	

[4] Notes: 1 = always, 2 = often, 3 = sometimes, 4 = seldom, 5 = never.

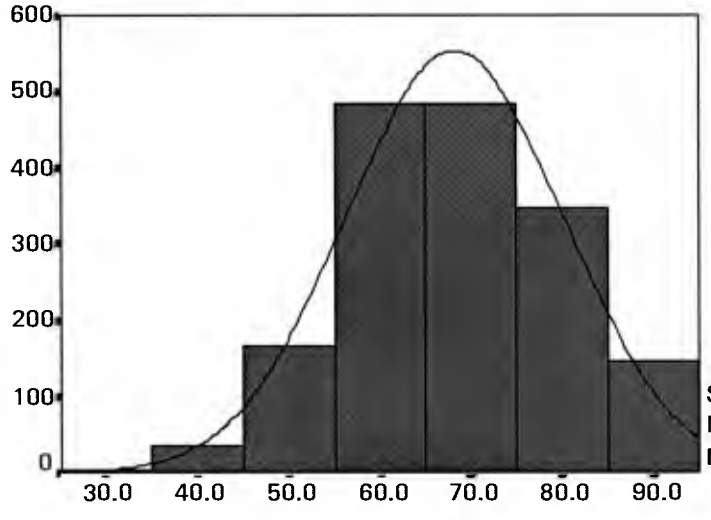
Table 4
Pilot Data from Headteachers
(N = 6)

	Category	Frequency
1. Gender	Female	2
	Male	4
2. Age	42	1
	53	1
	55	1
	58	2
	59	1
3. Educational qualification	Senior secondary	4
	Sarjana degree	2
4. Teaching experience	17	1
	33	1
	34	2
	39	2
5. Administrative experience	4	1
	5	1
	7	1
	14	1
	15	1
	28	1
6. Rank of promotion order	III-c	7
	III-d	8
7. Number of male teachers	1	1
	2	2
	3	3
	4	4
	5	5
8. Number of female teachers		
	5	5
	6	6
	7	7
	8	8

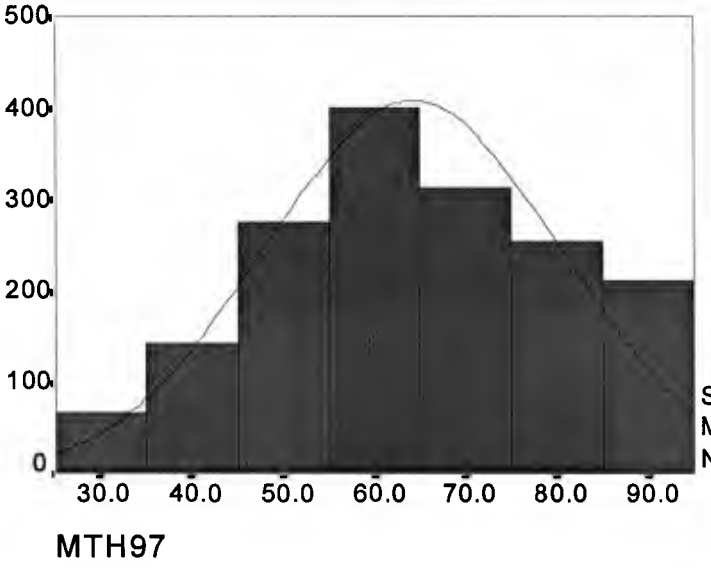
9. Number of male pupils	80	1
	96	1
	102	1
	124	1
	126	1
	202	1
10. Number of female pupils	61	1
	72	1
	91	1
	115	1
	142	1
	204	1
11. Number of books in the school library	462	1
	500	2
	640	1
	670	1
	686	1
12. Numbers of meeting	2	1
	3	1
	4	1
	5	1
	12	1
	14	1
13. Class hours	6	5
	12	1
14. Home hours for school	2	2
	3	1
	6	1
	7	1
	10	1
15. Professional development activities	Taking a course	3
	Independent study	5
	Teacher's club	6
	Educational training	6
	Educational seminar	5

APPENDIX C.1

The Shape of Indonesian Language and Mathematics Scores (Post-test)



Grade 4



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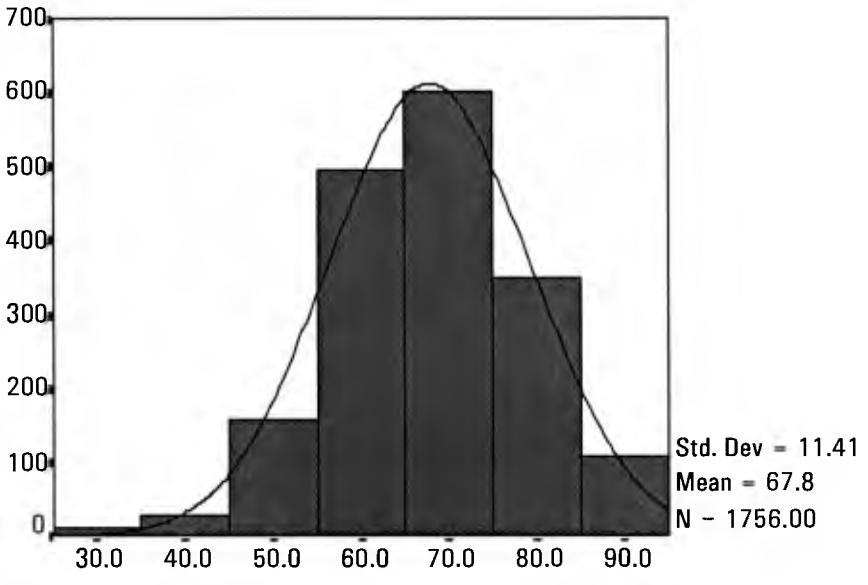

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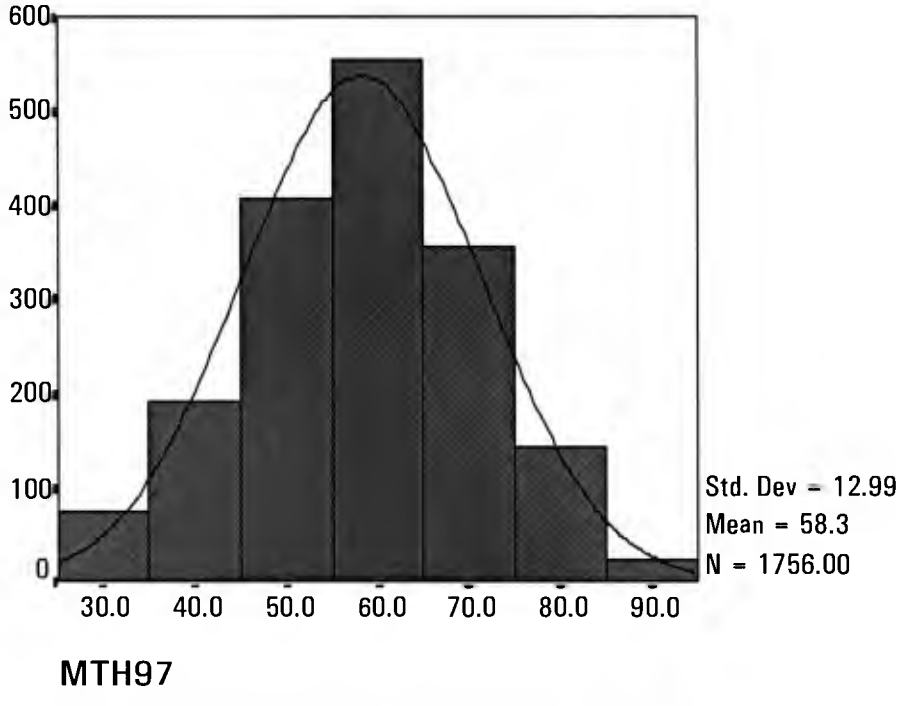

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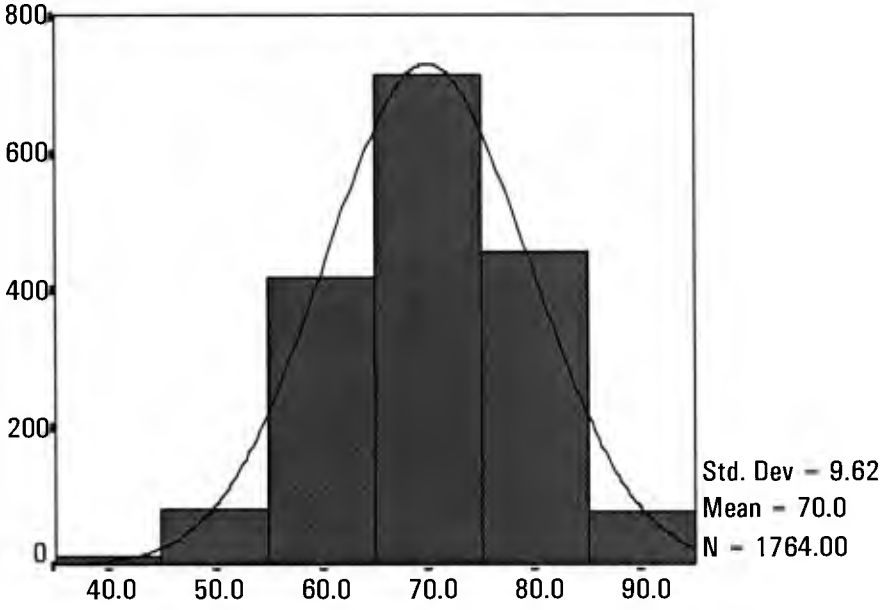

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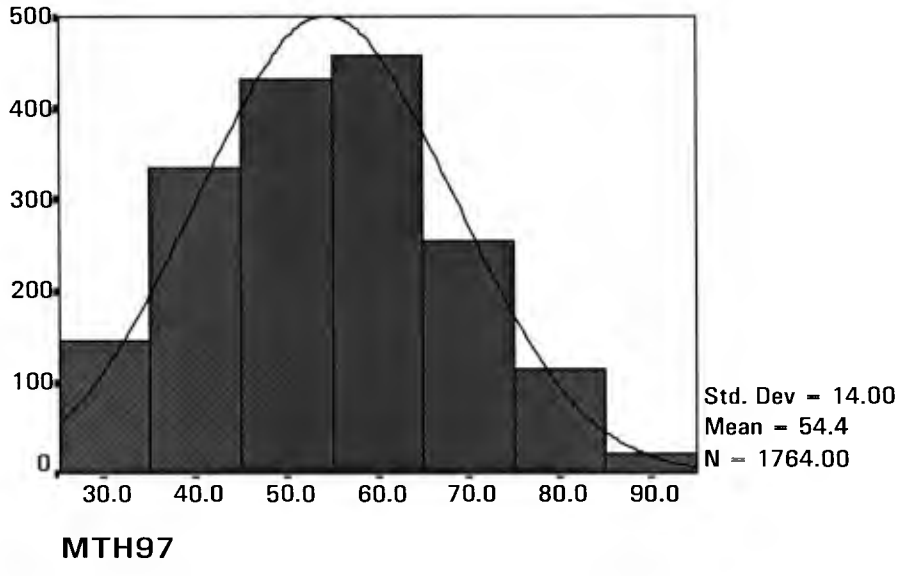
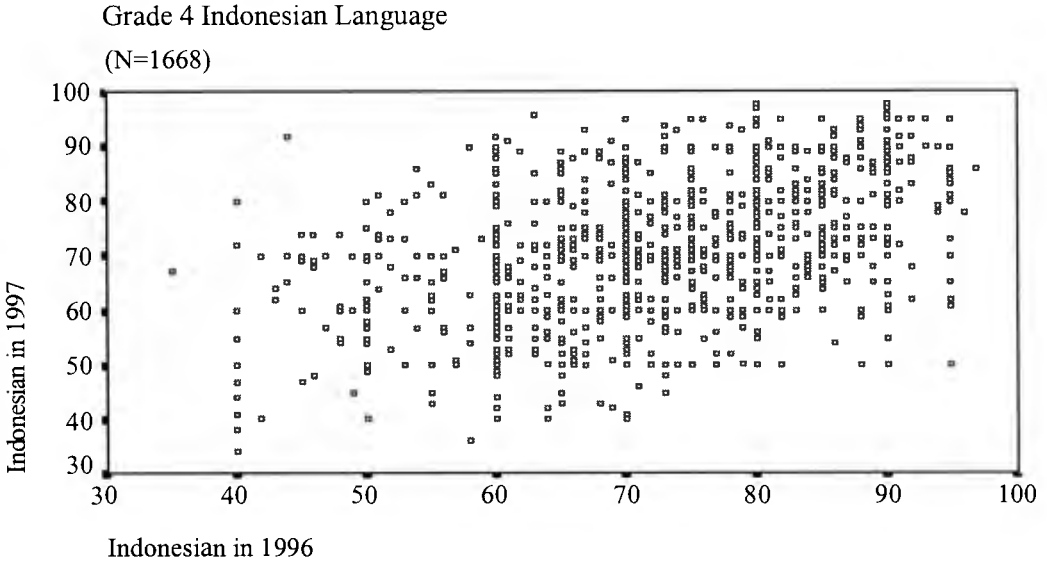
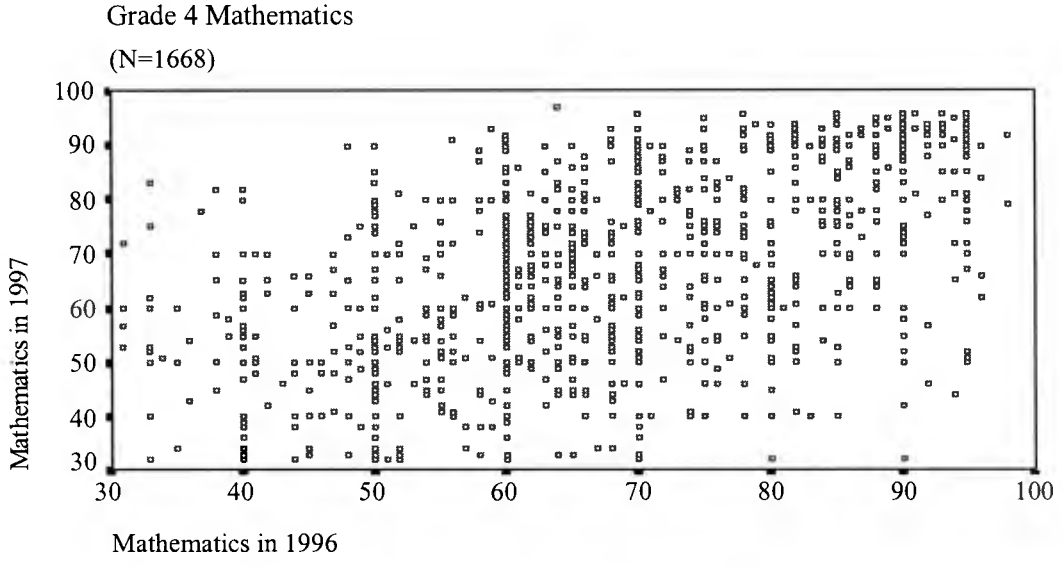


Grade 6

APPENDIX C.2

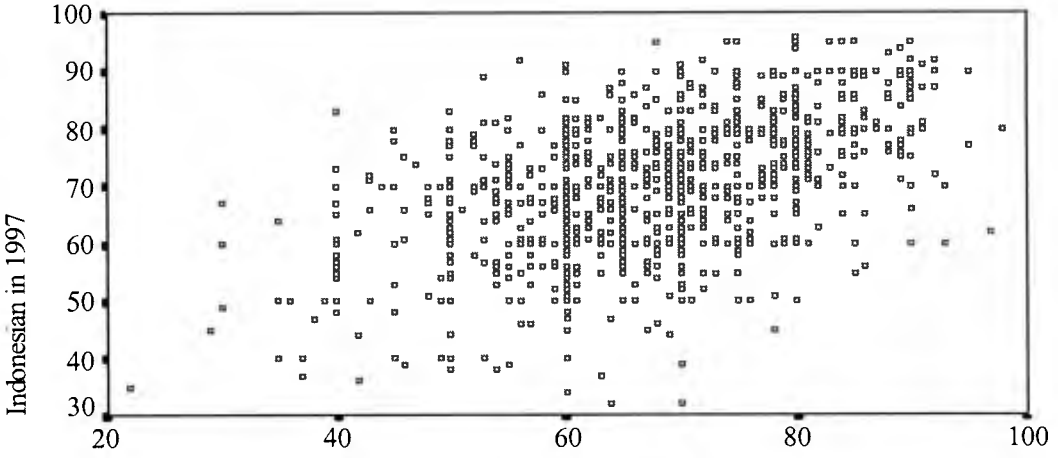
The Scatterplot of Pre- and Post-Test Scores in Indonesian Language and Mathematics





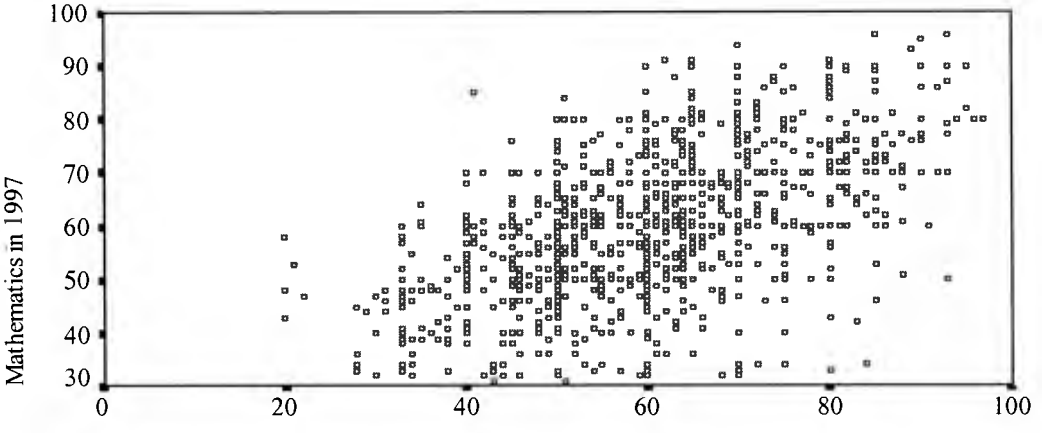
Grade 5 Indonesian Language

(N=1756)



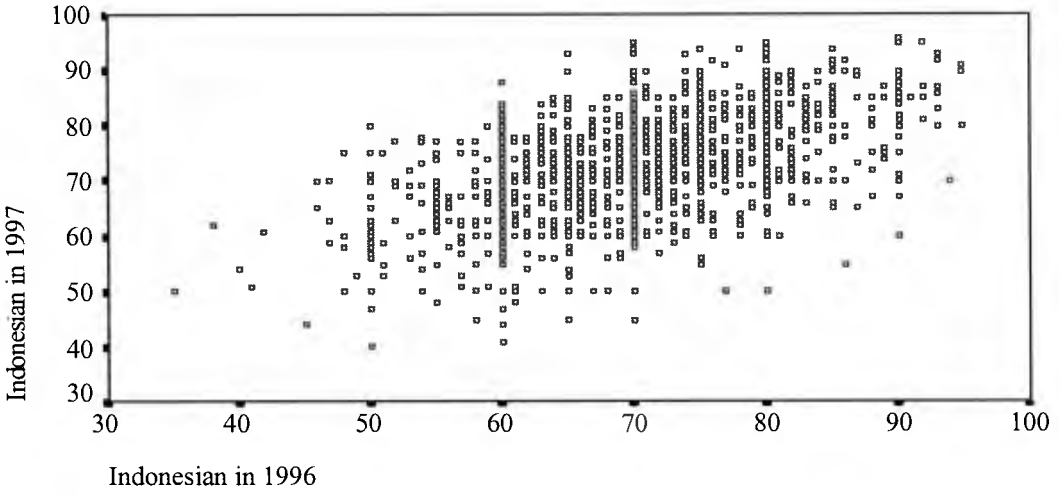
Grade 5 Mathematics

(N=1756)



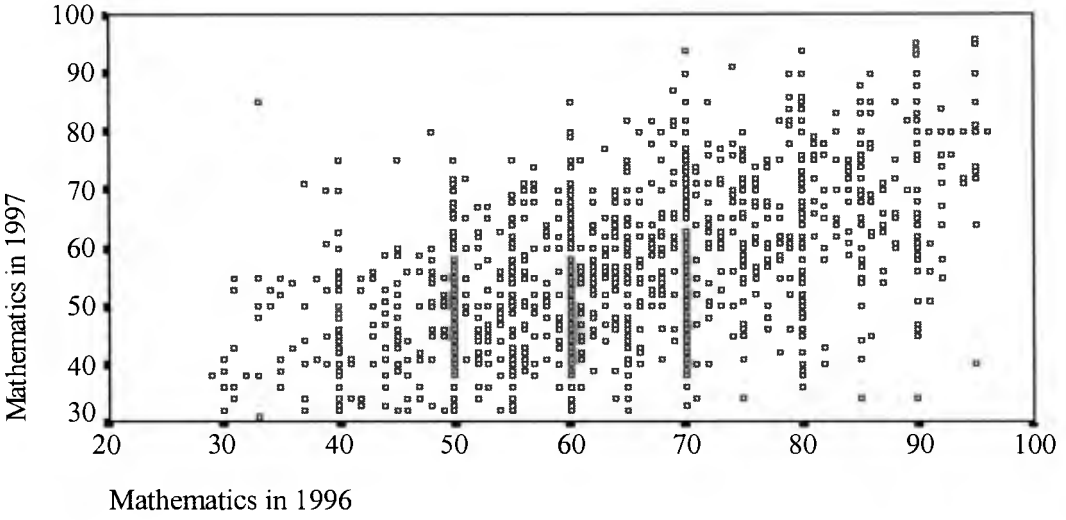
Grade 6 Indonesian Language

(N=1764)



Grade 6 Mathematics

(N=1764)



APPENDIX C.3

Parent's Occupation and Education

Father Occupation

Parents occupation were divided into father and mother occupations. Father's occupation consisted of 27 categories as the following Table 1.

Table 1
Description of Father's occupation

Value Label	Value	Frequency	Percent	Cum Percent
Trishaw driver	1.00	107	2.1	2.1
Public (car) driver	2.00	274	5.3	7.3
Sidewalk business	3.00	1019	19.6	27.0
Small merchant (eg.kiosk)	4.00	771	14.9	41.8
News deliver agent	5.00	1	.0	41.9
Catering	6.00	3	.1	41.9
Handicraft (rattan, meubel)	7.00	295	5.7	47.6
Real estate developer	8.00	18	.3	48.0
Security guard	9.00	76	1.5	49.4
Tailor	10.00	68	1.3	50.7
Barber	11.00	5	.1	50.8
Shoemaker	12.00	11	.2	51.0
Farmer	13.00	8	.2	51.2
Bricklayer	14.00	232	4.5	55.7
Carpenter	15.00	92	1.8	57.4
Technician/mechanic	16.00	98	1.9	59.3
Labourer at factory	17.00	744	14.3	73.7
Nurse	18.00	3	.1	73.7
Sport coach	19.00	3	.1	73.8
Journalist	20.00	5	.1	73.9
Religious leader	21.00	2	.0	73.9
Teacher	22.00	123	2.4	76.3
Clerk at private sector	23.00	278	5.4	81.6
Civil servant	24.00	638	12.3	93.9
Police/military	25.00	223	4.3	98.2
Moonlighting	26.00	25	.5	98.7
No indication/no response	27.00	66	1.3	100.0
	Total	5188	100.0	

The categories were grouped into classification demonstrated by Golthorpe & Hope (1978), adopted from Office of Populations Censuses and Surveys (OPCS). An additional consideration, related to training requirement, was used because some jobs needed training and did not. The grouping were presented in Table 2.

Table 2
Grouping of Father's Occupation

Occupational classification[1]	Non-skilled	Skilled (with training)
A. Self-employed		
1. Without employees	- trishaw driver - side walk business - small merchant (kiosk) - news delivery agent - farmer - moonlighting	- handicraft - catering - tailor - barber - shoemaker - sport coach - carpenter - technician/mechanic
2. With employees	---	- Real estate developer (Non-manual)
B. Employees		
1. Managers	---	---
2. Foreman & supervisors		
a. Manual	- security guard	- public driver - bricklayer - labourer at factory
b. Non-manual	---	- nurse - journalist - teacher - clerk at private sector - civil servant - police/military - religious leader

This classification lead to the final conclusion that there were three main categories:

1. Unskilled manual work for trishaw driver, side walk business, small merchant, news delivery agent, farmer, moonlighting, and security guard.
2. Skilled manual work for handicract, catering, tailor, barber, shoemaker, sport coach, carpenter, technician/mechanic, public driver, bricklayer, and labourer.
3. Clerical & professional work fro real estate developer, nurse, journalist, teacher, clerk at private sector, civil servant, police/military, and religious leader.

[1] Goldthorpe & Hope (1978) and BPS (1996)

Mother's occupation

On mother's occupation, there were a slight different tendencies. There were 15 categories as showed in Table 3.

Table 3
Description of Mother's occupation

Value Label	Value	Frequency	Percent	Cum Percent
Sidewalk business	1.00	652	12.6	12.6
Handicraft & Small merchant	2.00	516	9.9	22.5
Baker/cake maker	3.00	5	.1	22.6
Catering	4.00	24	.5	23.1
Tailor	5.00	146	2.8	25.9
Labourer at factory	6.00	493	9.5	35.4
Nurse	7.00	9	.2	35.6
Teacher	8.00	181	3.5	39.1
Clerk at private sector	9.00	102	2.0	41.0
Civil servant	10.00	203	3.9	44.9
Police/military	11.00	4	.1	45.0
Labourer at printery	12.00	6	.1	45.1
Beautician (at salon)	13.00	10	.2	45.3
House cleaner/maid	14.00	139	2.7	48.0
Housewive/unemployed	15.00	2698	52.0	100.0
	Total	5188	100.0	

Besides using the basic consideration as for fathers, there was one additional category appears in Indonesian Population Census Classification (BPS, 1996) i.e family or charity works without earning money. This category was used because represent a big group of the sample. The following table presented the classification.

Table 4
Grouping of Mother's Occupation

Occupational classification[2]	Non-skilled	Skilled (with training)
A. Self-employed		
1. Without employees	- side walk business - house cleaner/keeper	- handicraft - tailor - catering - baker/cake maker
2. With employees	---	---
3. Without salary/earning[3]	"Family worker / House wife"	
B. Employees		
1. Managers	---	---
2. Foreman & supervisors		
a. Manual	---	- labourer at factory - labourer at printery - beautician
b. Non-manual		- nurse - teacher - clerk at private sector - civil servant - police/military

As a result, four main categories were set:

1. Unskilled manual work for sidewalk business, house clear & maid
2. Skilled manual work for handicraft, tailor, catering, baker/cake maker, labourer at factory and printery, and beautician.
3. Clerical and professional work for nurse, teacher, clerk at private sector, civil servant, and police/military.
4. Non-earning work for almost being house wife only.

[2] Goldthorpe & Hope (1978) and BPS (1996)

[3] BPS (1996)

Parents' Education

The categories of parents' education were converted into years of education and were indexed as showed in Table 4.

Table 4
Conversion of Categories of Education into Years

Educational Category	Years of education	Assumed Years of Education	Indexed Years of Education (divided by 1,5)
- None	0	0	0
- Some primary school		3	2
- Completed primary school	6	6	4
- Some Junior high school		7.5	5
- Completed junior high-school	9	9	6
- Some senior high school		10.5	7
- Completed senior high school	12	12	8
- Some tertiary education		15	10
- Completed tertiary education	16	18	12

APPENDIX C.4

DESCRIPTION OF ITEMS IN SOME FACTOR ANALYSES

1. PARENTAL ENCOURAGEMENT

	Mean	Std Dev	Label
HWCTRL	4.47829	1.18450	parent's control over homework
HWHELP	4.07940	1.45029	parent's help on homework
SWCTRL	3.76028	1.66678	parent's control over schoolwork
REPORTRP	2.24660	.63317	parent's reaction to good report

Number of Cases = 5188

Correlation Matrix:

	HWCTRL	HWHELP	SWCTRL	REPORTRP
HWCTRL	1.00000			
HWHELP	.51584	1.00000		
SWCTRL	.64487	.50417	1.00000	
REPORTRP	.32540	.30454	.26300	1.00000

Residual Matrix of Confirmatory Factor Analysis of Parental Encouragement

	1	2	3	4
1	0.00			
2	0.01	0.00		
3	-0.00	-0.00	0.00	
4	-0.01	-0.02	0.02	0.00

Of the residuals (in the lower triangle of the residual matrix) :

Largest (in magnitude) = 0.02453
Mean (in magnitude) = 0.007775
Root Mean Square = 0.01085

2. INSTRUCTIONAL APPROACH

	Mean	Std Dev	Label
TRAD11	1.44444	.66199	using standardised textbooks
TRAD13	1.95556	.69974	lecturing
TRAD16	2.51111	.80840	memorising
TRAD19	2.33889	1.10440	not allowing pupil's talk
TRAD20	2.03333	1.13305	uniform task for class
TINOV12	2.18889	.73833	using visual aids
TINOV14	2.84444	.60558	discussing in the classroom
TINOV15	2.55000	.71124	assigning group project
TINOV17	2.82778	.70774	using experiment
TINOV18	1.52222	.62941	individualised home work

Number of Cases = 180

Correlation Matrix:

	TRAD11	TRAD13	TRAD16	TRAD19	TRAD20	TINOV12	TINOV14
TRAD11	1.00000						
TRAD13	-.00536	1.00000					
TRAD16	.18907	.08976	1.00000				
TRAD19	.15198	.09189	.13655	1.00000			
TRAD20	-.01241	.03711	.16427	.28558	1.00000		
TINOV12	.20447	.02715	.22110	-.12690	.08592	1.00000	
TINOV14	.20129	.04951	.31167	-.12121	.20300	.31598	1.00000
TINOV15	.20171	-.02919	.21765	-.03236	.13657	.39682	.48510
TINOV17	.12851	.05214	.26212	.01791	.05597	.36195	.26301
TINOV18	.28455	.21790	.31792	.16994	.31230	.15922	.19966

	TINOV15	TINOV17	TINOV18
TINOV15	1.00000		
TINOV17	.27801	1.00000	
TINOV18	.12854	.07762	1.00000

Residual Matrix of Confirmatory Factor Analysis of Instructional Approach

	1	2	3	4	5	6	7	8	9	10
1	-0.00									
2	-0.04	-0.00								
3	-0.02	0.03	0.00							
4	0.11	0.08	0.07	0.00						
5	-0.12	0.01	-0.00	0.25	0.00					
6	0.03	-0.02	-0.03	-0.18	-0.05	-0.00				
7	0.00	-0.01	0.01	-0.18	0.04	-0.05	0.00			
8	0.01	-0.08	-0.08	-0.09	-0.02	0.04	0.06	0.00		
9	-0.01	0.01	0.05	-0.03	-0.06	0.11	-0.04	-0.02	-0.00	
10	0.18	0.19	0.16	0.14	0.23	-0.03	-0.03	-0.09	-0.08	-0.00

Of the residuals (in the lower triangle of the residual matrix) :

Largest (in magnitude) = 0.2516
Mean (in magnitude) = 0.05781
Root Mean Square = 0.08624

3. LEADERSHIP

	Mean	Std Dev	Label
T27	3.52222	1.24378	friendly and approachable
T29	4.16667	.94248	using staff suggestions
T30	4.41667	.77586	treating staff as his/her equals
T32	4.07778	.98284	looking for teacher's welfare
T35NEG	4.09444	1.06071	acts without consultation
T37	3.83889	.91030	giving advance notice of changes
T39	4.21111	.96872	willing to make changes
P28	4.18889	.84423	staff competition
P31	3.65556	.85432	needling staff for greater effort
P33	3.44444	.97581	pushing for increasing outcomes
P34	3.78333	1.09481	keep working maximally
P36NG	3.81667	1.05954	allowing to work at easy
P38	3.93889	.98686	working rapidly
P40	3.41667	.82472	emphasising outcomes

Number of Cases = 180

Correlation Matrix:

	T27	T29	T30	T32	T35NEG	T37	T39
T27	1.00000						
T29	.35425	1.00000					
T30	.30008	.56154	1.00000				
T32	.23622	.44428	.37486	1.00000			
T35NEG	.03016	.11270	.12163	.10545	1.00000		
T37	.18821	.20729	.26960	.22014	.07949	1.00000	
T39	.08882	.22436	.23166	.11761	.26321	.13381	1.00000
P28	.16091	.48681	.39092	.31211	-.02627	.15613	.14907
P31	.24909	.41861	.35259	.19177	.10391	.19404	.09511
P33	.26339	.55075	.40339	.41811	.15353	.33892	.20750
P34	.16971	.45750	.34365	.32207	.01772	.16658	.18033
P36NG	.12817	.34965	.29052	.10497	.16959	.03871	.09235
P38	.30378	.44948	.28152	.23532	.05891	.29992	.20057
P40	.27685	.32702	.29467	.17345	-.04524	.28339	.12004

	P28	P31	P33	P34	P36NG	P38	P40
P28	1.00000						
P31	.33858	1.00000					
P33	.47395	.37230	1.00000				
P34	.38905	.36774	.36779	1.00000			
P36NG	.27626	.39273	.30079	.26416	1.00000		
P38	.30227	.33934	.41705	.26690	.34185	1.00000	
P40	.28752	.37927	.44196	.26141	.24774	.32662	1.00000

Residual Matrix of Confirmatory Factor Analysis of Leadership Dimensions

	1	2	3	4	5	6	7	8	9	10
1	-0.00									
2	-0.02	-0.00								
3	0.03	-0.05	-0.00							
4	0.04	0.04	-0.04	0.00						
5	0.01	-0.12	0.04	0.00	0.00					
6	-0.05	0.00	-0.00	-0.06	-0.07	-0.00				
7	-0.04	0.07	0.06	-0.04	0.00	0.02	-0.00			
8	-0.08	0.02	-0.02	-0.05	0.05	0.08	0.07	0.00		
9	0.03	-0.01	0.01	0.04	-0.00	0.03	-0.06	0.00	0.00	
10	0.02	-0.00	-0.04	0.00	-0.00	-0.07	-0.03	0.01	0.01	0.00
11	0.02	-0.09	0.07	0.05	0.12	-0.04	-0.08	0.01	0.01	0.01
12	0.11	-0.02	-0.05	0.06	0.10	0.02	0.12	0.04	0.02	-0.02
13	-0.04	0.01	0.11	-0.01	0.11	0.12	0.11	0.04	-0.08	0.03
14	-0.01	-0.06	0.02	0.03	0.03	0.05	-0.02	-0.04	-0.02	0.03

	11	12	13	14
11	0.00			
12	-0.02	0.00		
13	0.03	-0.02	-0.00	
14	-0.04	-0.22	0.03	-0.00

Of the residuals (in the lower triangle of the residual matrix) :

Largest (in magnitude) = 0.2174
Mean (in magnitude) = 0.03749
Root Mean Square = 0.05312

APPENDIX C.5

Correlation Matrix of Pupil Variables

Grade 4:

-- Correlation Coefficients --

	PAGE	FEDUC	MEDUC	FMSIZE	CHILDREN	CHLD_ORD
PAGE	1.0000					
FEDUC	-.3488	1.0000				
MEDUC	-.3571	.7130	1.0000			
FMSIZE	.1483	-.0543	-.1020	1.0000		
CHILDREN	.2535	-.1571	-.2074	.6602	1.0000	
CHLD_ORD	.2090	-.1454	-.2387	.4265	.6498	1.0000
HLANG	.1255	-.2327	-.2388	.0722	.0920	.1264
TIMEHW	-.0358*	.0899	.0447*	.0142*	-.0175*	-.0339*
SOCPRS	.1078	-.0381*	-.1504	.3388	.4922	.7040
PRBOOK	-.0991	.1958	.1772	-.0567	-.0858	-.0911
PARENCT	-.1655	.1560	.1506	-.0029*	-.0644	-.0120*

	HLANG	TIMEHW	SOCPRS	PRBOOK	PARENCT
HLANG	1.0000				
TIMEHW	-.0434*	1.0000			
SOCPRS	.0505	-.0217*	1.0000		
PRBOOK	-.1019	.0690	-.0450*	1.0000	
PARENCT	.0020*	.0848	.0297*	.0928	1.0000

Grade 5:

	PAGE	FEDUC	MEDUC	FMSIZE	CHILDREN	CHLD_ORD
PAGE	1.0000					
FEDUC	-.3670	1.0000				
MEDUC	-.4042	.7287	1.0000			
FMSIZE	.1129	-.0634	-.0867	1.0000		
CHILDREN	.2212	-.1143	-.1646	.6348	1.0000	
CHLD_ORD	.1755	-.0899	-.1773	.4426	.6902	1.0000
HLANG	.0885	-.2262	-.2008	.0470	.0460	.0482
TIMEHW	-.0253*	.0338*	.0256*	-.0124*	-.0011*	.0028*
SOCPRS	.0739	.0033*	-.0731	.3823	.5629	.7648
PRBOOK	-.1735	.2885	.2959	-.0204*	-.0515	-.0325*
PARENCT	-.1561	.2074	.2247	-.0385*	-.0911	-.0518

	HLANG	TIMEHW	SOCPRS	PRBOOK	PARENCT
HLANG	1.0000				
TIMEHW	-.0554	1.0000			
SOCPRS	.0174*	-.0101*	1.0000		
PRBOOK	-.0638	.0317*	-.0255*	1.0000	
PARENCT	-.1098	.1247	-.0203*	.0750	1.0000

Grade 6:

-- Correlation Coefficients --

	PAGE	FEDUC	MEDUC	FMSIZE	CHILDREN	CHLD_ORD
PAGE	1.0000					
FEDUC	-.3672	1.0000				
MEDUC	-.3849	.7125	1.0000			
FMSIZE	.1596	-.0648	-.0844	1.0000		
CHILDREN	.2359	-.1456	-.1960	.6691	1.0000	
CHLD_ORD	.1976	-.1228	-.1750	.4586	.6857	1.0000
HLANG	.1398	-.2558	-.2767	.0853	.0957	.0849
TIMEHW	-.0956	.1094	.1102	-.0038*	-.0334*	-.0029*
SOCPRS	.1035	-.0221*	-.0788	.4050	.5666	.7812
PRBOOK	-.2061	.2141	.2191	-.0171*	-.0872	-.0554
PARENCT	-.1728	.1944	.2332	-.0781	-.1392	-.1075

	HLANG	TIMEHW	SOCPRS	PRBOOK	PARENCT
HLANG	1.0000				
TIMEHW	-.0421*	1.0000			
SOCPRS	.0228*	.0058*	1.0000		
PRBOOK	-.0703	.1445	-.0490	1.0000	
PARENCT	-.1609	.1624	-.0239*	.0498	1.0000

Note: * p> 0.05

APPENDIX C.6

Correlation Matrix of Class Variables

Grade 4:

-- Correlation Coefficients --

	TAGE	TEDUC	TRANK_OR	LESSNPLN	TCORRECT	HMWEEK
TAGE	1.0000	-.0589	.7743	.0046	-.0876	-.0190
TEDUC	-.0589*	1.0000	-.0167	.0958	-.0377	.2375
TRANK_OR	.7743	-.0167*	1.0000	.0394	-.0479	.0336
LESSNPLN	.0046*	.0958*	.0394*	1.0000	.3055	.1859
TCORRECT	-.0876*	-.0377*	-.0479*	.3055	1.0000	.2375
HMWEEK	-.0190*	.2375	.0336*	.1859*	.2375*	1.0000
TRADITIO	-.1542*	-.0597*	.0556*	-.0001*	.1821*	.0274*
INOVAT	.1191*	.0960*	.1968*	.1663*	.2379*	.0218*
TASK	.1934*	.1979*	.1718*	.1246*	.1904*	.1798*
PEOPLE	.0565*	.3177	.2045*	.0503*	.0673*	.1266*

	TRADITIO	INOVAT	TASK	PEOPLE
TRADITIO	1.0000			
INOVAT	.3997	1.0000		
TASK	.0429*	.1669*	1.0000	
PEOPLE	.1253*	.1953*	.6422	1.0000

Grade 5:

-- Correlation Coefficients --

	TAGE	TEDUC	TRANK_OR	LESSNPLN	TCORRECT	HMWEEK
TAGE	1.0000					
TEDUC	-.1281*	1.0000				
TRANK_OR	.6144	.1605*	1.0000			
LESSNPLN	.0050*	.1900*	.0380*	1.0000		
TCORRECT	.1000*	-.0768*	.0199*	.3076	1.0000	
HMWEEK	-.0085*	.1166*	.2072*	.2021*	.1399*	1.0000
TRADITIO	-.1783*	.1287*	-.1973*	.1927*	.0971*	.1182*
INOVAT	-.0708*	.0328*	-.1291*	.1620*	.0957*	.1527*
TASK	.0599*	-.0425*	-.0458*	-.2098*	-.1882*	-.2811
PEOPLE	.0263*	-.1667*	-.0189*	-.0739*	-.1609*	-.0782*

	TRADITIO	INOVAT	TASK	PEOPLE
TRADITIO	1.0000			
INOVAT	.4874	1.0000		
TASK	-.0231*	-.0588*	1.0000	
PEOPLE	-.0027*	.0437*	.6877	1.0000

Grade 6:

-- Correlation Coefficients --

	TAGE	TEDUC	TRANK_OR	LESSNPLN	TCORRECT	HMWEEK
TAGE	1.0000					
TEDUC	-.0805*	1.0000				
TRANK_OR	.6977	.0989*	1.0000			
LESSNPLN	-.0177*	-.0913*	.0977*	1.0000		
TCORRECT	.1153*	-.1018*	.1373*	.1025*	1.0000	
HMWEEK	.1291*	.0194*	.1307*	-.0694*	-.1657*	1.0000
TRADITIO	.1690*	.0646*	.0374*	-.0992*	.1385*	-.2832*
INOVAT	.4127	.3291	.3406	.0422*	-.0672*	.1099*
TASK	.2567	-.0033*	.1590*	.0387*	.1092*	-.1116*
PEOPLE	.0982*	.0653*	.0402*	-.0081*	-.0237*	.0634*

	TRADITIO	INOVAT	TASK	PEOPLE
TRADITIO	1.0000			
INOVAT	.2032*	1.0000		
TASK	.2901	.1956*	1.0000	
PEOPLE	.0155*	.0850*	.5897	1.0000

Note: * p> 0.05

APPENDIX C.7

Correlation Matrix of School Variables

-- Correlation Coefficients --

	HAGE	HEDUC	HTEXPER	HEADEXPR	HRANK_OR	PROFGRW
HAGE	1.0000					
HEDUC	-.4961	1.0000				
HTEXPER	.8759	-.4547	1.0000			
HEADEXPR	.6072	-.1844*	.5262	1.0000		
HRANK_OR	.5318	-.0057*	.4715	.6080	1.0000	
PROFGRW	-.0823*	.3570	-.0366*	.0238*	.1568*	1.0000
MEETING	.0933*	.0650*	.1232*	-.0980*	-.0041*	.1832*
CLSHOUR	-.0644*	-.0720*	-.0819*	-.1050*	-.0889*	-.1465*
HMHOUR	.0134*	-.1865*	.1080*	-.1871*	.0226*	.0550*
MFPUP	.2279*	-.2707	.2064*	.0901*	.2229*	-.3064
PTRATIO	-.3129	.0694*	-.4247	-.2243*	-.3405	.0630*
SCHLBOOK	-.0625*	-.0191*	-.0630*	.0610*	.0352*	-.0530*

	MEETING	CLSHOUR	HMHOUR	MFPUP	PTRATIO	SCHLBOOK
MEETING	1.0000					
CLSHOUR	.1210*	1.0000				
HMHOUR	-.0408*	.0149*	1.0000			
MFPUP	-.1792*	-.0437*	.1138*	1.0000		
PTRATIO	-.0885*	-.1188*	-.0020*	-.0908*	1.0000	
SCHLBOOK	-.1482*	-.0208*	.1167*	.1917*	.0735*	1.0000

Note: * p> 0.05

APPENDIX D.1

THE STRUCTURE OF SAMPLES

A Summary of Grade 4 Samples

level 2 : 60 units, level 1 : 1668 units

ID 2:	1	2	3	4	5	6	7	8	9	10
N 1:	39	27	38	34	31	23	24	30	28	21
ID 2:	11	12	13	14	15	16	17	18	19	20
N 1:	41	38	21	40	16	32	20	15	20	34
ID 2:	21	22	23	24	25	26	27	28	29	30
N 1:	32	31	26	22	34	25	22	19	36	31
ID 2:	31	32	33	34	35	36	37	38	39	40
N 1:	33	43	30	31	29	26	29	24	32	29
ID 2:	41	42	43	44	45	46	47	48	49	50
N 1:	30	23	40	30	37	16	21	18	31	30
ID 2:	51	52	53	54	55	56	57	58	59	60
N 1:	20	30	32	21	24	16	27	30	14	22

A Summary of Grade 5 Samples

level 2 : 60 units, level 1 : 1756 units

ID 2:	1	2	3	4	5	6	7	8	9	10
N 1:	35	31	45	32	35	27	35	34	29	18
ID 2:	11	12	13	14	15	16	17	18	19	20
N 1:	40	36	24	37	17	34	36	22	22	33
ID 2:	21	22	23	24	25	26	27	28	29	30
N 1:	32	31	26	28	37	27	25	26	37	25
ID 2:	31	32	33	34	35	36	37	38	39	40
N 1:	40	38	25	30	33	33	28	25	27	24
ID 2:	41	42	43	44	45	46	47	48	49	50
N 1:	32	34	34	23	38	21	21	23	31	25
ID 2:	51	52	53	54	55	56	57	58	59	60
N 1:	25	28	25	28	22	28	19	26	20	34

A Summary of Grade 6 Samples

level 2 : 60 units, level 1 : 1764 units

ID 2:	1	2	3	4	5	6	7	8	9	10
N 1:	44	32	40	40	36	22	27	34	31	24
ID 2:	11	12	13	14	15	16	17	18	19	20
N 1:	35	36	28	42	22	38	31	17	26	34
ID 2:	21	22	23	24	25	26	27	28	29	30
N 1:	27	31	23	24	36	17	24	23	37	24
ID 2:	31	32	33	34	35	36	37	38	39	40
N 1:	42	29	31	35	28	25	28	28	32	28
ID 2:	41	42	43	44	45	46	47	48	49	50
N 1:	35	30	44	21	31	25	27	21	31	24
ID 2:	51	52	53	54	55	56	57	58	59	60
N 1:	24	32	26	31	16	32	23	28	27	25

APPENDIX D.2

STEPWISE PROCEDURES[1]

APPENDIX D.2a
EXAMINING PUPIL VARIABLES FOR GRADE 4 INDONESIAN LANGUAGE

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.005442	0.06461

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2217	0.04571
1	CONS	/CONS	0.7516	0.02651

-2*log(lh) is 4388.75

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.01207	0.06673
CIND96	0.04238	0.001694

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2464	0.04893
1	CONS	/CONS	0.5401	0.01904

-2*log(lh) is 3861.16

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.07928	0.06938
CIND96	0.0444	0.001704
SQ-IND96	0.0006689	0.0001078

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2556	0.05037
1	CONS	/CONS	0.5268	0.01858

-2*log(lh) is 3823.17

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.06652	0.0677
CIND96	0.03238	0.002048
SQ-IND96	0.0005736	0.0001051
CMTH96	0.0155	0.001554

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2435	0.04795
1	CONS	/CONS	0.497	0.01753

-2*log(lh) is 3726.64

STEP 5:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.09543	0.0686
CIND96	0.03199	0.002052
SQ-IND96	0.0004879	0.0001111
CMTH96	0.01575	0.001555
SQ-MTH96	0.0001798	7.635e-05

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2419	0.04794
1	CONS	/CONS	0.4954	0.01753

-2*log(lh) is 3721.1

STEP 6:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.06754	0.06988
CIND96	0.02758	0.002056
SQ-IND96	0.0004795	0.0001083
CMTH96	0.01736	0.001526
SQ-MTH96	0.0001722	7.443e-05
PSEX	-0.3276	0.03528

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2361	0.04641
1	CONS	/CONS	0.4707	0.0166

-2*log(lh) is 3637.03

STEP 7:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1123	0.07423
CIND96	0.02646	0.002066
SQ-IND96	0.0005125	0.0001081
CMTH96	0.01676	0.001527
SQ-MTH96	0.0001723	7.43e-05
PSEX	-0.3086	0.0355
AGE1	0.0005722	0.04779
AGE2	-0.05589	0.04758
AGE3	-0.1968	0.05455

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2274	0.04479
1	CONS	/CONS	0.4667	0.01646

-2*log(lh) is 3621.14

STEP 8:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.2077	0.08034
CIND96	0.02604	0.002065
SQ-IND96	0.0005049	0.0001081
CMTH96	0.01647	0.001527
SQ-MTH96	0.0001586	7.425e-05
PSEX	-0.3139	0.03544
AGE1	0.01248	0.04782

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2241	0.04417
1	CONS	/CONS	0.4642	0.01637

-2*log(lh) is 3611.67

[1] For explanation of variable labels in appendices D.2a through D.7c, see Appendix B.1a.

AGE2	-0.04047	0.04773
AGE3	-0.1818	0.05462
F1DUM	-0.1468	0.08832
F2DUM	-0.1113	0.08831

STEP 9:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.2532	0.09338
CIND96	0.02592	0.002078
SQ-IND96	0.0005022	0.0001085
CMTH96	0.0164	0.001528
SQ-MTH96	0.0001573	7.425e-05
PSEX	-0.316	0.03559
AGE1	0.01408	0.04789
AGE2	-0.03795	0.04787
AGE3	-0.1799	0.05477
M1DUM	-0.04862	0.08108
M2DUM	-0.04856	0.0741
M3DUM	-0.06769	0.06527

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2239	0.04417
1	CONS	/CONS	0.4638	0.01637

-2*log(lh) is 3610.46

STEP 10:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.04517	0.08542
CIND96	0.02598	0.002062
SQ-IND96	0.0004984	0.0001078
CMTH96	0.01622	0.001529
SQ-MTH96	0.0001673	7.403e-05
PSEX	-0.3156	0.03542
AGE1	0.01402	0.04775
AGE2	-0.02915	0.04797
AGE3	-0.1647	0.05506
FEDUC	0.02645	0.007266

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.223	0.04397
1	CONS	/CONS	0.4632	0.01633

-2*log(lh) is 3607.94

STEP 11:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.006396	0.08282
CIND96	0.02586	0.002072
SQ-IND96	0.0004904	0.0001082
CMTH96	0.01637	0.001531
SQ-MTH96	0.0001668	7.417e-05
PSEX	-0.3154	0.03551
AGE1	0.0134	0.04792
AGE2	-0.03286	0.0482
AGE3	-0.1681	0.05541
MEDUC	0.02054	0.007355

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2223	0.04383
1	CONS	/CONS	0.4648	0.01639

-2*log(lh) is 3613.37

STEP 12:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.02535	0.1047
CIND96	0.02597	0.002062
SQ-IND96	0.0004984	0.0001078
CMTH96	0.01622	0.001529
SQ-MTH96	0.0001671	7.403e-05
PSEX	-0.3159	0.03543
AGE1	0.01473	0.0478
AGE2	-0.02807	0.04809
AGE3	-0.1627	0.05538
FEDUC	0.0265	0.007267
FMSIZE	-0.00351	0.01072

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2231	0.04398
1	CONS	/CONS	0.4631	0.01633

-2*log(lh) is 3607.84

STEP 13:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.03139	0.09914
CIND96	0.02585	0.002062
SQ-IND96	0.000496	0.0001077
CMTH96	0.01624	0.001528
SQ-MTH96	0.0001652	7.399e-05
PSEX	-0.3182	0.03543
AGE1	0.0194	0.04785
AGE2	-0.01752	0.04854
AGE3	-0.1486	0.056
FEDUC	0.02593	0.007269
CHILDREN	-0.02592	0.01701

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2237	0.04406
1	CONS	/CONS	0.4624	0.01633

-2*log(lh) is 3605.62

STEP 14:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.0001428	0.09122
CIND96	0.02593	0.002061
SQ-IND96	0.0004938	0.0001078
CMTH96	0.01617	0.001528
SQ-MTH96	0.0001647	7.4e-05
PSEX	-0.318	0.03543
AGE1	0.02047	0.04794
AGE2	-0.01554	0.04889
AGE3	-0.1528	0.05565
FEDUC	0.02609	0.007266
CHLD_ORD	-0.02135	0.01509

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.224	0.04414
1	CONS	/CONS	0.4625	0.01631

-2*log(lh) is 3605.94

STEP 15:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.04319	0.08617
CIND96	0.02596	0.002064
SQ-IND96	0.0004981	0.0001078
CMTH96	0.01622	0.001529
SQ-MTH96	0.0001673	7.403e-05

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2231	0.04397
1	CONS	/CONS	0.4632	0.01633

PSEX	-0.3157	0.03542	-2*log(lh) is 3607.91
AGE1	0.01445	0.04782	
AGE2	-0.02795	0.04846	
AGE3	-0.1639	0.05521	
FEDUC	0.02648	0.007268	
SOCPRES	-0.002678	0.01527	

STEP 16:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.1414	0.1062					
CIND96	0.02594	0.00206	2	CONS	/CONS	0.2228	0.04396
SQ-IND96	0.0004934	0.0001078					
CMTH96	0.01608	0.00153	1	CONS	/CONS	0.4625	0.01633
SQ-MTH96	0.0001665	7.398e-05					
PSEX	-0.3147	0.0354	-2*log(lh) is 3605.63				
AGE1	0.009035	0.04783					
AGE2	-0.03466	0.04808					
AGE3	-0.1663	0.05503					
FEDUC	0.02812	0.007343					
HLANG	0.02998	0.0197					

STEP 17:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.05452	0.08554					
CIND96	0.02587	0.002061	2	CONS	/CONS	0.2227	0.0439
SQ-IND96	0.0005029	0.0001077					
CMTH96	0.01619	0.001528	1	CONS	/CONS	0.4624	0.01631
SQ-MTH96	0.0001696	7.398e-05					
PSEX	-0.312	0.03545	-2*log(lh) is 3605.17				
AGE1	0.01765	0.04776					
AGE2	-0.02356	0.04805					
AGE3	-0.1562	0.05524					
FEDUC	0.02528	0.007294					
PARENCT	0.03498	0.02098					

STEP 18:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.04215	0.0964					
CIND96	0.02597	0.002062	2	CONS	/CONS	0.2231	0.04401
SQ-IND96	0.0004985	0.0001078					
CMTH96	0.01622	0.00153	1	CONS	/CONS	0.4632	0.01634
SQ-MTH96	0.0001675	7.41e-05					
PSEX	-0.3158	0.03555	-2*log(lh) is 3607.94				
AGE1	0.01399	0.04776					
AGE2	-0.02922	0.04798					
AGE3	-0.1646	0.05507					
FEDUC	0.02649	0.007287					
TIMEHW	-0.001256	0.01851					

STEP 19:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.04752	0.09615					
CIND96	0.02597	0.002063	2	CONS	/CONS	0.223	0.04397
SQ-IND96	0.0004981	0.0001079					
CMTH96	0.01621	0.00153	1	CONS	/CONS	0.4632	0.01633
SQ-MTH96	0.0001672	7.407e-05					
PSEX	-0.3157	0.03543	-2*log(lh) is 3607.94				
AGE1	0.01406	0.04776					
AGE2	-0.02914	0.04797					
AGE3	-0.1646	0.05506					
FEDUC	0.02642	0.007293					
PRBOOK	0.00113	0.02127					

STEP 20:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.04715	0.08546					
CIND96	0.026	0.002062	2	CONS	/CONS	0.2227	0.04396
SQ-IND96	0.0004973	0.0001078					
CMTH96	0.01619	0.00153	1	CONS	/CONS	0.4631	0.01633
SQ-MTH96	0.0001678	7.403e-05					
PSEX	-0.3152	0.03542	-2*log(lh) is 3607.64				
AGE1	0.01416	0.04775					
AGE2	-0.02837	0.04799					
AGE3	-0.1641	0.05506					
FEDUC	0.02539	0.007522					
NEWSPPR	0.02103	0.03849					

STEP 21:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.03255	0.08753					
CIND96	0.02593	0.002062	2	CONS	/CONS	0.2232	0.04399
SQ-IND96	0.0004986	0.0001078					
CMTH96	0.01621	0.001529	1	CONS	/CONS	0.463	0.01633
SQ-MTH96	0.0001688	7.404e-05					
PSEX	-0.3146	0.03544	-2*log(lh) is 3607.24				
AGE1	0.01343	0.04776					
AGE2	-0.02837	0.04799					
AGE3	-0.1633	0.05512					
FEDUC	0.02546	0.007395					
STPL1	-0.01412	0.04285					
STPL2	-0.04918	0.05961					

APPENDIX D.2b
EXAMINING CLASS VARIABLES FOR GRADE 4 INDONESIAN LANGUAGE

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.08352	0.09176
CIND96	0.02595	0.002061
SQ-IND96	0.0004981	0.0001078
CMTH96	0.01622	0.001529
SQ-MTH96	0.0001691	7.404e-05
PSEX	-0.3158	0.03541
AGE1	0.01389	0.04775
AGE2	-0.02915	0.04797
AGE3	-0.165	0.05505
FEDUC	0.02642	0.007265
TSEX	0.1639	0.1483

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2182	0.04309
1	CONS	/CONS	0.4632	0.01633

-2*log(lh) is 3606.73

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.5857	0.2938
CIND96	0.02593	0.00206
SQ-IND96	0.0004943	0.0001078
CMTH96	0.01624	0.001528
SQ-MTH96	0.0001677	7.4e-05
PSEX	-0.315	0.03541
AGE1	0.01429	0.04775
AGE2	-0.02923	0.04797
AGE3	-0.1661	0.05504
FEDUC	0.02655	0.00726
TAGE	-0.0167	0.007456

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.204	0.0405
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3603.13

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.5825	0.3797
CIND96	0.02593	0.00206
SQ-IND96	0.0004943	0.0001078
CMTH96	0.01624	0.001528
SQ-MTH96	0.0001677	7.4e-05
PSEX	-0.315	0.03541
AGE1	0.01428	0.04775
AGE2	-0.02923	0.04797
AGE3	-0.1661	0.05504
FEDUC	0.02655	0.007261
TAGE	-0.0167	0.00747
TEDUC	0.0003777	0.02893

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.204	0.04049
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3603.13

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.6351	0.4339
CIND96	0.02593	0.00206
SQ-IND96	0.0004945	0.0001078
CMTH96	0.01623	0.001528
SQ-MTH96	0.0001673	7.403e-05
PSEX	-0.315	0.03541
AGE1	0.01431	0.04775
AGE2	-0.02921	0.04797
AGE3	-0.166	0.05504
FEDUC	0.02654	0.00726
TAGE	-0.01905	0.01003
TCREXPER	0.002722	0.01758

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2039	0.04049
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3603.11

STEP 5:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.6392	0.3221
CIND96	0.02591	0.002061
SQ-IND96	0.0004945	0.0001078
CMTH96	0.01624	0.001528
SQ-MTH96	0.000167	7.401e-05
PSEX	-0.3151	0.03541
AGE1	0.01445	0.04775
AGE2	-0.02935	0.04797
AGE3	-0.1657	0.05504
FEDUC	0.0265	0.007261
TAGE	-0.02038	0.01078
TRANK_OR	0.02028	0.05034

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2035	0.0404
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3602.97

STEP 6:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.5025	0.3284
CIND96	0.02594	0.00206
SQ-IND96	0.0004941	0.0001078
CMTH96	0.01624	0.001528
SQ-MTH96	0.0001672	7.4e-05
PSEX	-0.3147	0.03542
AGE1	0.01438	0.04775
AGE2	-0.0293	0.04797
AGE3	-0.1664	0.05504
FEDUC	0.0266	0.007261
TAGE	-0.01633	0.007464
TCORRECT	0.0177	0.0316

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2028	0.04027
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3602.82

STEP 7:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.5692	0.3167

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)

CIND96	0.02593	0.00206	2	CONS	/CONS	0.204	0.04049
SQ-IND96	0.0004942	0.0001078					
CMTH96	0.01624	0.001528	1	CONS	/CONS	0.4632	0.01634
SQ-MTH96	0.0001679	7.401e-05					
PSEX	-0.3149	0.03541	-2*log(lh) is		3603.11		
AGE1	0.01428	0.04775					
AGE2	-0.02927	0.04797					
AGE3	-0.1664	0.05507					
FEDUC	0.02658	0.007264					
TAGE	-0.01671	0.007456					
LESSNPLN	0.00436	0.03128					

STEP 8:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	0.5777	0.3457					
CIND96	0.02593	0.002061	2	CONS	/CONS	0.204	0.04053
SQ-IND96	0.0004944	0.0001078					
CMTH96	0.01623	0.001529	1	CONS	/CONS	0.4632	0.01634
SQ-MTH96	0.0001676	7.4e-05					
PSEX	-0.315	0.03541	-2*log(lh) is		3603.13		
AGE1	0.01429	0.04775					
AGE2	-0.02924	0.04797					
AGE3	-0.1661	0.05504					
FEDUC	0.02655	0.007261					
TAGE	-0.0167	0.007457					
HMWEEK	0.001678	0.03829					

STEP 9:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	0.4977	0.32					
CIND96	0.02586	0.00206	2	CONS	/CONS	0.1977	0.03934
SQ-IND96	0.000493	0.0001078					
CMTH96	0.01623	0.001528	1	CONS	/CONS	0.4632	0.01634
SQ-MTH96	0.0001683	7.399e-05					
PSEX	-0.3155	0.03541	-2*log(lh) is		3601.44		
AGE1	0.01504	0.04776					
AGE2	-0.02852	0.04797					
AGE3	-0.1653	0.05504					
FEDUC	0.02662	0.007259					
TAGE	-0.0161	0.009635					
IND1TR	0.1646	0.1675					
IND2TR	0.004262	0.2031					

STEP 10:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	0.6406	0.2872					
CIND96	0.02599	0.00206	2	CONS	/CONS	0.1916	0.03824
SQ-IND96	0.0004918	0.0001078					
CMTH96	0.01619	0.001528	1	CONS	/CONS	0.4632	0.01634
SQ-MTH96	0.0001725	7.402e-05					
PSEX	-0.3148	0.03541	-2*log(lh) is		3599.77		
AGE1	0.01468	0.04775					
AGE2	-0.02871	0.04796					
AGE3	-0.1663	0.05502					
FEDUC	0.02656	0.007256					
TAGE	-0.01813	0.007284					
TRADITIO	0.09994	0.05366					

STEP 11:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	0.5436	0.2967					
CIND96	0.02591	0.00206	2	CONS	/CONS	0.2017	0.04006
SQ-IND96	0.0004944	0.0001078					
CMTH96	0.01623	0.001528	1	CONS	/CONS	0.4632	0.01634
SQ-MTH96	0.0001696	7.403e-05					
PSEX	-0.315	0.03541	-2*log(lh) is		3602.46		
AGE1	0.01401	0.04775					
AGE2	-0.02906	0.04796					
AGE3	-0.1661	0.05503					
FEDUC	0.02658	0.00726					
TAGE	-0.01584	0.007491					
INOVATIO	0.05143	0.06256					

STEP 12:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	0.6163	0.2949					
CIND96	0.02594	0.00206	2	CONS	/CONS	0.2017	0.04007
SQ-IND96	0.0004943	0.0001078					
CMTH96	0.01623	0.001528	1	CONS	/CONS	0.4632	0.01634
SQ-MTH96	0.0001676	7.399e-05					
PSEX	-0.3152	0.03541	-2*log(lh) is		3602.54		
AGE1	0.01451	0.04775					
AGE2	-0.02884	0.04797					
AGE3	-0.1653	0.05505					
FEDUC	0.02648	0.00726					
TAGE	-0.01753	0.007493					
TASK	0.05198	0.06704					

STEP 13:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	0.5866	0.2929					
CIND96	0.02592	0.00206	2	CONS	/CONS	0.2026	0.04051
SQ-IND96	0.0004932	0.0001078					
CMTH96	0.01624	0.001528	1	CONS	/CONS	0.4632	0.01634
SQ-MTH96	0.0001677	7.399e-05					
PSEX	-0.3147	0.03542	-2*log(lh) is		3602.75		
AGE1	0.01406	0.04775					
AGE2	-0.02961	0.04797					
AGE3	-0.167	0.05505					

FEDUC	0.0266	0.00726
TAGE	-0.01664	0.007434
PEOPLE	-0.03531	0.05658

STEP 14:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.593	0.2952
CIND96	0.02591	0.002061
SQ-IND96	0.0004942	0.0001078
CMTH96	0.01624	0.001528
SQ-MTH96	0.0001676	7.4e-05
PSEX	-0.3151	0.03542
AGE1	0.01428	0.04775
AGE2	-0.02929	0.04797
AGE3	-0.1663	0.05504
FEDUC	0.0266	0.007264
TAGE	-0.01653	0.007487
INDBOOK	-0.001152	0.004753

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2038	0.04049
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3603.07

STEP 15:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.7344	0.3442
CIND96	0.02599	0.002062
SQ-IND96	0.0004939	0.0001078
CMTH96	0.01623	0.001528
SQ-MTH96	0.0001682	7.399e-05
PSEX	-0.314	0.03543
AGE1	0.0142	0.04775
AGE2	-0.02904	0.04796
AGE3	-0.1661	0.05503
FEDUC	0.02673	0.007263
TAGE	-0.01654	0.007422
MLPUP	-0.009455	0.01155

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2019	0.0401
1	CONS	/CONS	0.4632	0.01633

-2*log(lh) is 3602.47

STEP 16:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.8712	0.3688
CIND96	0.02591	0.00206
SQ-IND96	0.0004937	0.0001078
CMTH96	0.01626	0.001528
SQ-MTH96	0.0001677	7.398e-05
PSEX	-0.3163	0.03542
AGE1	0.0142	0.04775
AGE2	-0.02989	0.04796
AGE3	-0.1672	0.05503
FEDUC	0.02686	0.007262
TAGE	-0.01766	0.007402
FMPUP	-0.01542	0.01231

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1985	0.03948
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3601.58

STEP 17:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.9258	0.38
CIND96	0.02598	0.00206
SQ-IND96	0.0004936	0.0001078
CMTH96	0.01623	0.001528
SQ-MTH96	0.0001678	7.398e-05
PSEX	-0.3148	0.03541
AGE1	0.01425	0.04775
AGE2	-0.02932	0.04796
AGE3	-0.1666	0.05503
FEDUC	0.02693	0.007262
TAGE	-0.0171	0.007352
CLSIZE	-0.01005	0.007273

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1976	0.0393
1	CONS	/CONS	0.4632	0.01633

-2*log(lh) is 3601.25

STEP 18:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.6082	0.3193
CIND96	0.02594	0.002061
SQ-IND96	0.0004944	0.0001078
CMTH96	0.01623	0.001529
SQ-MTH96	0.0001677	7.4e-05
PSEX	-0.3146	0.03546
AGE1	0.01427	0.04775
AGE2	-0.02914	0.04797
AGE3	-0.166	0.05504
FEDUC	0.02654	0.00726
TAGE	-0.01658	0.007484
MFPROP	-0.0249	0.1385

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2039	0.0405
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3603.1

APPENDIX D.2c
EXAMINING SCHOOL VARIABLES FOR GRADE 4 INDONESIAN LANGUAGE

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.6563	0.3429
CIND96	0.02592	0.00206
SQ-IND96	0.000495	0.0001078
CMTH96	0.01624	0.001528
SQ-MTH96	0.0001674	7.4e-05
PSEX	-0.3149	0.03541
AGE1	0.01442	0.04775
AGE2	-0.02909	0.04797
AGE3	-0.1659	0.05504
FEDUC	0.02653	0.00726
TAGE	-0.01804	0.008169
HSEX	-0.05493	0.1381

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2035	0.04049
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3602.98

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1229	0.607
CIND96	0.02595	0.00206
SQ-IND96	0.0004963	0.0001078
CMTH96	0.0162	0.001528
SQ-MTH96	0.0001679	7.398e-05
PSEX	-0.3146	0.03541
AGE1	0.01435	0.04775
AGE2	-0.02886	0.04796
AGE3	-0.1653	0.05503
FEDUC	0.02643	0.007259
TAGE	-0.01744	0.007368
HAGE	0.014	0.01053

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1976	0.03933
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3601.39

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.4238	0.3455
CIND96	0.02594	0.00206
SQ-IND96	0.0004951	0.0001078
CMTH96	0.01622	0.001528
SQ-MTH96	0.000168	7.399e-05
PSEX	-0.3147	0.03541
AGE1	0.01449	0.04775
AGE2	-0.02909	0.04797
AGE3	-0.1655	0.05504
FEDUC	0.02656	0.007259
TAGE	-0.01817	0.007595
HTCHEXPR	0.006941	0.007919

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2012	0.04003
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3602.37

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.5463	0.2941
CIND96	0.02597	0.002061
SQ-IND96	0.0004974	0.0001078
CMTH96	0.01618	0.001529
SQ-MTH96	0.0001645	7.406e-05
PSEX	-0.3146	0.03541
AGE1	0.01439	0.04775
AGE2	-0.02901	0.04796
AGE3	-0.1655	0.05504
FEDUC	0.02629	0.007264
TAGE	-0.01782	0.007479
HEADEXPR	0.008253	0.008265

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2004	0.03984
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3602.14

STEP 5:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.4589	0.4006
CIND96	0.02591	0.002061
SQ-IND96	0.000494	0.0001078
CMTH96	0.01624	0.001528
SQ-MTH96	0.0001676	7.4e-05
PSEX	-0.315	0.03541
AGE1	0.0144	0.04775
AGE2	-0.02915	0.04797
AGE3	-0.166	0.05504
FEDUC	0.02653	0.00726
TAGE	-0.01604	0.007578
HEDUC	0.01269	0.02733

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2032	0.04035
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3602.92

STEP 6:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.6906	0.5395
CIND96	0.02593	0.00206
SQ-IND96	0.0004937	0.0001078
CMTH96	0.01624	0.001529
SQ-MTH96	0.0001682	7.403e-05
PSEX	-0.3151	0.03541
AGE1	0.01431	0.04775
AGE2	-0.02921	0.04797
AGE3	-0.1662	0.05504
FEDUC	0.02662	0.007268
TAGE	-0.01655	0.00748
HRANK_OR	-0.01431	0.06174

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2037	0.04045
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3603.08

STEP 7:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.8086	0.3803
CIND96	0.02595	0.00206
SQ-IND96	0.0004933	0.0001078
CMTH96	0.01624	0.001528
SQ-MTH96	0.0001675	7.399e-05
PSEX	-0.3151	0.03541
AGE1	0.01422	0.04775
AGE2	-0.02936	0.04796
AGE3	-0.1663	0.05503
FEDUC	0.02657	0.007259
TAGE	-0.01603	0.007442
PROFGRW	-0.05901	0.0646

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.201	0.03995
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3602.3

STEP 8:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	1.117	0.3365
CIND96	0.02614	0.002061
SQ-IND96	0.0004944	0.0001077
CMTH96	0.01614	0.001527
SQ-MTH96	0.0001651	7.395e-05
PSEX	-0.3156	0.0354
AGE1	0.01586	0.04775
AGE2	-0.02956	0.04795
AGE3	-0.1669	0.055
FEDUC	0.02641	0.007251
TAGE	-0.01942	0.007084
MEETING	-0.09699	0.03492

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1787	0.03589
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3595.88

STEP 9:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	1.185	0.3921
CIND96	0.02614	0.002061
SQ-IND96	0.000494	0.0001077
CMTH96	0.01613	0.001528
SQ-MTH96	0.0001652	7.395e-05
PSEX	-0.3156	0.0354
AGE1	0.01605	0.04775
AGE2	-0.02964	0.04795
AGE3	-0.167	0.055
FEDUC	0.02648	0.007254
TAGE	-0.01954	0.007084
MEETING	-0.09573	0.03508
CLSHOUR	-0.01089	0.03234

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1783	0.03587
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3595.76

STEP 10:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	1.192	0.3336
CIND96	0.02612	0.00206
SQ-IND96	0.0004938	0.0001077
CMTH96	0.01613	0.001527
SQ-MTH96	0.000163	7.394e-05
PSEX	-0.3151	0.0354
AGE1	0.0159	0.04775
AGE2	-0.02935	0.04795
AGE3	-0.1657	0.055
FEDUC	0.02593	0.007255
TAGE	-0.01556	0.007381
MEETING	-0.09629	0.03424
HMHOUR	-0.03075	0.01984

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1711	0.03448
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3593.52

STEP 11:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	1.078	0.4487
CIND96	0.02613	0.002061
SQ-IND96	0.0004945	0.0001077
CMTH96	0.01614	0.001528
SQ-MTH96	0.000165	7.395e-05
PSEX	-0.3157	0.03541
AGE1	0.01588	0.04775
AGE2	-0.02952	0.04795
AGE3	-0.1667	0.05502
FEDUC	0.02637	0.007257
TAGE	-0.01957	0.007165
MEETING	-0.09641	0.03521
SCHLBOOK	7.977e-05	0.0006169

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1787	0.03588
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3595.86

STEP 12:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	1.162	0.429
CIND96	0.02614	0.002061
SQ-IND96	0.0004942	0.0001077
CMTH96	0.01614	0.001527
SQ-MTH96	0.0001653	7.396e-05
PSEX	-0.3155	0.03541
AGE1	0.01586	0.04775
AGE2	-0.02959	0.04795
AGE3	-0.167	0.055
FEDUC	0.02649	0.007269
TAGE	-0.01949	0.007092
MEETING	-0.09826	0.0357
MALEP	-0.0003853	0.002255

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1787	0.03616
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3595.85

STEP 13:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	1.034	0.4085
CIND96	0.02613	0.002061

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1782	0.03578

SQ-IND96	0.0004945	0.0001077
CMTH96	0.01613	0.001527
SQ-MTH96	0.0001649	7.395e-05
PSEX	-0.3156	0.0354
AGE1	0.01591	0.04775
AGE2	-0.02944	0.04795
AGE3	-0.1666	0.055
FEDUC	0.02624	0.007266
TAGE	-0.01919	0.007106
MEETING	-0.09569	0.03507
FMLP	0.0007299	0.002056

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3595.75

STEP 14:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	1.296	0.4751
CIND96	0.02614	0.002061
SQ-IND96	0.0004936	0.0001077
CMTH96	0.01614	0.001527
SQ-MTH96	0.0001656	7.395e-05
PSEX	-0.3153	0.03541
AGE1	0.01599	0.04775
AGE2	-0.02937	0.04795
AGE3	-0.1668	0.055
FEDUC	0.02643	0.007251
TAGE	-0.01906	0.007098
MEETING	-0.1001	0.03531
MFPUP	-0.1665	0.3121

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1777	0.03569
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3595.59

STEP 15:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.9734	0.3444
CIND96	0.02617	0.00206
SQ-IND96	0.0004926	0.0001077
CMTH96	0.01611	0.001527
SQ-MTH96	0.0001673	7.394e-05
PSEX	-0.3155	0.0354
AGE1	0.01513	0.04775
AGE2	-0.03066	0.04795
AGE3	-0.1682	0.05499
FEDUC	0.02589	0.007257
TAGE	-0.01927	0.006959
MEETING	-0.1035	0.03458
MALETR	0.07586	0.05078

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1718	0.03461
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3593.68

STEP 16:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	1.156	0.4189
CIND96	0.02615	0.002062
SQ-IND96	0.0004942	0.0001077
CMTH96	0.01614	0.001527
SQ-MTH96	0.0001656	7.401e-05
PSEX	-0.3155	0.0354
AGE1	0.01582	0.04775
AGE2	-0.02964	0.04795
AGE3	-0.1671	0.05502
FEDUC	0.02646	0.007259
TAGE	-0.01942	0.007083
MEETING	-0.09781	0.03531
FMLTR	-0.006199	0.03974

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1787	0.03587
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3595.85

STEP 17:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	1.38	0.446
CIND96	0.02613	0.00206
SQ-IND96	0.0004943	0.0001077
CMTH96	0.01615	0.001527
SQ-MTH96	0.0001644	7.394e-05
PSEX	-0.3155	0.0354
AGE1	0.01565	0.04775
AGE2	-0.02988	0.04795
AGE3	-0.1668	0.05499
FEDUC	0.02647	0.00725
TAGE	-0.01993	0.007062
MEETING	-0.1001	0.03487
PTRATIO	-0.009526	0.01068

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1763	0.03542
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3595.09

STEP 18:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	1.093	0.3366
CIND96	0.02618	0.002061
SQ-IND96	0.0004937	0.0001077
CMTH96	0.01613	0.001527
SQ-MTH96	0.0001662	7.396e-05
PSEX	-0.3153	0.0354
AGE1	0.01552	0.04775
AGE2	-0.03016	0.04796
AGE3	-0.1676	0.055
FEDUC	0.02631	0.007252
TAGE	-0.01962	0.007059
MEETING	-0.09959	0.03495
MFTCR	0.09208	0.1239

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1771	0.03558
1	CONS	/CONS	0.4632	0.01634

-2*log(lh) is 3595.33

EXAMINING THE RANDOM PART:

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	1.151	0.3396
CIND96	0.02601	0.002033
SQ-IND96	0.0004994	0.0001096
CMTH96	0.01653	0.001515
SQ-MTH96	0.0001663	7.359e-05
PSEX	-0.3202	0.0351
AGE1	0.01527	0.04666
AGE2	-0.02468	0.04732
AGE3	-0.1631	0.05497
FEDUC	0.02436	0.007158
TAGE	-0.01982	0.007153
MEETING	-0.09879	0.03524

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1828	0.03654
1	CONS	/CONS	0.4623	0.01644
1	CIND96	/CONS	-0.002668	0.0007076

-2*log(lh) is 3579.5

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	1.151	0.3396
CIND96	0.02601	0.002033
SQ-IND96	0.0004995	0.0001096
CMTH96	0.01653	0.001515
SQ-MTH96	0.0001663	7.36e-05
PSEX	-0.3202	0.0351
AGE1	0.01532	0.04666
AGE2	-0.02467	0.04732
AGE3	-0.1631	0.05497
FEDUC	0.02436	0.007159
TAGE	-0.01982	0.007153
MEETING	-0.09879	0.03524

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1828	0.03657
1	CONS	/CONS	0.4623	0.01644
1	CIND96	/CONS	-0.002656	0.0008802
1	CMTH96	/CONS	-1.489e-05	0.0006702

-2*log(lh) is 3579.5

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	1.161	0.3397
CIND96	0.02602	0.002028
SQ-IND96	0.0005035	0.0001096
CMTH96	0.01661	0.001512
SQ-MTH96	0.0001597	7.346e-05
PSEX	-0.3195	0.03519
AGE1	0.01398	0.04637
AGE2	-0.02539	0.04717
AGE3	-0.1652	0.05488
FEDUC	0.02381	0.007136
TAGE	-0.01993	0.007157
MEETING	-0.09909	0.03526

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.183	0.03661
1	CONS	/CONS	0.4374	0.02188
1	CIND96	/CONS	-0.002578	0.0007173
1	PSEX	/CONS	0.02575	0.01656

-2*log(lh) is 3577.05

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	1.155	0.3395
CIND96	0.02597	0.002034
SQ-IND96	0.0004945	0.0001096
CMTH96	0.01657	0.001511
SQ-MTH96	0.0001615	7.346e-05
PSEX	-0.3205	0.0351
AGE1	0.01458	0.04594
AGE2	-0.02571	0.04731
AGE3	-0.1638	0.05506
FEDUC	0.02401	0.007148
TAGE	-0.01979	0.007152
MEETING	-0.09884	0.03523

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1827	0.03656
1	CONS	/CONS	0.4428	0.02977
1	CIND96	/CONS	-0.00249	0.0007333
1	AGE1	/CONS	0.003548	0.02139
1	AGE2	/CONS	0.018	0.02173
1	AGE3	/CONS	0.01809	0.02451

-2*log(lh) is 3578.51

APPENDIX D.3a
EXAMINING PUPIL VARIABLES FOR GRADE 4 MATHEMATICS

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.004281	0.06191

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2	0.04197
1	CONS	/CONS	0.7827	0.02762

-2*log(lh) is 4448.79

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.0009974	0.05513
CMTH96	0.03611	0.001292

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.162	0.03334
1	CONS	/CONS	0.5302	0.0187

-2*log(lh) is 3808.79

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.08629	0.05804
CMTH96	0.03634	0.001282
SQ-MTH96	0.0003778	7.38e-05

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1655	0.03386
1	CONS	/CONS	0.5214	0.01839

-2*log(lh) is 3782.82

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.08402	0.05877
CMTH96	0.03007	0.001559
SQ-MTH96	0.000374	7.274e-05
CIND96	0.01387	0.002016

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1716	0.03488
1	CONS	/CONS	0.506	0.01784

-2*log(lh) is 3736.25

STEP 5:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1352	0.06038
CMTH96	0.02917	0.001554
SQ-MTH96	0.0002407	7.629e-05
CIND96	0.0163	0.002049
SQ-IND96	0.0005947	0.0001111

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1783	0.03603
1	CONS	/CONS	0.4965	0.01751

-2*log(lh) is 3707.89

STEP 6:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.06267	0.06247
CMTH96	0.02988	0.001556
SQ-MTH96	0.0002374	7.594e-05
CIND96	0.01434	0.002095
SQ-IND96	0.0005904	0.0001105
PSEX	-0.1457	0.03604

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1748	0.03535
1	CONS	/CONS	0.4919	0.01735

-2*log(lh) is 3691.62

STEP 7:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.04878	0.06772
CMTH96	0.02948	0.001561
SQ-MTH96	0.0002403	7.598e-05
CIND96	0.01353	0.00211
SQ-IND96	0.0006125	0.0001107
PSEX	-0.1334	0.03635
AGE1	0.02877	0.04896
AGE2	-0.01076	0.05871
AGE3	-0.1246	0.06576

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.167	0.03393
1	CONS	/CONS	0.4902	0.01729

-2*log(lh) is 3683.51

STEP 8:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.05553	0.07054
CMTH96	0.0294	0.001554
SQ-MTH96	0.0002206	7.581e-05
CIND96	0.01385	0.002092
SQ-IND96	0.0005728	0.0001103
PSEX	-0.1508	0.03591
F1DUM	-0.1932	0.04909
F2DUM	-0.08658	0.04918

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1642	0.03343
1	CONS	/CONS	0.488	0.01721

-2*log(lh) is 3675.54

STEP 9:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1854	0.08635
CMTH96	0.02924	0.001553
SQ-MTH96	0.0002165	7.57e-05
CIND96	0.01337	0.002103
SQ-IND96	0.0005589	0.0001105
PSEX	-0.1571	0.03599
F1DUM	-0.1576	0.05219
F2DUM	-0.04859	0.05187
M1DUM	-0.114	0.09252
M2DUM	-0.1244	0.08557

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1664	0.03395
1	CONS	/CONS	0.4908	0.01727

-2*log(lh) is 3668.66

M3DUM	-0.1342	0.07661

STEP 10:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.08329	0.09303
CMTH96	0.02909	0.001559
SQ-MTH96	0.0002205	7.572e-05
CIND96	0.01357	0.002093
SQ-IND96	0.0005684	0.0001102
PSEX	-0.1522	0.03588
F1DUM	-0.1368	0.05513
F2DUM	-0.04663	0.0523
FEDUC	0.01562	0.008212

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1575	0.03225
1	CONS	/CONS	0.4872	0.01718

-2*log(lh) is 3670.44

STEP 11:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.07355	0.08414
CMTH96	0.02902	0.001558
SQ-MTH96	0.0002168	7.568e-05
CIND96	0.01323	0.002099
SQ-IND96	0.000556	0.0001102
PSEX	-0.154	0.03587
F1DUM	-0.1452	0.0521
F2DUM	-0.05261	0.05069
MEDUC	0.02146	0.0078

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.157	0.03212
1	CONS	/CONS	0.4865	0.01716

-2*log(lh) is 3668.03

STEP 12:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1027	0.1068
CMTH96	0.02902	0.001558
SQ-MTH96	0.0002171	7.568e-05
CIND96	0.01325	0.0021
SQ-IND96	0.0005556	0.0001102
PSEX	-0.1538	0.03587
F1DUM	-0.1452	0.0521
F2DUM	-0.05296	0.05069
MEDUC	0.02158	0.007804
FMSIZE	0.004828	0.01091

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1569	0.03206
1	CONS	/CONS	0.4864	0.01716

-2*log(lh) is 3667.83

STEP 13:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.04271	0.1015
CMTH96	0.02902	0.001557
SQ-MTH96	0.0002159	7.569e-05
CIND96	0.01317	0.002102
SQ-IND96	0.0005564	0.0001102
PSEX	-0.1542	0.03587
F1DUM	-0.1445	0.05211
F2DUM	-0.05209	0.0507
MEDUC	0.02096	0.007853
CHILDREN	-0.009321	0.01716

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.157	0.0322
1	CONS	/CONS	0.4864	0.01716

-2*log(lh) is 3667.73

STEP 14:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.001781	0.0943
CMTH96	0.02896	0.001557
SQ-MTH96	0.0002126	7.565e-05
CIND96	0.01318	0.002098
SQ-IND96	0.000554	0.0001102
PSEX	-0.155	0.03584
F1DUM	-0.1465	0.05206
F2DUM	-0.05265	0.05065
MEDUC	0.01917	0.00791
CHLD_ORD	-0.02579	0.01533

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1571	0.03225
1	CONS	/CONS	0.4856	0.01716

-2*log(lh) is 3665.2

STEP 15:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.04937	0.08695
CMTH96	0.02904	0.001557
SQ-MTH96	0.0002159	7.566e-05
CIND96	0.01314	0.0021
SQ-IND96	0.0005553	0.0001102
PSEX	-0.1539	0.03586
F1DUM	-0.1485	0.05217
F2DUM	-0.05354	0.05068
MEDUC	0.02033	0.007864
SOCPRES	-0.01715	0.0156

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.157	0.03207
1	CONS	/CONS	0.4861	0.01714

-2*log(lh) is 3666.82

STEP 16:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1635	0.1048
CMTH96	0.02889	0.001559
SQ-MTH96	0.000216	7.564e-05
CIND96	0.01315	0.002099
SQ-IND96	0.0005504	0.0001102
PSEX	-0.1534	0.03585
F1DUM	-0.1504	0.05219
F2DUM	-0.05857	0.05083
MEDUC	0.02303	0.00787
HLANG	0.02897	0.02016

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1561	0.03174
1	CONS	/CONS	0.486	0.01714

-2*log(lh) is 3665.96

STEP 17:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.07605	0.08431
CMTH96	0.02901	0.001558
SQ-MTH96	0.0002174	7.569e-05

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.157	0.03207

CIND96	0.0132	0.002101	1	CONS	/CONS	0.4864	0.01715
SQ-IND96	0.0005579	0.0001103					
PSEX	-0.1527	0.03597	-2*log(lh) is	3667.82			
F1DUM	-0.1441	0.05216					
F2DUM	-0.05205	0.0507					
MEDUC	0.02114	0.007832					
PARENCT	0.00965	0.0214					

STEP 18:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.02345	0.09659					
CMTH96	0.02909	0.001558	2	CONS	/CONS	0.1568	0.0321
SQ-MTH96	0.0002206	7.574e-05					
CIND96	0.01318	0.002099	1	CONS	/CONS	0.4862	0.01716
SQ-IND96	0.0005572	0.0001102					
PSEX	-0.1572	0.03599	-2*log(lh) is	3666.91			
F1DUM	-0.1453	0.05208					
F2DUM	-0.05284	0.05067					
MEDUC	0.02168	0.0078					
TIMEHW	-0.01991	0.01888					

STEP 19:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.2046	0.09611					
CMTH96	0.02886	0.001555	2	CONS	/CONS	0.1542	0.03155
SQ-MTH96	0.0002094	7.556e-05					
CIND96	0.01305	0.002096	1	CONS	/CONS	0.4845	0.01709
SQ-IND96	0.0005422	0.0001101					
PSEX	-0.1566	0.03581	-2*log(lh) is	3660.32			
F1DUM	-0.1405	0.05202					
F2DUM	-0.05139	0.05058					
MEDUC	0.02036	0.007793					
PRBOOK	0.06018	0.02166					

STEP 20:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.206	0.09667					
CMTH96	0.02885	0.001556	2	CONS	/CONS	0.1541	0.03154
SQ-MTH96	0.0002096	7.558e-05					
CIND96	0.01306	0.002097	1	CONS	/CONS	0.4845	0.01709
SQ-IND96	0.000542	0.0001101					
PSEX	-0.1565	0.03582	-2*log(lh) is	3660.31			
F1DUM	-0.1395	0.05252					
F2DUM	-0.05031	0.0512					
MEDUC	0.02018	0.007909					
PRBOOK	0.05998	0.02171					
NEWSPPR	0.00544	0.03953					

STEP 21:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.2206	0.09843					
CMTH96	0.02886	0.001555	2	CONS	/CONS	0.1549	0.03157
SQ-MTH96	0.0002078	7.557e-05					
CIND96	0.01304	0.002095	1	CONS	/CONS	0.4839	0.01708
SQ-IND96	0.0005391	0.0001101					
PSEX	-0.1561	0.03582	-2*log(lh) is	3658.77			
F1DUM	-0.1424	0.05204					
F2DUM	-0.05388	0.05065					
MEDUC	0.02157	0.007897					
PRBOOK	0.0609	0.02176					
STPL1	0.04956	0.04401					
STPL2	-0.01602	0.06074					

APPENDIX D.3b
EXAMINING CLASS VARIABLES FOR GRADE 4 MATHEMATICS

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2232	0.1009
CMTH96	0.02886	0.001555
SQ-MTH96	0.0002105	7.558e-05
CIND96	0.01304	0.002095
SQ-IND96	0.0005421	0.0001101
PSEX	-0.1568	0.03581
F1DUM	-0.1397	0.05203
F2DUM	-0.05134	0.05058
MEDUC	0.02043	0.007793
PRBOOK	0.06017	0.02165
TSEX	0.07632	0.1265

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1532	0.03142
1	CONS	/CONS	0.4845	0.01708

-2*log(lh) is 3659.96

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1389	0.2618
CMTH96	0.02887	0.001555
SQ-MTH96	0.0002089	7.554e-05
CIND96	0.01303	0.002095
SQ-IND96	0.0005391	0.0001101
PSEX	-0.1564	0.0358
F1DUM	-0.1413	0.05201
F2DUM	-0.05197	0.05057
MEDUC	0.02054	0.007791
PRBOOK	0.0607	0.02165
TAGE	-0.009119	0.006468

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1484	0.0305
1	CONS	/CONS	0.4845	0.01709

-2*log(lh) is 3658.37

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.3754	0.2199
CMTH96	0.02886	0.001555
SQ-MTH96	0.0002098	7.556e-05
CIND96	0.01305	0.002095
SQ-IND96	0.0005429	0.0001101
PSEX	-0.1566	0.0358
F1DUM	-0.1397	0.05202
F2DUM	-0.05163	0.05058
MEDUC	0.02046	0.007792
PRBOOK	0.06073	0.02166
TEDUC	0.02187	0.02534

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1521	0.03138
1	CONS	/CONS	0.4845	0.01708

-2*log(lh) is 3659.58

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.07129	0.1364
CMTH96	0.02887	0.001555
SQ-MTH96	0.0002106	7.555e-05
CIND96	0.01304	0.002095
SQ-IND96	0.0005384	0.0001101
PSEX	-0.1564	0.0358
F1DUM	-0.1414	0.05201
F2DUM	-0.05171	0.05057
MEDUC	0.02057	0.007791
PRBOOK	0.06038	0.02165
TCREXPER	-0.009228	0.006727

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1487	0.03064
1	CONS	/CONS	0.4845	0.01708

-2*log(lh) is 3658.47

STEP 5:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1439	0.1516
CMTH96	0.02886	0.001555
SQ-MTH96	0.0002099	7.557e-05
CIND96	0.01307	0.002096
SQ-IND96	0.0005412	0.0001101
PSEX	-0.1565	0.03581
F1DUM	-0.1406	0.05202
F2DUM	-0.05166	0.05058
MEDUC	0.02047	0.007795
PRBOOK	0.06028	0.02166
TRANK_OR	-0.01449	0.02805

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1534	0.03144
1	CONS	/CONS	0.4845	0.01708

-2*log(lh) is 3660.06

STEP 6:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2424	0.1454
CMTH96	0.02886	0.001555
SQ-MTH96	0.000209	7.557e-05
CIND96	0.01306	0.002096
SQ-IND96	0.000542	0.0001101
PSEX	-0.1565	0.03581
F1DUM	-0.1402	0.05203
F2DUM	-0.05143	0.05058
MEDUC	0.02043	0.007795
PRBOOK	0.06011	0.02166
TCORRECT	0.009667	0.02786

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1538	0.03148
1	CONS	/CONS	0.4845	0.01709

-2*log(lh) is 3660.2

STEP 7:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1842	0.1441
CMTH96	0.02885	0.001555
SQ-MTH96	0.000209	7.558e-05
CIND96	0.01305	0.002096

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1541	0.03179
1	CONS	/CONS	0.4845	0.01709

SQ-IND96	0.0005425	0.0001101	
PSEX	-0.1567	0.03581	-2*log(lh) is 3660.29
F1DUM	-0.1408	0.05204	
F2DUM	-0.05126	0.05059	
MEDUC	0.0203	0.007799	
PRBOOK	0.06014	0.02166	
LESSNPLN	-0.005249	0.02763	

STEP 8:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1883	0.1842
CMTH96	0.02886	0.001556
SQ-MTH96	0.0002094	7.556e-05
CIND96	0.01305	0.002096
SQ-IND96	0.0005421	0.0001101
PSEX	-0.1566	0.03581
F1DUM	-0.1405	0.05202
F2DUM	-0.0514	0.05058
MEDUC	0.02037	0.007793
PRBOOK	0.06015	0.02166
HMWEEK	-0.003501	0.03381

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1542	0.03162
1	CONS	/CONS	0.4845	0.01709

-2*log(lh) is 3660.31

STEP 9:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.13	0.1206
CMTH96	0.02887	0.001555
SQ-MTH96	0.0002097	7.555e-05
CIND96	0.01306	0.002095
SQ-IND96	0.0005419	0.0001101
PSEX	-0.1563	0.03581
F1DUM	-0.1409	0.05202
F2DUM	-0.05166	0.05058
MEDUC	0.02047	0.007792
PRBOOK	0.06085	0.02166
MTH1TR	-0.1366	0.1409
MTH2TR	-0.102	0.1236

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1512	0.031
1	CONS	/CONS	0.4844	0.01708

-2*log(lh) is 3659.23

STEP 10:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2043	0.09594
CMTH96	0.02883	0.001555
SQ-MTH96	0.0002116	7.561e-05
CIND96	0.0131	0.002096
SQ-IND96	0.0005416	0.0001101
PSEX	-0.1566	0.0358
F1DUM	-0.14	0.05202
F2DUM	-0.05184	0.05058
MEDUC	0.02036	0.007792
PRBOOK	0.06021	0.02165
TRADITIO	0.03999	0.04824

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1524	0.03122
1	CONS	/CONS	0.4845	0.01708

-2*log(lh) is 3659.64

STEP 11:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2139	0.0966
CMTH96	0.02885	0.001555
SQ-MTH96	0.0002114	7.56e-05
CIND96	0.01303	0.002095
SQ-IND96	0.000542	0.0001101
PSEX	-0.1566	0.0358
F1DUM	-0.141	0.05202
F2DUM	-0.05158	0.05058
MEDUC	0.02045	0.007792
PRBOOK	0.06058	0.02166
INOVATIO	0.04511	0.05473

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1523	0.0312
1	CONS	/CONS	0.4845	0.01709

-2*log(lh) is 3659.65

STEP 12:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2047	0.09609
CMTH96	0.02886	0.001555
SQ-MTH96	0.0002093	7.556e-05
CIND96	0.01306	0.002096
SQ-IND96	0.0005425	0.0001101
PSEX	-0.1567	0.03581
F1DUM	-0.14	0.05204
F2DUM	-0.05148	0.05058
MEDUC	0.02032	0.007795
PRBOOK	0.06017	0.02166
TASK	0.01734	0.0589

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1539	0.03154
1	CONS	/CONS	0.4845	0.01709

-2*log(lh) is 3660.24

STEP 13:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2043	0.09625
CMTH96	0.02886	0.001555
SQ-MTH96	0.0002094	7.556e-05
CIND96	0.01305	0.002096
SQ-IND96	0.0005421	0.0001101
PSEX	-0.1566	0.03581
F1DUM	-0.1405	0.05203
F2DUM	-0.05141	0.05058
MEDUC	0.02037	0.007795
PRBOOK	0.06017	0.02166
PEOPLE	-0.002466	0.05014

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1542	0.03155
1	CONS	/CONS	0.4845	0.01709

-2*log(lh) is 3660.32

STEP 14:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2149	0.1071
CMTH96	0.02885	0.001555
SQ-MTH96	0.0002095	7.556e-05

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1541	0.03154

CIND96	0.01307	0.002097	1	CONS	/CONS	0.4845	0.01709
SQ-IND96	0.0005424	0.0001101					
PSEX	-0.1565	0.03581	-2*log(lh) is		3660.28		
F1DUM	-0.14	0.05207					
F2DUM	-0.05107	0.0506					
MEDUC	0.02031	0.007797					
PRBOOK	0.06013	0.02166					
MTHBOOK	0.0008481	0.003891					

STEP 15:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.002119	0.1913	2	CONS	/CONS	0.1499	0.03077
CMTH96	0.02885	0.001555					
SQ-MTH96	0.0002098	7.555e-05	1	CONS	/CONS	0.4845	0.01709
CIND96	0.01314	0.002097					
SQ-IND96	0.0005409	0.0001101					
PSEX	-0.155	0.03583	-2*log(lh) is		3658.85		
F1DUM	-0.1415	0.05201					
F2DUM	-0.05241	0.05058					
MEDUC	0.0208	0.007797					
PRBOOK	0.06052	0.02165					
MLPUP	-0.01239	0.01014					

STEP 16:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.2829	0.2025	2	CONS	/CONS	0.1536	0.03154
CMTH96	0.02885	0.001555					
SQ-MTH96	0.0002094	7.556e-05	1	CONS	/CONS	0.4845	0.01708
CIND96	0.01305	0.002095					
SQ-IND96	0.0005421	0.0001101					
PSEX	-0.1561	0.03583	-2*log(lh) is		3660.13		
F1DUM	-0.1398	0.05204					
F2DUM	-0.05068	0.05061					
MEDUC	0.02031	0.007794					
PRBOOK	0.06012	0.02166					
FMPUP	0.004803	0.01093					

STEP 17:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.108	0.2324	2	CONS	/CONS	0.1536	0.03145
CMTH96	0.02886	0.001555					
SQ-MTH96	0.0002092	7.556e-05	1	CONS	/CONS	0.4845	0.01708
CIND96	0.01307	0.002096					
SQ-IND96	0.000542	0.0001101					
PSEX	-0.1566	0.03581	-2*log(lh) is		3660.12		
F1DUM	-0.1411	0.05203					
F2DUM	-0.05201	0.0506					
MEDUC	0.02048	0.007797					
PRBOOK	0.06031	0.02166					
CLSIZE	-0.002972	0.006514					

STEP 18:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.02238	0.1604	2	CONS	/CONS	0.1485	0.03055
CMTH96	0.02881	0.001555					
SQ-MTH96	0.0002098	7.554e-05	1	CONS	/CONS	0.4845	0.01708
CIND96	0.01314	0.002096					
SQ-IND96	0.0005421	0.0001101					
PSEX	-0.1535	0.03588	-2*log(lh) is		3658.35		
F1DUM	-0.1399	0.05201					
F2DUM	-0.04996	0.05059					
MEDUC	0.02064	0.007791					
PRBOOK	0.06013	0.02165					
MFPROP	-0.1698	0.12					

APPENDIX D.3c
EXAMINING SCHOOL VARIABLES FOR GRADE 4 MATHEMATICS

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1876	0.1054
CMTH96	0.02886	0.001555
SQ-MTH96	0.0002091	7.556e-05
CIND96	0.01305	0.002096
SQ-IND96	0.0005433	0.0001101
PSEX	-0.1566	0.03581
F1DUM	-0.1408	0.05202
F2DUM	-0.05164	0.05059
MEDUC	0.02034	0.007793
PRBOOK	0.0599	0.02167
HSEX	-0.0434	0.1112

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.154	0.03157
1	CONS	/CONS	0.4844	0.01708

-2*log(lh) is 3660.17

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.9989	0.4926
CMTH96	0.0288	0.001555
SQ-MTH96	0.0002093	7.553e-05
CIND96	0.01308	0.002095
SQ-IND96	0.0005454	0.0001101
PSEX	-0.1561	0.0358
F1DUM	-0.1425	0.05201
F2DUM	-0.05076	0.05057
MEDUC	0.02021	0.007791
PRBOOK	0.05948	0.02165
HAGE	0.01514	0.009213

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.147	0.03024
1	CONS	/CONS	0.4844	0.01708

-2*log(lh) is 3657.68

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.424	0.2329
CMTH96	0.02883	0.001555
SQ-MTH96	0.0002096	7.555e-05
CIND96	0.01306	0.002095
SQ-IND96	0.0005435	0.0001101
PSEX	-0.1564	0.03581
F1DUM	-0.1417	0.05202
F2DUM	-0.05106	0.05058
MEDUC	0.02039	0.007792
PRBOOK	0.06004	0.02165
HTCHEXPR	0.007036	0.006805

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1513	0.03101
1	CONS	/CONS	0.4844	0.01708

-2*log(lh) is 3659.26

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2856	0.1192
CMTH96	0.02878	0.001556
SQ-MTH96	0.0002051	7.563e-05
CIND96	0.01312	0.002096
SQ-IND96	0.0005469	0.0001102
PSEX	-0.1561	0.03581
F1DUM	-0.1397	0.05202
F2DUM	-0.04989	0.0506
MEDUC	0.02007	0.007798
PRBOOK	0.05971	0.02166
HEADEXPR	0.008234	0.00721

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1507	0.03101
1	CONS	/CONS	0.4844	0.01708

-2*log(lh) is 3659.03

STEP 5:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2796	0.2141
CMTH96	0.02886	0.001555
SQ-MTH96	0.0002093	7.556e-05
CIND96	0.01303	0.002096
SQ-IND96	0.0005417	0.0001101
PSEX	-0.1566	0.03581
F1DUM	-0.1403	0.05202
F2DUM	-0.05132	0.05058
MEDUC	0.02037	0.007793
PRBOOK	0.06036	0.02166
HEDUC	0.009295	0.02371

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1536	0.03146
1	CONS	/CONS	0.4845	0.01709

-2*log(lh) is 3660.17

STEP 6:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.8637	0.4217
CMTH96	0.02879	0.001555
SQ-MTH96	0.0002051	7.557e-05
CIND96	0.01305	0.002094
SQ-IND96	0.0005466	0.0001101
PSEX	-0.1561	0.0358
F1DUM	-0.1414	0.052
F2DUM	-0.05026	0.05058
MEDUC	0.02001	0.007795
PRBOOK	0.05927	0.02166
HRANK_OR	0.08546	0.05326

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1474	0.03032
1	CONS	/CONS	0.4844	0.01708

-2*log(lh) is 3657.8

STEP 7:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.3015	0.2594
CMTH96	0.02885	0.001555
SQ-MTH96	0.0002095	7.556e-05
CIND96	0.01304	0.002096

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1536	0.03144
1	CONS	/CONS	0.4845	0.01709

SQ-IND96	0.0005424	0.0001101	
PSEX	-0.1566	0.03581	-2*log(lh) is 3660.16
F1DUM	-0.1405	0.05202	
F2DUM	-0.0509	0.0506	
MEDUC	0.02037	0.007793	
PRBOOK	0.06015	0.02166	
PROFGRW	0.02298	0.05716	

STEP 8:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.09968	0.1734
CMTH96	0.02883	0.001556
SQ-MTH96	0.0002085	7.556e-05
CIND96	0.01314	0.002099
SQ-IND96	0.0005434	0.0001101
PSEX	-0.1568	0.03581
F1DUM	-0.1402	0.05202
F2DUM	-0.05209	0.05059
MEDUC	0.02019	0.007797
PRBOOK	0.06	0.02166
MEETING	-0.02349	0.03235

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1528	0.03131
1	CONS	/CONS	0.4845	0.01708

-2*log(lh) is 3659.8

STEP 9:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1154	0.2152
CMTH96	0.02884	0.001556
SQ-MTH96	0.0002095	7.556e-05
CIND96	0.01306	0.002096
SQ-IND96	0.0005415	0.0001101
PSEX	-0.1568	0.03581
F1DUM	-0.1409	0.05203
F2DUM	-0.05144	0.05058
MEDUC	0.0204	0.007793
PRBOOK	0.06017	0.02165
CLSHOUR	-0.01393	0.03007

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1536	0.03147
1	CONS	/CONS	0.4845	0.01708

-2*log(lh) is 3660.11

STEP 10:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.02619	0.1589
CMTH96	0.02886	0.001555
SQ-MTH96	0.0002072	7.555e-05
CIND96	0.01303	0.002095
SQ-IND96	0.0005416	0.0001101
PSEX	-0.1559	0.03581
F1DUM	-0.1386	0.05203
F2DUM	-0.05101	0.05058
MEDUC	0.02018	0.007793
PRBOOK	0.06012	0.02165
HMHOUR	-0.0247	0.01757

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1488	0.03059
1	CONS	/CONS	0.4844	0.01708

-2*log(lh) is 3658.38

STEP 11:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1766	0.3055
CMTH96	0.02885	0.001556
SQ-MTH96	0.0002094	7.556e-05
CIND96	0.01306	0.002096
SQ-IND96	0.000542	0.0001101
PSEX	-0.1566	0.03581
F1DUM	-0.1405	0.05202
F2DUM	-0.05139	0.05058
MEDUC	0.0204	0.007804
PRBOOK	0.06021	0.02166
SCHLBOOK	-5.461e-05	0.0005656

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1542	0.03162
1	CONS	/CONS	0.4845	0.01708

-2*log(lh) is 3660.32

STEP 12:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2503	0.2237
CMTH96	0.02885	0.001555
SQ-MTH96	0.000209	7.557e-05
CIND96	0.01305	0.002096
SQ-IND96	0.0005427	0.0001101
PSEX	-0.1567	0.03581
F1DUM	-0.14	0.05207
F2DUM	-0.05105	0.05061
MEDUC	0.02025	0.007809
PRBOOK	0.05995	0.02168
MALEP	0.0004699	0.002074

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1541	0.03169
1	CONS	/CONS	0.4845	0.01709

-2*log(lh) is 3660.27

STEP 13:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.3006	0.2024
CMTH96	0.02885	0.001555
SQ-MTH96	0.0002092	7.556e-05
CIND96	0.01304	0.002095
SQ-IND96	0.0005426	0.0001101
PSEX	-0.1566	0.03581
F1DUM	-0.1393	0.05207
F2DUM	-0.0508	0.0506
MEDUC	0.02011	0.007808
PRBOOK	0.05998	0.02166
FMLP	0.001031	0.001913

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1533	0.03139
1	CONS	/CONS	0.4845	0.01709

-2*log(lh) is 3660.04

STEP 14:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2334	0.3232
CMTH96	0.02886	0.001555
SQ-MTH96	0.0002093	7.557e-05
CIND96	0.01305	0.002096

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1542	0.03159
1	CONS	/CONS	0.4845	0.01708

SQ-IND96	0.0005424	0.0001101
PSEX	-0.1567	0.03581
F1DUM	-0.1405	0.05202
F2DUM	-0.05136	0.05058
MEDUC	0.02036	0.007793
PRBOOK	0.06011	0.02167
MFPUP	0.02694	0.2877

-2*log(lh) is 3660.32

STEP 15:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.5339	0.1357
CMTH96	0.02881	0.001343
SQ-MTH96	0.0002145	7.549e-05
CIND96	0.01303	0.002091
SQ-IND96	0.0005342	0.00011
PSEX	-0.1573	0.03578
F1DUM	-0.1379	0.05198
F2DUM	-0.04852	0.05055
MEDUC	0.02026	0.00778
PRBOOK	0.05905	0.02162
MALETR	0.1476	0.04411

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.127	0.02664
1	CONS	/CONS	0.4845	0.01708

-2*log(lh) is 3650.03

STEP 16:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.6887	0.2904
CMTH96	0.02881	0.001552
SQ-MTH96	0.0002126	7.554e-05
CIND96	0.01298	0.002092
SQ-IND96	0.0005353	0.00011
PSEX	-0.1575	0.03578
F1DUM	-0.1369	0.052
F2DUM	-0.04729	0.0506
MEDUC	0.01989	0.007806
PRBOOK	0.05878	0.02162
MALETR	0.1598	0.04834
FMLTR	0.0224	0.03716

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1261	0.02628
1	CONS	/CONS	0.4845	0.01709

-2*log(lh) is 3649.67

STEP 17:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2771	0.2548
CMTH96	0.02883	0.001552
SQ-MTH96	0.0002134	7.547e-05
CIND96	0.01299	0.00209
SQ-IND96	0.0005331	0.00011
PSEX	-0.1574	0.03578
F1DUM	-0.1393	0.05198
F2DUM	-0.04805	0.05055
MEDUC	0.02043	0.007778
PRBOOK	0.05939	0.02162
MALETR	0.1497	0.04362
PTRATIO	-0.01079	0.009096

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1236	0.026
1	CONS	/CONS	0.4845	0.01708

-2*log(lh) is 3648.64

STEP 18:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.5328	0.1451
CMTH96	0.02881	0.001553
SQ-MTH96	0.0002145	7.549e-05
CIND96	0.01303	0.002092
SQ-IND96	0.0005341	0.00011
PSEX	-0.1573	0.03579
F1DUM	-0.1379	0.052
F2DUM	-0.04855	0.05058
MEDUC	0.02026	0.007783
PRBOOK	0.05905	0.02162
MALETR	0.1463	0.07559
MFTCR	0.003991	0.1828

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.127	0.02671
1	CONS	/CONS	0.4845	0.01708

-2*log(lh) is 3650.03

EXAMINING THE RANDOM PART:

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.5341	0.1357
CMTH96	0.02881	0.001553
SQ-MTH96	0.0002147	7.546e-05
CIND96	0.01303	0.002091
SQ-IND96	0.0005342	0.00011
PSEX	-0.1572	0.03579
F1DUM	-0.1378	0.05198
F2DUM	-0.04841	0.05056
MEDUC	0.02027	0.007781
PRBOOK	0.05897	0.02162
MALETR	0.1477	0.0441

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.127	0.02656
1	CONS	/CONS	0.4845	0.01709
1	CMTH96	/CONS	4.14e-05	0.0005783

-2*log(lh) is 3650.03

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.5311	0.1356
CMTH96	0.02879	0.001549
SQ-MTH96	0.0002108	7.547e-05
CIND96	0.01299	0.002078
SQ-IND96	0.0005284	0.0001113
PSEX	-0.1605	0.03572

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1271	0.02658
1	CONS	/CONS	0.4843	0.01712
1	CIND96	/CONS	-0.001371	0.0007451

F1DUM	-0.1397	0.05178	-2*log(lh) is 3646.08
F2DUM	-0.04894	0.0503	
MEDUC	0.01993	0.007748	
PRBOOK	0.06088	0.02157	
MALETR	0.1473	0.04414	

STEP 3:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.5297	0.1355					
CMTH96	0.02888	0.001545	2	CONS	/CONS	0.1277	0.02665
SQ-MTH96	0.0002196	7.505e-05					
CIND96	0.01319	0.002073	1	CONS	/CONS	0.4326	0.02154
SQ-IND96	0.0005382	0.0001101	1	PSEX	/CONS	0.05289	0.01749
PSEX	-0.1572	0.03583					
F1DUM	-0.1433	0.05172	-2*log(lh) is 3640.8				
F2DUM	-0.04988	0.05033					
MEDUC	0.019	0.007751					
PRBOOK	0.05963	0.0216					
MALETR	0.1481	0.04417					

APPENDIX D.4a
EXAMINING PUPIL VARIABLES FOR GRADE 5 INDONESIAN LANGUAGE

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.009956	0.0528

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1375	0.03051
1	CONS	/CONS	0.837	0.02874

-2*log(lh) is 4775.56

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.01024	0.06012
CIND96	0.05315	0.001751

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1976	0.03958
1	CONS	/CONS	0.5395	0.01853

-2*log(lh) is 4046.23

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.04534	0.06185
CIND96	0.05368	0.001757
SQ-IND96	0.000269	0.0002

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2002	0.04004
1	CONS	/CONS	0.537	0.01844

-2*log(lh) is 4039.01

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.01354	0.05827
CIND96	0.0396	0.002043
CMTH96	0.0206	0.001754

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1859	0.03698
1	CONS	/CONS	0.5	0.01711

-2*log(lh) is 3913.37

STEP 5:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.01977	0.05968
CIND96	0.03954	0.002047
CMTH96	0.02055	0.001757
SQ-MTH96	3.699e-05	7.943e-05

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1852	0.03719
1	CONS	/CONS	0.5	0.01717

-2*log(lh) is 3913.15

STEP 6:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.143	0.06002
CIND96	0.03638	0.002032
CMTH96	0.02174	0.001721
PSEX	-0.3022	0.0342

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1803	0.03602
1	CONS	/CONS	0.4785	0.01643

-2*log(lh) is 3837

STEP 7:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.2135	0.06476
CIND96	0.03445	0.002033
CMTH96	0.02112	0.001706
PSEX	-0.2819	0.03405
AGE1	0.02328	0.04556
AGE2	-0.08641	0.0488
AGE3	-0.2691	0.04972

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1768	0.03532
1	CONS	/CONS	0.4676	0.01606

-2*log(lh) is 3796.96

STEP 8:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.2708	0.07157
CIND96	0.0341	0.002039
CMTH96	0.02101	0.001706
PSEX	-0.2854	0.03406
AGE1	0.02495	0.04552
AGE2	-0.07842	0.04899
AGE3	-0.2589	0.05001
F1DUM	-0.06287	0.04735
F2DUM	-0.08539	0.04652

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1763	0.03532
1	CONS	/CONS	0.4665	0.01606

-2*log(lh) is 3792.76

STEP 9:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.3257	0.08592
CIND96	0.03393	0.002038
CMTH96	0.02095	0.001705
PSEX	-0.2879	0.03405
AGE1	0.02612	0.04549
AGE2	-0.07244	0.04907
AGE3	-0.2487	0.05023
M1DUM	-0.1434	0.07831
M2DUM	-0.09896	0.0718
M3DUM	-0.0572	0.06416

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1756	0.03522
1	CONS	/CONS	0.4654	0.01602

-2*log(lh) is 3788.35

STEP 10:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1068	0.07881
CIND96	0.03414	0.002034
CMTH96	0.02076	0.00171
PSEX	-0.2843	0.03401
AGE1	0.03203	0.04564
AGE2	-0.06596	0.0495
AGE3	-0.2419	0.05097
FEDUC	0.01714	0.008281

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1747	0.03492
1	CONS	/CONS	0.4663	0.01601

-2*log(lh) is 3791.43

STEP 11:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.07903	0.07644
CIND96	0.03385	0.002035
CMTH96	0.0207	0.001705
PSEX	-0.2868	0.03398
AGE1	0.03769	0.04564
AGE2	-0.05337	0.04971
AGE3	-0.2245	0.05143
MEDUC	0.02448	0.007518

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1738	0.03478
1	CONS	/CONS	0.465	0.01597

-2*log(lh) is 3786.39

STEP 12:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.168	0.09967
CIND96	0.03384	0.002034
CMTH96	0.02079	0.001706
PSEX	-0.2872	0.03396
AGE1	0.03764	0.04561
AGE2	-0.05154	0.04969
AGE3	-0.2194	0.05153
MEDUC	0.02404	0.007521
FMSIZE	-0.0147	0.01055

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1748	0.03476
1	CONS	/CONS	0.4644	0.01597

-2*log(lh) is 3784.45

STEP 13:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.142	0.0923
CIND96	0.03379	0.002035
CMTH96	0.02071	0.001705
PSEX	-0.2883	0.03399
AGE1	0.0394	0.04564
AGE2	-0.04757	0.04991
AGE3	-0.2157	0.05192
MEDUC	0.02382	0.007534
CHILDREN	-0.02011	0.0165

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1742	0.03484
1	CONS	/CONS	0.4646	0.01595

-2*log(lh) is 3784.9

STEP 14:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.08621	0.08386
CIND96	0.03385	0.002035
CMTH96	0.0207	0.001706
PSEX	-0.287	0.03399
AGE1	0.03779	0.04565
AGE2	-0.05239	0.04993
AGE3	-0.2235	0.05168
MEDUC	0.02433	0.007555
CHLD_ORD	-0.002899	0.01393

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1738	0.03477
1	CONS	/CONS	0.465	0.01597

-2*log(lh) is 3786.34

STEP 15:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.06648	0.07808
CIND96	0.03387	0.002034
CMTH96	0.02066	0.001706
PSEX	-0.2869	0.03398
AGE1	0.03679	0.04565
AGE2	-0.05651	0.04986
AGE3	-0.2264	0.05148
MEDUC	0.02474	0.007524
SOCPRES	0.0107	0.01367

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1736	0.03476
1	CONS	/CONS	0.4649	0.01597

-2*log(lh) is 3785.77

STEP 16:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1988	0.1026
CIND96	0.03358	0.002027
CMTH96	0.02041	0.001699
PSEX	-0.2831	0.03385
AGE1	0.0404	0.04545
AGE2	-0.06212	0.04954
AGE3	-0.222	0.05121
MEDUC	0.02939	0.007583
HLANG	0.08181	0.02035

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1699	0.03403
1	CONS	/CONS	0.461	0.01583

-2*log(lh) is 3770.3

STEP 17:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1961	0.1026
CIND96	0.03358	0.002024
CMTH96	0.02033	0.001698
PSEX	-0.2873	0.03388
AGE1	0.03934	0.0454
AGE2	-0.06484	0.04951
AGE3	-0.2293	0.0513
MEDUC	0.03141	0.007652
HLANG	0.07958	0.02036
PARENCT	-0.03402	0.01819

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1701	0.03402
1	CONS	/CONS	0.46	0.01583

-2*log(lh) is 3766.8

STEP 18:

FIXED PART			RANDOM PART			
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1551	0.1156				
CIND96	0.03356	0.002026	2	CONS /CONS	0.169	0.03405
CMTH96	0.0204	0.001699				
PSEX	-0.2854	0.03395	1	CONS /CONS	0.4609	0.01583
AGE1	0.03987	0.04545				
AGE2	-0.06304	0.04954	-2*log(lh) is		3769.63	
AGE3	-0.2227	0.05121				
MEDUC	0.02958	0.007585				
HLANG	0.08107	0.02037				
TIMEHW	-0.01563	0.01906				

STEP 19:

FIXED PART			RANDOM PART			
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2744	0.1129				
CIND96	0.03348	0.002026	2	CONS /CONS	0.1704	0.03431
CMTH96	0.02022	0.001702				
PSEX	-0.2818	0.03383	1	CONS /CONS	0.4602	0.01583
AGE1	0.04122	0.04542				
AGE2	-0.05978	0.04952	-2*log(lh) is		3767.72	
AGE3	-0.2191	0.0512				
MEDUC	0.0277	0.007649				
HLANG	0.08213	0.02033				
PRBOOK	0.03367	0.02094				

STEP 20:

FIXED PART			RANDOM PART			
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2223	0.103				
CIND96	0.03337	0.002026	2	CONS /CONS	0.1694	0.03394
CMTH96	0.02035	0.001697				
PSEX	-0.2811	0.03381	1	CONS /CONS	0.4597	0.01578
AGE1	0.03866	0.04539				
AGE2	-0.05781	0.0495	-2*log(lh) is		3765.32	
AGE3	-0.219	0.05115				
MEDUC	0.02415	0.007928				
HLANG	0.0873	0.02047				
NEWSPPR	0.08934	0.04				

STEP 21:

FIXED PART			RANDOM PART			
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2341	0.1042				
CIND96	0.03348	0.002025	2	CONS /CONS	0.1699	0.03392
CMTH96	0.02036	0.001696				
PSEX	-0.285	0.03392	1	CONS /CONS	0.4589	0.01578
AGE1	0.03632	0.04538				
AGE2	-0.0586	0.04947	-2*log(lh) is		3762.79	
AGE3	-0.2193	0.05112				
MEDUC	0.02526	0.008021				
HLANG	0.08583	0.0205				
NEWSPPR	0.09253	0.04036				
STPL1	0.01301	0.04189				
STPL2	0.09381	0.05906				

APPENDIX D.4b
EXAMINING CLASS VARIABLES FOR GRADE 5 INDONESIAN LANGUAGE

STEP 1:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.2761	0.1071					
CIND96	0.03348	0.002027	2	CONS	/CONS	0.1609	0.03238
CMTH96	0.02025	0.001697					
PSEX	-0.2807	0.03381	1	CONS	/CONS	0.4597	0.01578
AGE1	0.03838	0.04539					
AGE2	-0.05803	0.0495	-2*log(lh) is 3762.56				
AGE3	-0.2204	0.05115					
MEDUC	0.02383	0.007927					
HLANG	0.08741	0.02046					
NEWSPPR	0.08886	0.04					
TSEX	0.2065	0.1229					

STEP 2:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.2164	0.3769					
CIND96	0.03337	0.002026	2	CONS	/CONS	0.1694	0.03393
CMTH96	0.02035	0.001698					
PSEX	-0.2811	0.03381	1	CONS	/CONS	0.4597	0.01578
AGE1	0.03867	0.04539					
AGE2	-0.05781	0.0495	-2*log(lh) is 3765.32				
AGE3	-0.219	0.05116					
MEDUC	0.02415	0.007928					
HLANG	0.0873	0.02047					
NEWSPPR	0.08934	0.04					
TAGE	-0.000159	0.009775					

STEP 3:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.07969	0.2254					
CIND96	0.03337	0.002026	2	CONS	/CONS	0.1678	0.03393
CMTH96	0.02036	0.001697					
PSEX	-0.2811	0.03381	1	CONS	/CONS	0.4597	0.01578
AGE1	0.0385	0.04539					
AGE2	-0.05795	0.0495	-2*log(lh) is 3764.81				
AGE3	-0.219	0.05115					
MEDUC	0.02428	0.007929					
HLANG	0.08729	0.02047					
NEWSPPR	0.08935	0.04					
TEDUC	-0.01766	0.02481					

STEP 4:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.1699	0.1749					
CIND96	0.03339	0.002026	2	CONS	/CONS	0.169	0.03389
CMTH96	0.02033	0.001698					
PSEX	-0.2811	0.03381	1	CONS	/CONS	0.4597	0.01578
AGE1	0.03872	0.04539					
AGE2	-0.05772	0.0495	-2*log(lh) is 3765.18				
AGE3	-0.2187	0.05116					
MEDUC	0.02421	0.007929					
HLANG	0.08741	0.02047					
NEWSPPR	0.08952	0.04					
TCREXPER	-0.003619	0.009758					

STEP 5:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.2103	0.1955					
CIND96	0.03337	0.002026	2	CONS	/CONS	0.1694	0.03393
CMTH96	0.02035	0.001697					
PSEX	-0.2811	0.03381	1	CONS	/CONS	0.4597	0.01578
AGE1	0.03865	0.04539					
AGE2	-0.05776	0.04951	-2*log(lh) is 3765.31				
AGE3	-0.219	0.05116					
MEDUC	0.02416	0.00793					
HLANG	0.08731	0.02047					
NEWSPPR	0.08937	0.04					
TRANK_OR	-0.002521	0.03498					

STEP 6:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.02441	0.1546					
CIND96	0.03345	0.002026	2	CONS	/CONS	0.1604	0.0323
CMTH96	0.02025	0.001697					
PSEX	-0.2809	0.03381	1	CONS	/CONS	0.4597	0.01579
AGE1	0.03944	0.04539					
AGE2	-0.05714	0.0495	-2*log(lh) is 3762.46				
AGE3	-0.2182	0.05115					
MEDUC	0.0241	0.007924					
HLANG	0.08764	0.02046					
NEWSPPR	0.08968	0.04					
TCORRECT	-0.04758	0.02778					

STEP 7:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.1646	0.1605					
CIND96	0.03336	0.002026	2	CONS	/CONS	0.1687	0.03387
CMTH96	0.02036	0.001697					
PSEX	-0.281	0.03381	1	CONS	/CONS	0.4597	0.01578
AGE1	0.0386	0.04539					

AGE2	-0.05765	0.0495	-2*log(lh) is 3765.1
AGE3	-0.2188	0.05116	
MEDUC	0.02406	0.00793	
HLANG	0.08726	0.02047	
NEWSPPR	0.08926	0.04	
LESSNPLN	-0.01292	0.02754	

STEP 8:

FIXED PART			RANDOM PART			
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.208	0.2067	2	CONS /CONS	0.1694	0.03393
CIND96	0.03337	0.002026				
CMTH96	0.02035	0.001697				
PSEX	-0.281	0.03381	1	CONS /CONS	0.4597	0.01578
AGE1	0.03868	0.04539				
AGE2	-0.05778	0.04951	-2*log(lh) is 3765.31			
AGE3	-0.2189	0.05117				
MEDUC	0.02413	0.007929				
HLANG	0.0873	0.02047				
NEWSPPR	0.08935	0.04				
HMWEEK	-0.002884	0.0361				

STEP 9:

FIXED PART			RANDOM PART			
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1272	0.1466	2	CONS /CONS	0.1663	0.03336
CIND96	0.03327	0.002027				
CMTH96	0.02044	0.0017				
PSEX	-0.281	0.03381	1	CONS /CONS	0.4597	0.01579
AGE1	0.03854	0.04539				
AGE2	-0.05792	0.04951	-2*log(lh) is 3764.42			
AGE3	-0.2188	0.05116				
MEDUC	0.02414	0.007927				
HLANG	0.08758	0.02047				
NEWSPPR	0.08909	0.04				
IND1TR	-0.1376	0.1456				
IND2TR	-0.1033	0.1511				

STEP 10:

FIXED PART			RANDOM PART			
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2202	0.103	2	CONS /CONS	0.1686	0.0338
CIND96	0.03339	0.002026				
CMTH96	0.02037	0.001697				
PSEX	-0.2809	0.03381	1	CONS /CONS	0.4597	0.01578
AGE1	0.03851	0.04539				
AGE2	-0.05756	0.04951	-2*log(lh) is 3765.05			
AGE3	-0.2187	0.05116				
MEDUC	0.02417	0.007927				
HLANG	0.08721	0.02047				
NEWSPPR	0.08909	0.04				
TRADITIO	0.03043	0.05912				

STEP 11:

FIXED PART			RANDOM PART			
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2241	0.1033	2	CONS /CONS	0.1693	0.03394
CIND96	0.03337	0.002026				
CMTH96	0.02034	0.001698				
PSEX	-0.281	0.03381	1	CONS /CONS	0.4597	0.01578
AGE1	0.03881	0.0454				
AGE2	-0.05783	0.0495	-2*log(lh) is 3765.27			
AGE3	-0.2191	0.05116				
MEDUC	0.02414	0.007928				
HLANG	0.08728	0.02047				
NEWSPPR	0.08945	0.04				
INOVATIO	-0.01371	0.05987				

STEP 12:

FIXED PART			RANDOM PART			
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2228	0.1031	2	CONS /CONS	0.1694	0.03392
CIND96	0.03336	0.002028				
CMTH96	0.02036	0.001698				
PSEX	-0.2811	0.03381	1	CONS /CONS	0.4597	0.01578
AGE1	0.03869	0.04539				
AGE2	-0.05784	0.0495	-2*log(lh) is 3765.3			
AGE3	-0.219	0.05116				
MEDUC	0.02416	0.007928				
HLANG	0.08736	0.02047				
NEWSPPR	0.08936	0.04				
TASK	-0.006255	0.05096				

STEP 13:

FIXED PART			RANDOM PART			
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2221	0.103	2	CONS /CONS	0.1694	0.03392
CIND96	0.03338	0.002027				
CMTH96	0.02034	0.001699				
PSEX	-0.281	0.03381	1	CONS /CONS	0.4597	0.01578
AGE1	0.03869	0.04539				
AGE2	-0.05778	0.0495	-2*log(lh) is 3765.31			
AGE3	-0.219	0.05115				
MEDUC	0.02416	0.007929				
HLANG	0.08728	0.02047				
NEWSPPR	0.08931	0.04				
PEOPLE	0.005095	0.05853				

STEP 14:

FIXED PART			RANDOM PART			
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1849	0.1154	2	CONS /CONS	0.168	0.03393
CIND96	0.03336	0.002026				
CMTH96	0.02037	0.001697				
PSEX	-0.2812	0.03381	1	CONS /CONS	0.4596	0.01578

AGE1	0.03842	0.04539	
AGE2	-0.0578	0.0495	-2*log(lh) is 3764.8
AGE3	-0.2194	0.05116	
MEDUC	0.02448	0.00794	
HLANG	0.08726	0.02047	
NEWSPPR	0.08987	0.04001	
INDBOOK	-0.002976	0.004145	

STEP 15:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2948	0.256
CIND96	0.03336	0.002026
CMTH96	0.02036	0.001697
PSEX	-0.2813	0.03382
AGE1	0.03852	0.04539
AGE2	-0.05762	0.04951
AGE3	-0.2189	0.05116
MEDUC	0.02407	0.007931
HLANG	0.08742	0.02047
NEWSPPR	0.08931	0.04
MLPUP	0.004127	0.01335

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1691	0.03387
1	CONS	/CONS	0.4597	0.01578

-2*log(lh) is 3765.22

STEP 16:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2765	0.2007
CIND96	0.03336	0.002026
CMTH96	0.02036	0.001697
PSEX	-0.2807	0.03383
AGE1	0.03875	0.04539
AGE2	-0.05767	0.04951
AGE3	-0.2187	0.05116
MEDUC	0.02402	0.007937
HLANG	0.08736	0.02047
NEWSPPR	0.08924	0.04
FMPUP	0.00351	0.01115

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1691	0.03388
1	CONS	/CONS	0.4597	0.01578

-2*log(lh) is 3765.22

STEP 17:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.3375	0.2831
CIND96	0.03335	0.002026
CMTH96	0.02037	0.001697
PSEX	-0.2809	0.03381
AGE1	0.03865	0.04539
AGE2	-0.05745	0.04951
AGE3	-0.2186	0.05116
MEDUC	0.02397	0.007938
HLANG	0.08749	0.02047
NEWSPPR	0.08921	0.04
CLSIZE	0.003503	0.008022

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1688	0.03382
1	CONS	/CONS	0.4597	0.01578

-2*log(lh) is 3765.13

STEP 18:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2206	0.1638
CIND96	0.03337	0.002026
CMTH96	0.02035	0.001697
PSEX	-0.281	0.03385
AGE1	0.03867	0.04539
AGE2	-0.05781	0.04951
AGE3	-0.219	0.05116
MEDUC	0.02414	0.00793
HLANG	0.08729	0.02047
NEWSPPR	0.08934	0.04
MFPROP	-0.001326	0.1015

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1694	0.03396
1	CONS	/CONS	0.4597	0.01578

-2*log(lh) is 3765.32

APPENDIX D.4c
EXAMINING SCHOOL VARIABLES FOR GRADE 5 INDONESIAN LANGUAGE

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2447	0.1119
CIND96	0.03336	0.002026
CMTH96	0.02037	0.001697
PSEX	-0.2809	0.03381
AGE1	0.03868	0.04539
AGE2	-0.05781	0.0495
AGE3	-0.2189	0.05115
MEDUC	0.02416	0.007927
HLANG	0.0875	0.02047
NEWSPPR	0.08932	0.04
HSEX	0.05854	0.1152

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1687	0.03392
1	CONS	/CONS	0.4597	0.01578

-2*log(lh) is 3765.06

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.02984	0.5217
CIND96	0.03338	0.002026
CMTH96	0.02036	0.001697
PSEX	-0.2808	0.03382
AGE1	0.03878	0.04539
AGE2	-0.05742	0.04951
AGE3	-0.2187	0.05116
MEDUC	0.02425	0.00793
HLANG	0.08735	0.02047
NEWSPPR	0.0896	0.04
HAGE	-0.004813	0.00976

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1687	0.03401
1	CONS	/CONS	0.4597	0.01578

-2*log(lh) is 3765.07

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1306	0.2435
CIND96	0.03336	0.002026
CMTH96	0.02036	0.001697
PSEX	-0.2809	0.03381
AGE1	0.03883	0.04539
AGE2	-0.05742	0.04951
AGE3	-0.2187	0.05116
MEDUC	0.02418	0.007928
HLANG	0.08731	0.02047
NEWSPPR	0.08935	0.04
HTCHEXPR	-0.002953	0.007107

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1689	0.03395
1	CONS	/CONS	0.4597	0.01578

-2*log(lh) is 3765.15

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1826	0.1261
CIND96	0.03341	0.002027
CMTH96	0.02033	0.001697
PSEX	-0.2809	0.03381
AGE1	0.03879	0.04539
AGE2	-0.05737	0.04951
AGE3	-0.2186	0.05116
MEDUC	0.02437	0.007937
HLANG	0.08738	0.02047
NEWSPPR	0.08952	0.04
HEADEXPR	-0.004105	0.007519

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1686	0.03379
1	CONS	/CONS	0.4597	0.01578

-2*log(lh) is 3765.02

STEP 5:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.3609	0.2223
CIND96	0.03336	0.002026
CMTH96	0.02035	0.001697
PSEX	-0.2809	0.03381
AGE1	0.03894	0.04539
AGE2	-0.05753	0.0495
AGE3	-0.2187	0.05115
MEDUC	0.02418	0.007927
HLANG	0.08732	0.02047
NEWSPPR	0.08945	0.04
HEDUC	0.01722	0.0245

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1679	0.03365
1	CONS	/CONS	0.4597	0.01578

-2*log(lh) is 3764.83

STEP 6:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.6848	0.4427
CIND96	0.03337	0.002025
CMTH96	0.02034	0.001697
PSEX	-0.2812	0.03381
AGE1	0.03858	0.04539
AGE2	-0.05845	0.04951
AGE3	-0.219	0.05115
MEDUC	0.02384	0.007932
HLANG	0.08736	0.02046
NEWSPPR	0.08842	0.04001
HRANK_OR	0.05982	0.05573

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1656	0.03329
1	CONS	/CONS	0.4597	0.01578

-2*log(lh) is 3764.18

STEP 7:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.3272	0.2704
CIND96	0.03339	0.002026
CMTH96	0.02034	0.001697

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.169	0.03408

PSEX	-0.281	0.03381	1	CONS	/CONS	0.4597	0.01578
AGE1	0.0383	0.0454					
AGE2	-0.05783	0.0495	-2*log(lh) is		3765.14		
AGE3	-0.2191	0.05115					
MEDUC	0.02416	0.007928					
HLANG	0.08745	0.02047					
NEWSPPR	0.08961	0.04					
PROFGRW	0.02483	0.05918					

STEP 8:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.3487	0.1791					
CIND96	0.0334	0.002026	2	CONS	/CONS	0.1673	0.03356
CMTH96	0.02037	0.001697					
PSEX	-0.2809	0.03381	1	CONS	/CONS	0.4596	0.01578
AGE1	0.03803	0.0454					
AGE2	-0.05763	0.0495	-2*log(lh) is		3764.58		
AGE3	-0.2192	0.05115					
MEDUC	0.0242	0.007927					
HLANG	0.08707	0.02047					
NEWSPPR	0.08976	0.04					
MEETING	0.02882	0.03348					

STEP 9:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.6239	0.2166					
CIND96	0.03335	0.002024	2	CONS	/CONS	0.1565	0.03164
CMTH96	0.02048	0.001696					
PSEX	-0.2807	0.03381	1	CONS	/CONS	0.4597	0.01578
AGE1	0.03759	0.04539					
AGE2	-0.05804	0.04949	-2*log(lh) is		3761.08		
AGE3	-0.2189	0.05114					
MEDUC	0.02385	0.007924					
HLANG	0.08679	0.02046					
NEWSPPR	0.08892	0.03999					
CLSHOUR	0.06319	0.03514					

STEP 10:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.3026	0.1693					
CIND96	0.03343	0.002028	2	CONS	/CONS	0.1685	0.03395
CMTH96	0.02031	0.001698					
PSEX	-0.281	0.03381	1	CONS	/CONS	0.4596	0.01578
AGE1	0.03865	0.04539					
AGE2	-0.05784	0.0495	-2*log(lh) is		3764.96		
AGE3	-0.2191	0.05115					
MEDUC	0.02435	0.007935					
HLANG	0.08724	0.02047					
NEWSPPR	0.08902	0.04					
HMHOUR	0.01104	0.0185					

STEP 11:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.3325	0.318					
CIND96	0.03336	0.002026	2	CONS	/CONS	0.169	0.03385
CMTH96	0.02036	0.001697					
PSEX	-0.281	0.03381	1	CONS	/CONS	0.4597	0.01578
AGE1	0.03871	0.04539					
AGE2	-0.0579	0.0495	-2*log(lh) is		3765.18		
AGE3	-0.2189	0.05116					
MEDUC	0.02401	0.007937					
HLANG	0.08728	0.02047					
NEWSPPR	0.08931	0.04					
SCHLBOOK	0.0002144	0.0005852					

STEP 12:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.126	0.2347					
CIND96	0.0334	0.002027	2	CONS	/CONS	0.1689	0.03385
CMTH96	0.02034	0.001697					
PSEX	-0.281	0.03381	1	CONS	/CONS	0.4596	0.01578
AGE1	0.0387	0.04539					
AGE2	-0.05803	0.04951	-2*log(lh) is		3765.11		
AGE3	-0.2192	0.05116					
MEDUC	0.02436	0.007942					
HLANG	0.08716	0.02047					
NEWSPPR	0.08962	0.04					
MALEP	-0.00098	0.002144					

STEP 13:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.1297	0.2122					
CIND96	0.03341	0.002027	2	CONS	/CONS	0.1688	0.03383
CMTH96	0.02033	0.001698					
PSEX	-0.2812	0.03381	1	CONS	/CONS	0.4596	0.01578
AGE1	0.03879	0.04539					
AGE2	-0.05797	0.0495	-2*log(lh) is		3765.07		
AGE3	-0.2193	0.05116					
MEDUC	0.02438	0.007941					
HLANG	0.08707	0.02047					
NEWSPPR	0.08974	0.04001					
FMLP	-0.0009909	0.001986					

STEP 14:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.3125	0.337					
CIND96	0.03338	0.002026	2	CONS	/CONS	0.1692	0.0339
CMTH96	0.02034	0.001697					

PSEX	-0.2812	0.03382	1	CONS	/CONS	0.4597	0.01578
AGE1	0.03877	0.04539					
AGE2	-0.05778	0.0495	-2*log(lh) is		3765.24		
AGE3	-0.219	0.05115					
MEDUC	0.02415	0.007928					
HLANG	0.08721	0.02047					
NEWSPPR	0.08943	0.04					
MFPUP	0.08374	0.2979					

STEP 15:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)	RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.5406	0.1429					
CIND96	0.03314	0.002022	2	CONS	/CONS	0.1424	0.02914
CMTH96	0.02034	0.001693					
PSEX	-0.2815	0.0338	1	CONS	/CONS	0.4598	0.01579
AGE1	0.03887	0.04538					
AGE2	-0.05716	0.04948	-2*log(lh) is		3756.35		
AGE3	-0.2206	0.05113					
MEDUC	0.02336	0.007921					
HLANG	0.0878	0.02045					
NEWSPPR	0.08821	0.03999					
MALETR	0.1436	0.04602					

STEP 16:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)	RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.5131	0.3056					
CIND96	0.03315	0.002024	2	CONS	/CONS	0.1424	0.029
CMTH96	0.02033	0.001694					
PSEX	-0.2814	0.0338	1	CONS	/CONS	0.4598	0.01579
AGE1	0.0389	0.04538					
AGE2	-0.05717	0.04948	-2*log(lh) is		3756.34		
AGE3	-0.2206	0.05113					
MEDUC	0.02342	0.007941					
HLANG	0.08777	0.02045					
NEWSPPR	0.08824	0.03999					
MALETR	0.1415	0.05067					
FMLTR	-0.003961	0.03886					

STEP 17:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)	RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.1344	0.2637					
CIND96	0.03311	0.00202	2	CONS	/CONS	0.134	0.0275
CMTH96	0.02031	0.001692					
PSEX	-0.282	0.0338	1	CONS	/CONS	0.4598	0.01579
AGE1	0.03909	0.04538					
AGE2	-0.05798	0.04948	-2*log(lh) is		3753.11		
AGE3	-0.2215	0.05111					
MEDUC	0.02346	0.007917					
HLANG	0.08749	0.02045					
NEWSPPR	0.0892	0.03998					
MALETR	0.1469	0.04482					
PTRATIO	-0.01702	0.009332					

STEP 18:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)	RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.354	0.1143					
CIND96	0.03334	0.002023	2	CONS	/CONS	0.1516	0.03074
CMTH96	0.02024	0.001695					
PSEX	-0.2814	0.03381	1	CONS	/CONS	0.4597	0.01579
AGE1	0.03896	0.04538					
AGE2	-0.05774	0.04949	-2*log(lh) is		3759.48		
AGE3	-0.2209	0.05114					
MEDUC	0.02399	0.007921					
HLANG	0.08764	0.02046					
NEWSPPR	0.08862	0.03999					
MFTCR	0.2822	0.1138					

EXAMINING THE RANDOM PART:

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)	RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.5409	0.1429					
CIND96	0.03314	0.002019	2	CONS	/CONS	0.1425	0.02901
CMTH96	0.0203	0.001694					
PSEX	-0.2811	0.03381	1	CONS	/CONS	0.4598	0.01579
AGE1	0.03828	0.04544	1	CIND96	/CONS	0.0002667	0.0006963
AGE2	-0.05735	0.04951					
AGE3	-0.2213	0.05109	-2*log(lh) is		3756.2		
MEDUC	0.02323	0.007924					
HLANG	0.08792	0.02044					
NEWSPPR	0.08759	0.04001					
MALETR	0.1441	0.04604					

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)	RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.5402	0.1429					
CIND96	0.03311	0.00202	2	CONS	/CONS	0.1425	0.029
CMTH96	0.02034	0.001693					
PSEX	-0.2809	0.0338	1	CONS	/CONS	0.4598	0.01579
AGE1	0.03792	0.04542	1	CMTH96	/CONS	0.000207	0.0006097
AGE2	-0.05807	0.04949					
AGE3	-0.2221	0.05109	-2*log(lh) is		3756.21		

MEDUC	0.02318	0.007921
HLANG	0.08781	0.02044
NEWSPPR	0.08767	0.04
MALETR	0.1441	0.04603

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.5389	0.1429
CIND96	0.03314	0.002021
CMTH96	0.02039	0.001694
PSEX	-0.2813	0.03378
AGE1	0.03846	0.04532
AGE2	-0.05697	0.04945
AGE3	-0.2218	0.05112
MEDUC	0.02323	0.007925
HLANG	0.08794	0.02046
NEWSPPR	0.08884	0.03997
MALETR	0.143	0.04604

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1425	0.02901
1	CONS	/CONS	0.4494	0.02238
1	PSEX	/CONS	0.01	0.016

-2*log(lh) is 3755.96

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.5411	0.1425
CIND96	0.03316	0.002018
CMTH96	0.02034	0.00169
PSEX	-0.2795	0.03377
AGE1	0.03865	0.0451
AGE2	-0.05811	0.05069
AGE3	-0.2208	0.05051
MEDUC	0.02316	0.007919
HLANG	0.08724	0.02039
NEWSPPR	0.09013	0.03994
MALETR	0.1445	0.04592

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1417	0.02885
1	CONS	/CONS	0.4612	0.02964
1	AGE1	/CONS	-0.007026	0.02152
1	AGE2	/CONS	0.02165	0.02401
1	AGE3	/CONS	-0.01476	0.0213

-2*log(lh) is 3753.85

APPENDIX D.5a
EXAMINING PUPIL VARIABLES FOR GRADE 5 MATHEMATICS

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.001808	0.06306

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.211	0.04345
1	CONS	/CONS	0.7731	0.02661

-2*log(lh) is 4662.1

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.008268	0.05673
CMTH96	0.04314	0.001467

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1748	0.03524
1	CONS	/CONS	0.5148	0.01768

-2*log(lh) is 3959.8

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.04122	0.05856
CMTH96	0.04273	0.001474
SQ-MTH96	0.0001557	8.525e-05

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1766	0.03557
1	CONS	/CONS	0.5128	0.01761

-2*log(lh) is 3953.87

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.006312	0.05685
CMTH96	0.03174	0.001711
CIND96	0.02352	0.001993

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.177	0.03541
1	CONS	/CONS	0.4757	0.01633

-2*log(lh) is 3825.92

STEP 5:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.05485	0.05858
CMTH96	0.03094	0.001715
CIND96	0.02476	0.002008
SQ-IND96	0.0003729	9.434e-05

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.18	0.03594
1	CONS	/CONS	0.4711	0.01618

-2*log(lh) is 3810.38

STEP 6:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.02977	0.06109
CMTH96	0.03112	0.001719
CIND96	0.02424	0.00204
SQ-IND96	0.000373	9.429e-05
PSEX	-0.0484	0.03392

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1795	0.03594
1	CONS	/CONS	0.4706	0.01618

-2*log(lh) is 3808.34

STEP 7:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.009713	0.06427
CMTH96	0.03048	0.00171
CIND96	0.02352	0.002025
SQ-IND96	0.0003761	9.402e-05
AGE1	0.04799	0.04547
AGE2	-0.09516	0.04855
AGE3	-0.1441	0.04941

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1785	0.03563
1	CONS	/CONS	0.4663	0.01601

-2*log(lh) is 3792.63

STEP 8:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.07541	0.07097
CMTH96	0.03025	0.001708
CIND96	0.023	0.002029
SQ-IND96	0.0003593	9.401e-05
AGE1	0.05128	0.04538
AGE2	-0.08206	0.04866
AGE3	-0.128	0.04962
F1DUM	-0.1294	0.04728
F2DUM	-0.1062	0.04639

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1776	0.03563
1	CONS	/CONS	0.4642	0.01601

-2*log(lh) is 3784.61

STEP 9:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.06963	0.08557
CMTH96	0.03026	0.001708
CIND96	0.02295	0.002031
SQ-IND96	0.0003564	9.413e-05
AGE1	0.05087	0.0454
AGE2	-0.08092	0.04878
AGE3	-0.1245	0.04989
F1DUM	-0.1232	0.04915
F2DUM	-0.1034	0.04848
M1DUM	-0.03804	0.07827

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1777	0.03544
1	CONS	/CONS	0.4639	0.01594

-2*log(lh) is 3783.44

M2DUM	-0.0008567	0.07172
M3DUM	0.01577	0.06409

STEP 10:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.02194	0.09852
CMTH96	0.03007	0.001712
CIND96	0.02293	0.002029
SQ-IND96	0.0003584	9.396e-05
AGE1	0.05636	0.0455
AGE2	-0.07184	0.04916
AGE3	-0.1138	0.05057
F1DUM	-0.09281	0.05378
F2DUM	-0.07757	0.05055
FEDUC	0.01184	0.008314

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1775	0.03542
1	CONS	/CONS	0.4637	0.01594

-2*log(lh) is 3782.58

STEP 11:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.05781	0.09139
CMTH96	0.03022	0.001711
CIND96	0.02297	0.002032
SQ-IND96	0.0003589	9.402e-05
AGE1	0.05258	0.04558
AGE2	-0.07936	0.04945
AGE3	-0.1242	0.05111
F1DUM	-0.1237	0.05079
F2DUM	-0.1012	0.04921
MEDUC	0.002486	0.008137

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1777	0.03545
1	CONS	/CONS	0.4642	0.01594

-2*log(lh) is 3784.51

STEP 12:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1018	0.09351
CMTH96	0.03028	0.001709
CIND96	0.02299	0.002029
SQ-IND96	0.0003593	9.4e-05
AGE1	0.05132	0.04538
AGE2	-0.08141	0.04868
AGE3	-0.1263	0.04978
F1DUM	-0.1284	0.04733
F2DUM	-0.1059	0.0464
FMSIZE	-0.004567	0.01056

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1775	0.03546
1	CONS	/CONS	0.4642	0.01594

-2*log(lh) is 3784.42

STEP 13:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1236	0.08505
CMTH96	0.03025	0.001708
CIND96	0.02295	0.002029
SQ-IND96	0.0003591	9.398e-05
AGE1	0.0529	0.0454
AGE2	-0.07683	0.04891
AGE3	-0.12	0.05021
F1DUM	-0.1269	0.04732
F2DUM	-0.1056	0.04638
CHILDREN	-0.01689	0.01646

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.177	0.03558
1	CONS	/CONS	0.464	0.01594

-2*log(lh) is 3783.56

STEP 14:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.07262	0.07683
CMTH96	0.03025	0.001708
CIND96	0.023	0.00203
SQ-IND96	0.0003593	9.401e-05
AGE1	0.0512	0.04539
AGE2	-0.08258	0.04896
AGE3	-0.1286	0.05
F1DUM	-0.1295	0.0473
F2DUM	-0.1062	0.04639
CHLD_ORD	0.001312	0.01386

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1776	0.03545
1	CONS	/CONS	0.4642	0.01594

-2*log(lh) is 3784.6

STEP 15:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.0614	0.07247
CMTH96	0.03021	0.001708
CIND96	0.02303	0.002029
SQ-IND96	0.0003597	9.398e-05
AGE1	0.04998	0.04539
AGE2	-0.08637	0.04884
AGE3	-0.1309	0.0497
F1DUM	-0.1299	0.04727
F2DUM	-0.1054	0.04639
SOCPRES	0.01325	0.01366

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1781	0.03545
1	CONS	/CONS	0.4639	0.01594

-2*log(lh) is 3783.67

STEP 16:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.09233	0.09164
CMTH96	0.03005	0.001706
CIND96	0.02284	0.002025
SQ-IND96	0.0003737	9.394e-05
AGE1	0.05154	0.04528
AGE2	-0.09073	0.04864
AGE3	-0.1302	0.04952
F1DUM	-0.148	0.04762
F2DUM	-0.1203	0.04655
HLANG	0.05835	0.02034

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1747	0.03491
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3776.4

STEP 17:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.09472	0.09209

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)

CMTH96	0.03006	0.001706	2	CONS	/CONS	0.1744	0.03491
CIND96	0.02283	0.002026					
SQ-IND96	0.0003733	9.395e-05	1	CONS	/CONS	0.4622	0.01587
AGE1	0.05185	0.0453					
AGE2	-0.09005	0.04872	-2*log(lh) is		3776.33		
AGE3	-0.1287	0.04984					
F1DUM	-0.1469	0.04782					
F2DUM	-0.1195	0.04666					
HLANG	0.05869	0.02038					
PARENCT	0.004602	0.0181					

STEP 18:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.01037	0.1068					
CMTH96	0.03003	0.001705	2	CONS	/CONS	0.1737	0.0349
CIND96	0.02284	0.002024					
SQ-IND96	0.000372	9.389e-05	1	CONS	/CONS	0.4617	0.01587
AGE1	0.0502	0.04527					
AGE2	-0.09302	0.04864	-2*log(lh) is		3774.18		
AGE3	-0.1321	0.0495					
F1DUM	-0.1518	0.04765					
F2DUM	-0.1237	0.04658					
HLANG	0.05716	0.02034					
TIMEHW	-0.02836	0.01904					

STEP 19:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.1041	0.1068					
CMTH96	0.03002	0.00171	2	CONS	/CONS	0.1749	0.03494
CIND96	0.02282	0.002028					
SQ-IND96	0.0003725	9.41e-05	1	CONS	/CONS	0.4622	0.01587
AGE1	0.05179	0.0453					
AGE2	-0.09018	0.04871	-2*log(lh) is		3776.35		
AGE3	-0.1294	0.04964					
F1DUM	-0.1473	0.04773					
F2DUM	-0.1195	0.04671					
HLANG	0.05843	0.02034					
PRBOOK	0.004493	0.02091					

STEP 20:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.1194	0.09641					
CMTH96	0.03002	0.001706	2	CONS	/CONS	0.1752	0.03492
CIND96	0.02273	0.002029					
SQ-IND96	0.0003704	9.399e-05	1	CONS	/CONS	0.4619	0.01587
AGE1	0.05194	0.04527					
AGE2	-0.08713	0.04879	-2*log(lh) is		3775.58		
AGE3	-0.1261	0.0497					
F1DUM	-0.1388	0.04867					
F2DUM	-0.1124	0.04734					
HLANG	0.0608	0.02051					
NEWSPPR	0.03563	0.03929					

STEP 21:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.09322	0.09166					
CMTH96	0.03005	0.001706	2	CONS	/CONS	0.1746	0.03489
CIND96	0.02285	0.002028					
SQ-IND96	0.0003734	9.396e-05	1	CONS	/CONS	0.4621	0.01587
AGE1	0.05196	0.04532					
AGE2	-0.09097	0.04869	-2*log(lh) is		3776.13		
AGE3	-0.1311	0.04963					
F1DUM	-0.1482	0.04788					
F2DUM	-0.1212	0.04683					
HLANG	0.05788	0.02043					
STPL1	0.01588	0.04102					
STPL2	-0.01421	0.05889					

APPENDIX D.5b
EXAMINING CLASS VARIABLES FOR GRADE 5 MATHEMATICS

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1802	0.09581
CMTH96	0.02989	0.001705
CIND96	0.02305	0.002025
SQ-IND96	0.000377	9.389e-05
AGE1	0.051	0.04527
AGE2	-0.09083	0.04863
AGE3	-0.1321	0.04949
F1DUM	-0.143	0.04762
F2DUM	-0.12	0.04652
HLANG	0.05873	0.02033
TSEX	0.3162	0.121

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.155	0.03132
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.94

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2429	0.361
CMTH96	0.0299	0.001705
CIND96	0.02304	0.002025
SQ-IND96	0.000377	9.389e-05
AGE1	0.05096	0.04528
AGE2	-0.09081	0.04863
AGE3	-0.1321	0.04949
F1DUM	-0.143	0.04762
F2DUM	-0.1201	0.04652
HLANG	0.05867	0.02033
TSEX	0.3159	0.121
TAGE	0.001691	0.009387

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1549	0.0313
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.9

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.0004003	0.2136
CMTH96	0.02989	0.001704
CIND96	0.02306	0.002024
SQ-IND96	0.0003754	9.389e-05
AGE1	0.05064	0.04527
AGE2	-0.0912	0.04862
AGE3	-0.1323	0.04948
F1DUM	-0.1438	0.04763
F2DUM	-0.1203	0.04652
HLANG	0.05871	0.02032
TSEX	0.3327	0.1214
TEDUC	-0.02262	0.02402

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1525	0.03085
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.06

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.02806	0.1661
CMTH96	0.02983	0.001705
CIND96	0.0231	0.002025
SQ-IND96	0.0003775	9.388e-05
AGE1	0.05101	0.04527
AGE2	-0.09087	0.04862
AGE3	-0.1317	0.04948
F1DUM	-0.1433	0.04762
F2DUM	-0.1202	0.04652
HLANG	0.05903	0.02032
TSEX	0.3157	0.1198
TCREXPER	-0.0104	0.009285

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1515	0.03068
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3768.7

STEP 5:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.07374	0.1858
CMTH96	0.02989	0.001703
CIND96	0.02305	0.002024
SQ-IND96	0.0003753	9.387e-05
AGE1	0.05064	0.04527
AGE2	-0.09024	0.04862
AGE3	-0.1321	0.04948
F1DUM	-0.144	0.04761
F2DUM	-0.1204	0.04651
HLANG	0.05909	0.02032
TSEX	0.3073	0.1187
TRANK_OR	-0.05245	0.03294

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1481	0.03006
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3767.45

STEP 6:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1605	0.1526
CMTH96	0.02988	0.001705
CIND96	0.02306	0.002026
SQ-IND96	0.0003769	9.389e-05
AGE1	0.05106	0.04528
AGE2	-0.09077	0.04863
AGE3	-0.132	0.04949
F1DUM	-0.1429	0.04763
F2DUM	-0.12	0.04652
HLANG	0.05875	0.02033
TSEX	0.3138	0.1219
TCORRECT	-0.004562	0.02756

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1549	0.03132
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.91

STEP 7:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)

CONS	-0.1115	0.1501
CMTH96	0.0299	0.001704
CIND96	0.02304	0.002025
SQ-IND96	0.0003756	9.391e-05
AGE1	0.05099	0.04527
AGE2	-0.09049	0.04863
AGE3	-0.1316	0.04949
F1DUM	-0.1428	0.04762
F2DUM	-0.1193	0.04654
HLANG	0.05871	0.02033
TSEX	0.3194	0.1207
LESSNPLN	-0.01574	0.02646

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1539	0.03137
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.58

STEP 8:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.04772	0.194
CMTH96	0.0299	0.001704
CIND96	0.02305	0.002024
SQ-IND96	0.0003771	9.387e-05
AGE1	0.05138	0.04527
AGE2	-0.09014	0.04862
AGE3	-0.13	0.04951
F1DUM	-0.1422	0.04762
F2DUM	-0.1198	0.04651
HLANG	0.0589	0.02032
TSEX	0.3138	0.1192
HMWEEK	-0.04613	0.03417

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1498	0.03036
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3768.14

STEP 9:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1392	0.1351
CMTH96	0.02991	0.001706
CIND96	0.02303	0.002025
SQ-IND96	0.0003766	9.389e-05
AGE1	0.05069	0.04528
AGE2	-0.09086	0.04863
AGE3	-0.1322	0.04949
F1DUM	-0.1433	0.04763
F2DUM	-0.1203	0.04653
HLANG	0.05871	0.02033
TSEX	0.3045	0.1244
MTH1TR	-0.05471	0.134
MTH2TR	-0.04832	0.1409

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1545	0.03123
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.75

STEP 10:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.173	0.09596
CMTH96	0.02992	0.001705
CIND96	0.02307	0.002025
SQ-IND96	0.0003771	9.388e-05
AGE1	0.05072	0.04528
AGE2	-0.09037	0.04863
AGE3	-0.1315	0.04949
F1DUM	-0.1433	0.04762
F2DUM	-0.12	0.04652
HLANG	0.05864	0.02033
TSEX	0.3022	0.1215
TRADITIO	0.0476	0.05712

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.153	0.03093
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.25

STEP 11:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1972	0.09587
CMTH96	0.02977	0.001706
CIND96	0.02303	0.002024
SQ-IND96	0.0003757	9.387e-05
AGE1	0.052	0.04528
AGE2	-0.09093	0.04862
AGE3	-0.1328	0.04948
F1DUM	-0.1435	0.04761
F2DUM	-0.1189	0.04652
HLANG	0.05868	0.02032
TSEX	0.3393	0.1202
INOVATIO	-0.0812	0.05719

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1496	0.03031
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3767.95

STEP 12:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1819	0.09582
CMTH96	0.0299	0.001705
CIND96	0.02301	0.002027
SQ-IND96	0.0003775	9.39e-05
AGE1	0.05107	0.04527
AGE2	-0.09103	0.04863
AGE3	-0.1322	0.04949
F1DUM	-0.143	0.04762
F2DUM	-0.1201	0.04652
HLANG	0.05898	0.02033
TSEX	0.3165	0.1208
TASK	-0.02163	0.04888

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1545	0.03133
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.74

STEP 13:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1818	0.09567
CMTH96	0.02994	0.001706
CIND96	0.02299	0.002027
SQ-IND96	0.000377	9.389e-05
AGE1	0.05084	0.04527
AGE2	-0.09097	0.04862
AGE3	-0.132	0.04949
F1DUM	-0.1429	0.04762

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1536	0.0313
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.47

F2DUM	-0.12	0.04652
HLANG	0.05894	0.02033
TSEX	0.3133	0.1206
PEOPLE	-0.03822	0.05604

STEP 14:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.18	0.1093	2	CONS	/CONS	0.155	0.0313
CMTH96	0.02989	0.001705	1	CONS	/CONS	0.4622	0.01587
CIND96	0.02305	0.002025					
SQ-IND96	0.000377	9.39e-05					
AGE1	0.05099	0.04528					
AGE2	-0.09083	0.04863	-2*log(lh) is			3769.94	
AGE3	-0.1321	0.04951					
F1DUM	-0.143	0.04765					
F2DUM	-0.12	0.04656					
HLANG	0.05873	0.02033					
TSEX	0.3163	0.1218					
MTHBOOK	-1.739e-05	0.004208					

STEP 15:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.3293	0.2445	2	CONS	/CONS	0.1538	0.0313
CMTH96	0.02991	0.001705	1	CONS	/CONS	0.4622	0.01587
CIND96	0.02303	0.002025					
SQ-IND96	0.0003775	9.389e-05					
AGE1	0.05069	0.04528					
AGE2	-0.09037	0.04863	-2*log(lh) is			3769.5	
AGE3	-0.1317	0.04949					
F1DUM	-0.1422	0.04764					
F2DUM	-0.1195	0.04653					
HLANG	0.05908	0.02033					
TSEX	0.3052	0.1217					
MLPUP	0.008554	0.01291					

STEP 16:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.1798	0.1912	2	CONS	/CONS	0.155	0.03132
CMTH96	0.02989	0.001705	1	CONS	/CONS	0.4622	0.01587
CIND96	0.02305	0.002026					
SQ-IND96	0.000377	9.391e-05					
AGE1	0.05099	0.04528					
AGE2	-0.09083	0.04864	-2*log(lh) is			3769.94	
AGE3	-0.1321	0.04952					
F1DUM	-0.143	0.04765					
F2DUM	-0.12	0.04656					
HLANG	0.05873	0.02033					
TSEX	0.3163	0.1225					
FMPUP	-2.93e-05	0.01085					

STEP 17:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.3496	0.2728	2	CONS	/CONS	0.1538	0.0313
CMTH96	0.02992	0.001705	1	CONS	/CONS	0.4622	0.01587
CIND96	0.023	0.002026					
SQ-IND96	0.0003763	9.389e-05					
AGE1	0.05114	0.04527					
AGE2	-0.09	0.04864	-2*log(lh) is			3769.5	
AGE3	-0.1309	0.04952					
F1DUM	-0.1418	0.04765					
F2DUM	-0.1188	0.04655					
HLANG	0.0591	0.02033					
TSEX	0.2992	0.1233					
CLSIZE	0.005213	0.007864					

STEP 18:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.2116	0.1538	2	CONS	/CONS	0.1548	0.03128
CMTH96	0.02989	0.001704	1	CONS	/CONS	0.4622	0.01587
CIND96	0.02305	0.002025					
SQ-IND96	0.0003774	9.39e-05					
AGE1	0.0508	0.04528					
AGE2	-0.09084	0.04863	-2*log(lh) is			3769.4	
AGE3	-0.1323	0.04949					
F1DUM	-0.1431	0.04763					
F2DUM	-0.1203	0.04653					
HLANG	0.05878	0.02033					
TSEX	0.3152	0.121					
MFPROP	0.02539	0.09734					

APPENDIX D.5c
EXAMINING SCHOOL VARIABLES FOR GRADE 5 MATHEMATICS

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2137	0.1032
CMTH96	0.02992	0.001705
CIND96	0.02303	0.002025
SQ-IND96	0.0003759	9.389e-05
AGE1	0.05101	0.04527
AGE2	-0.09092	0.04862
AGE3	-0.1319	0.04949
F1DUM	-0.1422	0.04763
F2DUM	-0.1199	0.04652
HLANG	0.05905	0.02033
TSEX	0.3065	0.1208
HSEX	0.09461	0.1108

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.153	0.03093
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.21

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.07893	0.509
CMTH96	0.0299	0.001705
CIND96	0.02305	0.002025
SQ-IND96	0.0003761	9.39e-05
AGE1	0.05108	0.04527
AGE2	-0.09055	0.04863
AGE3	-0.1319	0.04949
F1DUM	-0.143	0.04762
F2DUM	-0.1203	0.04652
HLANG	0.0587	0.02033
TSEX	0.3095	0.1215
HAGE	-0.004887	0.009426

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1543	0.03118
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.67

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1192	0.2376
CMTH96	0.0299	0.001705
CIND96	0.02304	0.002025
SQ-IND96	0.0003766	9.39e-05
AGE1	0.05111	0.04528
AGE2	-0.09059	0.04863
AGE3	-0.1318	0.04949
F1DUM	-0.1428	0.04762
F2DUM	-0.12	0.04652
HLANG	0.05871	0.02033
TSEX	0.3129	0.1215
HTCHEXPR	-0.001928	0.006867

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1548	0.0313
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.86

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1104	0.1251
CMTH96	0.02987	0.001704
CIND96	0.0231	0.002025
SQ-IND96	0.0003764	9.388e-05
AGE1	0.05103	0.04527
AGE2	-0.09049	0.04862
AGE3	-0.1319	0.04948
F1DUM	-0.1441	0.04764
F2DUM	-0.1214	0.04654
HLANG	0.05876	0.02032
TSEX	0.2967	0.1224
HEADEXPR	-0.006334	0.007314

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.153	0.03093
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.19

STEP 5:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2195	0.2122
CMTH96	0.02989	0.001704
CIND96	0.02305	0.002025
SQ-IND96	0.0003767	9.39e-05
AGE1	0.05108	0.04528
AGE2	-0.09075	0.04863
AGE3	-0.132	0.04949
F1DUM	-0.143	0.04762
F2DUM	-0.12	0.04652
HLANG	0.05873	0.02033
TSEX	0.3162	0.121
HEDUC	0.004906	0.02363

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1549	0.03129
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.89

STEP 6:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1208	0.4318
CMTH96	0.02989	0.001705
CIND96	0.02305	0.002025
SQ-IND96	0.0003769	9.389e-05
AGE1	0.05099	0.04527
AGE2	-0.09081	0.04863
AGE3	-0.1321	0.04949
F1DUM	-0.1429	0.04762
F2DUM	-0.1201	0.04653
HLANG	0.0587	0.02033
TSEX	0.316	0.121
HRANK_OR	-0.007619	0.05404

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1549	0.0313
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.92

STEP 7:

FIXED PART

RANDOM PART

PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.06485	0.2561
CMTH96	0.0299	0.001705
CIND96	0.02303	0.002025
SQ-IND96	0.0003763	9.39e-05
AGE1	0.05145	0.04528
AGE2	-0.09078	0.04863
AGE3	-0.132	0.04949
F1DUM	-0.1424	0.04763
F2DUM	-0.1202	0.04652
HLANG	0.05858	0.02033
TSEX	0.323	0.1215
PROFGRW	-0.02781	0.05723

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1542	0.03116
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.7

STEP 8:

FIXED PART

PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1033	0.1685
CMTH96	0.02987	0.001705
CIND96	0.02302	0.002025
SQ-IND96	0.0003764	9.389e-05
AGE1	0.05146	0.04528
AGE2	-0.09091	0.04862
AGE3	-0.1319	0.04949
F1DUM	-0.1425	0.04763
F2DUM	-0.1197	0.04652
HLANG	0.05893	0.02033
TSEX	0.3201	0.1209
MEETING	-0.01794	0.03233

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1542	0.03116
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.63

STEP 9:

FIXED PART

PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1547	0.2116
CMTH96	0.02988	0.001706
CIND96	0.02305	0.002025
SQ-IND96	0.0003773	9.391e-05
AGE1	0.05106	0.04528
AGE2	-0.09085	0.04863
AGE3	-0.1321	0.04949
F1DUM	-0.1429	0.04763
F2DUM	-0.12	0.04652
HLANG	0.05877	0.02033
TSEX	0.3179	0.1216
CLSHOUR	-0.004074	0.03016

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.155	0.0313
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.92

STEP 10:

FIXED PART

PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.219	0.1599
CMTH96	0.02986	0.001706
CIND96	0.02309	0.002028
SQ-IND96	0.0003779	9.393e-05
AGE1	0.05091	0.04528
AGE2	-0.09093	0.04863
AGE3	-0.1323	0.04949
F1DUM	-0.1434	0.04764
F2DUM	-0.12	0.04652
HLANG	0.05871	0.02033
TSEX	0.3167	0.1209
HMHOUR	0.005399	0.01782

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1547	0.03143
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.85

STEP 11:

FIXED PART

PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.3673	0.3081
CMTH96	0.02991	0.001705
CIND96	0.02302	0.002025
SQ-IND96	0.0003759	9.39e-05
AGE1	0.05122	0.04528
AGE2	-0.09076	0.04862
AGE3	-0.1316	0.04949
F1DUM	-0.1422	0.04764
F2DUM	-0.1187	0.04657
HLANG	0.05875	0.02032
TSEX	0.3192	0.1207
SCHLBOOK	0.0003584	0.0005612

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1538	0.03109
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.53

STEP 12:

FIXED PART

PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1919	0.2271
CMTH96	0.02989	0.001705
CIND96	0.02304	0.002027
SQ-IND96	0.0003771	9.389e-05
AGE1	0.05101	0.04528
AGE2	-0.09077	0.04864
AGE3	-0.132	0.04951
F1DUM	-0.1428	0.04768
F2DUM	-0.1199	0.04657
HLANG	0.05876	0.02033
TSEX	0.3145	0.1246
MALEP	0.0001205	0.002122

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.155	0.03132
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.93

STEP 13:

FIXED PART

PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.0849	0.2038
CMTH96	0.02985	0.001705
CIND96	0.02311	0.002028
SQ-IND96	0.0003782	9.391e-05
AGE1	0.05096	0.04527
AGE2	-0.09128	0.04863
AGE3	-0.1328	0.04951
F1DUM	-0.1443	0.04769

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1542	0.03133
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.66

F2DUM	-0.1212	0.04657
HLANG	0.05845	0.02033
TSEX	0.3255	0.122
FMLP	-0.00102	0.001926

STEP 14:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.5123	0.3186
CMTH96	0.02984	0.001705
CIND96	0.02309	0.002025
SQ-IND96	0.0003806	9.394e-05
AGE1	0.05133	0.04527
AGE2	-0.09085	0.04862
AGE3	-0.1323	0.04948
F1DUM	-0.1437	0.04762
F2DUM	-0.1205	0.04652
HLANG	0.05848	0.02033
TSEX	0.3	0.1207
MFPUP	0.3122	0.2859

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1517	0.0307
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3768.76

STEP 15:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.3918	0.1389
CMTH96	0.02994	0.001703
CIND96	0.02287	0.002024
SQ-IND96	0.0003759	9.385e-05
AGE1	0.05116	0.04527
AGE2	-0.09009	0.04861
AGE3	-0.1321	0.04947
F1DUM	-0.14	0.04762
F2DUM	-0.1184	0.04651
HLANG	0.05909	0.02032
TSEX	0.2825	0.1335
MALETR	0.1293	0.05276

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1433	0.02926
1	CONS	/CONS	0.4623	0.01587

-2*log(lh) is 3765.8

STEP 16:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2221	0.2578
CMTH96	0.02989	0.001705
CIND96	0.02304	0.002026
SQ-IND96	0.0003766	9.392e-05
AGE1	0.05099	0.04527
AGE2	-0.09074	0.04863
AGE3	-0.1318	0.0495
F1DUM	-0.1427	0.04764
F2DUM	-0.1197	0.04655
HLANG	0.0588	0.02033
TSEX	0.3239	0.1287
FMLTR	0.006821	0.03898

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1549	0.03132
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3769.91

STEP 17:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1832	0.255
CMTH96	0.02985	0.001704
CIND96	0.02309	0.002024
SQ-IND96	0.0003752	9.387e-05
AGE1	0.05093	0.04527
AGE2	-0.09175	0.04862
AGE3	-0.1332	0.04948
F1DUM	-0.1445	0.04762
F2DUM	-0.1212	0.04652
HLANG	0.05846	0.02032
TSEX	0.3464	0.1202
PTRATIO	-0.01521	0.009897

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1484	0.0301
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3767.62

STEP 18:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2414	0.1048
CMTH96	0.02985	0.001704
CIND96	0.02304	0.002024
SQ-IND96	0.0003784	9.388e-05
AGE1	0.05105	0.04527
AGE2	-0.09088	0.04862
AGE3	-0.1329	0.04948
F1DUM	-0.1421	0.04762
F2DUM	-0.1197	0.04651
HLANG	0.05889	0.02032
TSEX	0.2366	0.1322
MFTCR	0.1741	0.1257

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1495	0.03038
1	CONS	/CONS	0.4622	0.01587

-2*log(lh) is 3768.05

EXAMINING THE RANDOM PART:

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1862	0.09551
CMTH96	0.02999	0.001694
CIND96	0.02267	0.002026
SQ-IND96	0.0003787	9.097e-05
AGE1	0.05284	0.04531

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1553	0.03127
1	CONS	/CONS	0.4622	0.01597
1	CMTH96	/CONS	0.002018	0.0005968

AGE2	-0.08786	0.04842	
AGE3	-0.1221	0.04892	-2*log(lh) is 3759.01
F1DUM	-0.1484	0.04745	
F2DUM	-0.1237	0.0464	
HLANG	0.06087	0.02011	
TSEX	0.3151	0.1211	

STEP 2:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.1867	0.09551	2	CONS	/CONS	0.1553	0.03134
CMTH96	0.02996	0.001695					
CIND96	0.0227	0.002027	1	CONS	/CONS	0.4622	0.01597
SQ-IND96	0.0003787	9.08e-05	1	CMTH96	/CONS	0.001962	0.0007132
AGE1	0.05279	0.04533	1	CIND96	/CONS	0.0001194	0.0008128
AGE2	-0.08773	0.04843					
AGE3	-0.1223	0.04891					
F1DUM	-0.1479	0.04746	-2*log(lh) is 3758.99				
F2DUM	-0.1233	0.04641					
HLANG	0.06094	0.02011					
TSEX	0.3153	0.1211					

STEP 3:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.1887	0.09556	2	CONS	/CONS	0.1545	0.03119
CMTH96	0.03001	0.001695					
CIND96	0.02266	0.002026	1	CONS	/CONS	0.474	0.03037
SQ-IND96	0.0003797	9.103e-05	1	CMTH96	/CONS	0.001976	0.0006012
AGE1	0.05317	0.04491	1	AGE1	/CONS	-0.0189	0.02144
AGE2	-0.08709	0.04886	1	AGE2	/CONS	-0.00239	0.02298
AGE3	-0.1211	0.04931	1	AGE3	/CONS	-0.002841	0.02211
F1DUM	-0.1482	0.04738					
F2DUM	-0.1242	0.04632					
HLANG	0.06157	0.02011	-2*log(lh) is 3758.09				
TSEX	0.314	0.1208					

APPENDIX D.6a
EXAMINING PUPIL VARIABLES FOR GRADE 6 INDONESIAN LANGUAGE

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.01335	0.06036

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1906	0.03982
1	CONS	/CONS	0.7854	0.02691

-2*log(lh) is 4704.57

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.01405	0.05883
CIND96	0.05749	0.001922

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1893	0.03794
1	CONS	/CONS	0.5156	0.01766

-2*log(lh) is 3984.14

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.02197	0.06024
CIND96	0.05752	0.001922
SQ-IND96	8.866e-05	0.0001452

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1893	0.03791
1	CONS	/CONS	0.5154	0.01766

-2*log(lh) is 3983.77

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.01175	0.05559
CIND96	0.04439	0.002195
CMTH96	0.01808	0.001614

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1683	0.03385
1	CONS	/CONS	0.4821	0.01652

-2*log(lh) is 3863.07

STEP 5:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.03052	0.05737
CIND96	0.04431	0.002194
CMTH96	0.0179	0.001619
SQ-MTH96	0.0001001	7.604e-05

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1681	0.03385
1	CONS	/CONS	0.4816	0.01652

-2*log(lh) is 3861.34

STEP 6:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1498	0.05688
CIND96	0.03966	0.002194
CMTH96	0.01804	0.001573
PSEX	-0.3286	0.03398

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1611	0.03238
1	CONS	/CONS	0.4577	0.01568

-2*log(lh) is 3771.95

STEP 7:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.262	0.06177
CIND96	0.03701	0.002188
CMTH96	0.01671	0.001555
PSEX	-0.3095	0.0335
AGE1	-0.03524	0.0447
AGE2	-0.1081	0.04679
AGE3	-0.3716	0.05076

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.15	0.03026
1	CONS	/CONS	0.4423	0.01515

-2*log(lh) is 3709.54

STEP 8:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.302	0.0664
CIND96	0.03676	0.00219
CMTH96	0.01653	0.001556
PSEX	-0.3128	0.03351
AGE1	-0.03011	0.04486
AGE2	-0.09799	0.04729
AGE3	-0.3571	0.05145
F1DUM	-0.08491	0.0496
F2DUM	-0.03122	0.04451

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1465	0.02963
1	CONS	/CONS	0.4416	0.01513

-2*log(lh) is 3705.68

STEP 9:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.3022	0.07701
CIND96	0.03675	0.002189
CMTH96	0.01664	0.001557
PSEX	-0.3131	0.03351
AGE1	-0.02789	0.04492
AGE2	-0.09597	0.04727
AGE3	-0.3572	0.05149
M1DUM	-0.09908	0.07066
M2DUM	-0.08734	0.06385
M3DUM	-0.02142	0.05746

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1483	0.02995
1	CONS	/CONS	0.4413	0.01512

-2*log(lh) is 3704.83

STEP 10:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1347	0.07529
CIND96	0.03665	0.002187
CMTH96	0.01635	0.001556
PSEX	-0.3166	0.03351
AGE1	-0.01854	0.04497
AGE2	-0.08274	0.0475
AGE3	-0.3346	0.05223
FEDUC	0.02036	0.007002

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1465	0.02961
1	CONS	/CONS	0.4405	0.01509

-2*log(lh) is 3701.12

STEP 11:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.172	0.07314
CIND96	0.03679	0.002187
CMTH96	0.01643	0.001558
PSEX	-0.3166	0.0336
AGE1	-0.02102	0.04508
AGE2	-0.08415	0.04792
AGE3	-0.3376	0.05288
MEDUC	0.01607	0.007097

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1473	0.02977
1	CONS	/CONS	0.4413	0.01512

-2*log(lh) is 3704.43

STEP 12:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1937	0.09444
CIND96	0.03665	0.002186
CMTH96	0.01638	0.001556
PSEX	-0.3167	0.03351
AGE1	-0.01627	0.04501
AGE2	-0.07718	0.04779
AGE3	-0.3265	0.0528
FEDUC	0.0203	0.007
FMSIZE	-0.01026	0.009926

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1463	0.02957
1	CONS	/CONS	0.4402	0.01508

-2*log(lh) is 3700.05

STEP 13:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1564	0.08941
CIND96	0.03668	0.002188
CMTH96	0.01634	0.001556
PSEX	-0.3172	0.03354
AGE1	-0.01724	0.04506
AGE2	-0.07905	0.0482
AGE3	-0.3302	0.05313
FEDUC	0.02022	0.007009
CHILDREN	-0.007124	0.01587

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1466	0.02962
1	CONS	/CONS	0.4404	0.01509

-2*log(lh) is 3700.91

STEP 14:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1636	0.0805
CIND96	0.03667	0.002186
CMTH96	0.01633	0.001556
PSEX	-0.3186	0.03356
AGE1	-0.01367	0.04521
AGE2	-0.07546	0.04803
AGE3	-0.3253	0.05302
FEDUC	0.02006	0.007006
CHLD_ORD	-0.0133	0.01314

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1464	0.02972
1	CONS	/CONS	0.4402	0.01509

-2*log(lh) is 3700.09

STEP 15:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1434	0.07628
CIND96	0.03669	0.002188
CMTH96	0.01632	0.001557
PSEX	-0.3173	0.03353
AGE1	-0.01543	0.04519
AGE2	-0.0787	0.04786
AGE3	-0.3302	0.05261
FEDUC	0.02043	0.007002
SOCPRES	-0.009576	0.01392

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1461	0.02954
1	CONS	/CONS	0.4404	0.01509

-2*log(lh) is 3700.64

STEP 16:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1212	0.1065
CIND96	0.03663	0.00219
CMTH96	0.01635	0.001556
PSEX	-0.3166	0.03351
AGE1	-0.01903	0.04505
AGE2	-0.08347	0.04767
AGE3	-0.3352	0.05234
FEDUC	0.02063	0.007155
HLANG	0.003958	0.02205

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1466	0.02964
1	CONS	/CONS	0.4405	0.01509

-2*log(lh) is 3701.08

STEP 17:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1344	0.07553
CIND96	0.03664	0.002187
CMTH96	0.01635	0.001556
PSEX	-0.3167	0.03358
AGE1	-0.0186	0.04499
AGE2	-0.08286	0.04757
AGE3	-0.3348	0.05242
FEDUC	0.0204	0.007065
PARENCT	-0.0007286	0.01586

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1465	0.02963
1	CONS	/CONS	0.4405	0.01509

-2*log(lh) is 3701.11

STEP 18:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)

CONS	0.1755	0.09041					
CIND96	0.03665	0.002187	2	CONS	/CONS	0.1461	0.02961
CMTH96	0.01634	0.001556					
PSEX	-0.3207	0.03388	1	CONS	/CONS	0.4403	0.01509
AGE1	-0.01871	0.04496					
AGE2	-0.08369	0.04751	-2*log(lh) is	3700.45			
AGE3	-0.335	0.05223					
FEDUC	0.02077	0.007018					
TIMEHW	-0.01551	0.01905					

STEP 19:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	0.004174	0.09137					
CIND96	0.03633	0.002187	2	CONS	/CONS	0.1451	0.02935
CMTH96	0.01623	0.001554					
PSEX	-0.3112	0.03353	1	CONS	/CONS	0.439	0.01504
AGE1	-0.0147	0.04492					
AGE2	-0.07471	0.04753	-2*log(lh) is	3694.85			
AGE3	-0.323	0.05235					
FEDUC	0.01906	0.007009					
PRBOOK	0.04981	0.01988					

STEP 20:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	0.005178	0.09144					
CIND96	0.0363	0.002189	2	CONS	/CONS	0.1451	0.02935
CMTH96	0.01623	0.001554					
PSEX	-0.3112	0.03353	1	CONS	/CONS	0.439	0.01504
AGE1	-0.01433	0.04494					
AGE2	-0.07433	0.04754	-2*log(lh) is	3694.77			
AGE3	-0.3224	0.05239					
FEDUC	0.01844	0.007357					
PRBOOK	0.04931	0.01997					
NEWSPPR	0.0109	0.03885					

STEP 21:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	0.004246	0.09341					
CIND96	0.03633	0.002187	2	CONS	/CONS	0.1448	0.02937
CMTH96	0.01625	0.001554					
PSEX	-0.3136	0.03361	1	CONS	/CONS	0.4386	0.01504
AGE1	-0.01448	0.04496					
AGE2	-0.0777	0.04769	-2*log(lh) is	3693.31			
AGE3	-0.3272	0.05249					
FEDUC	0.01915	0.007107					
PRBOOK	0.04955	0.01992					
STPL1	-0.0131	0.04021					
STPL2	0.06318	0.05748					

APPENDIX D.6b
EXAMINING CLASS VARIABLES FOR GRADE 6 INDONESIAN LANGUAGE

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.06074	0.1002
CIND96	0.03638	0.002187
CMTH96	0.01622	0.001553
PSEX	-0.3106	0.03353
AGE1	-0.01465	0.04492
AGE2	-0.07506	0.04752
AGE3	-0.3226	0.05234
FEDUC	0.01913	0.007007
PRBOOK	0.0501	0.01987
TSEX	-0.1391	0.1035

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1403	0.02848
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3693.07

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.3704	0.3149
CIND96	0.0364	0.002187
CMTH96	0.01617	0.001554
PSEX	-0.3105	0.03353
AGE1	-0.01508	0.04492
AGE2	-0.07518	0.04752
AGE3	-0.3235	0.05234
FEDUC	0.01901	0.007007
PRBOOK	0.05052	0.01988
TAGE	-0.009032	0.007433

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1416	0.0287
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3693.39

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.05053	0.2134
CIND96	0.03633	0.002187
CMTH96	0.01623	0.001554
PSEX	-0.311	0.03354
AGE1	-0.01465	0.04492
AGE2	-0.07479	0.04753
AGE3	-0.3231	0.05235
FEDUC	0.0191	0.00701
PRBOOK	0.04998	0.01989
TEDUC	-0.005988	0.02491

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1449	0.02936
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3694.79

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1582	0.1666
CIND96	0.03634	0.002186
CMTH96	0.01621	0.001554
PSEX	-0.3108	0.03353
AGE1	-0.0151	0.04492
AGE2	-0.07487	0.04752
AGE3	-0.3231	0.05234
FEDUC	0.01907	0.007007
PRBOOK	0.05085	0.01989
TCREXPER	-0.008506	0.007697

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1421	0.02879
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3693.64

STEP 5:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.2959	0.2755
CIND96	0.03633	0.002186
CMTH96	0.01622	0.001554
PSEX	-0.3105	0.03353
AGE1	-0.01484	0.04492
AGE2	-0.07499	0.04752
AGE3	-0.3235	0.05235
FEDUC	0.01914	0.007008
PRBOOK	0.05086	0.01989
TRANK_OR	-0.05549	0.04943

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1419	0.02876
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3693.6

STEP 6:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.07423	0.1384
CIND96	0.03633	0.002187
CMTH96	0.01625	0.001554
PSEX	-0.3111	0.03353
AGE1	-0.01472	0.04492
AGE2	-0.07433	0.04753
AGE3	-0.3226	0.05235
FEDUC	0.01904	0.007008
PRBOOK	0.04981	0.01988
TCORRECT	0.01886	0.02505

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1436	0.0291
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3694.29

STEP 7:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1493	0.1376
CIND96	0.03628	0.002186
CMTH96	0.01624	0.001553
PSEX	-0.3113	0.03353
AGE1	-0.01568	0.04492
AGE2	-0.07603	0.04753
AGE3	-0.3249	0.05236
FEDUC	0.01901	0.007007
PRBOOK	0.04851	0.01989
LESSNPLN	-0.03019	0.02146

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1399	0.0284
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3692.91

STEP 8:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.05919	0.1678
CIND96	0.03636	0.002188
CMTH96	0.0162	0.001556
PSEX	-0.3112	0.03353
AGE1	-0.01481	0.04492
AGE2	-0.07462	0.04753
AGE3	-0.323	0.05235
FEDUC	0.01907	0.007009
PRBOOK	0.04985	0.01988
HMWEEK	-0.01176	0.03009

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1447	0.02929
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3694.7

STEP 9:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.006899	0.1326
CIND96	0.03631	0.002187
CMTH96	0.01623	0.001555
PSEX	-0.3115	0.03354
AGE1	-0.01468	0.04492
AGE2	-0.07434	0.04753
AGE3	-0.3226	0.05236
FEDUC	0.01894	0.007017
PRBOOK	0.04979	0.01992
IND1TR	-0.03208	0.139
IND2TR	0.02571	0.1378

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1446	0.02924
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3694.61

STEP 10:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.01029	0.09139
CIND96	0.03635	0.002187
CMTH96	0.01619	0.001555
PSEX	-0.3112	0.03353
AGE1	-0.01499	0.04492
AGE2	-0.07446	0.04753
AGE3	-0.323	0.05235
FEDUC	0.01879	0.007015
PRBOOK	0.04995	0.01988
TRADITIO	-0.05151	0.05547

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1428	0.02892
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3693.99

STEP 11:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.004075	0.09121
CIND96	0.03632	0.002187
CMTH96	0.01623	0.001554
PSEX	-0.3112	0.03353
AGE1	-0.01434	0.04492
AGE2	-0.07458	0.04753
AGE3	-0.3229	0.05235
FEDUC	0.01909	0.007008
PRBOOK	0.04934	0.01989
INOVATIO	-0.03804	0.04887

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1434	0.02904
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3694.25

STEP 12:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.002568	0.09122
CIND96	0.03631	0.002186
CMTH96	0.01618	0.001555
PSEX	-0.3113	0.03353
AGE1	-0.01487	0.04492
AGE2	-0.0745	0.04753
AGE3	-0.3229	0.05235
FEDUC	0.01898	0.007009
PRBOOK	0.05016	0.01988
TASK	0.04427	0.05268

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1434	0.02903
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3694.15

STEP 13:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.0005833	0.09064
CIND96	0.0364	0.002187
CMTH96	0.01621	0.001553
PSEX	-0.3109	0.03353
AGE1	-0.01471	0.04492
AGE2	-0.076	0.04753
AGE3	-0.3244	0.05235
FEDUC	0.01929	0.007007
PRBOOK	0.04948	0.01986
PEOPLE	-0.08849	0.05287

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1374	0.02796
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3692.12

STEP 14:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.01728	0.1001
CIND96	0.03631	0.002187
CMTH96	0.01623	0.001554
PSEX	-0.3111	0.03353
AGE1	-0.01469	0.04492
AGE2	-0.07491	0.04753
AGE3	-0.3232	0.05235
FEDUC	0.01916	0.007015
PRBOOK	0.05009	0.0199
INDBOOK	-0.001008	0.003147

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1448	0.02936
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3694.75

STEP 15:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.03813	0.1985
CIND96	0.03633	0.002187
CMTH96	0.01623	0.001554

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.145	0.02938

PSEX	-0.3115	0.03355	1	CONS	/CONS	0.439	0.01504
AGE1	-0.01479	0.04492					
AGE2	-0.07459	0.04753	-2*log(lh) is		3694.79		
AGE3	-0.3229	0.05235					
FEDUC	0.01898	0.007017					
PRBOOK	0.04955	0.01991					
MLPUP	0.002677	0.01115					

STEP 16:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.2496	0.1941					
CIND96	0.03645	0.002188	2	CONS	/CONS	0.1395	0.02832
CMTH96	0.01621	0.001553					
PSEX	-0.3094	0.03355	1	CONS	/CONS	0.439	0.01504
AGE1	-0.01463	0.04492					
AGE2	-0.07426	0.04752	-2*log(lh) is		3692.7		
AGE3	-0.3222	0.05235					
FEDUC	0.0188	0.007009					
PRBOOK	0.04852	0.01988					
FMPUP	0.01573	0.01064					

STEP 17:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.2368	0.2522					
CIND96	0.03638	0.002187	2	CONS	/CONS	0.1424	0.02887
CMTH96	0.01621	0.001554					
PSEX	-0.3113	0.03353	1	CONS	/CONS	0.439	0.01504
AGE1	-0.01498	0.04492					
AGE2	-0.07406	0.04753	-2*log(lh) is		3693.81		
AGE3	-0.3225	0.05235					
FEDUC	0.01873	0.007016					
PRBOOK	0.04843	0.01992					
CLSIZE	0.007549	0.007371					

STEP 18:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	0.09588	0.1499					
CIND96	0.03638	0.002188	2	CONS	/CONS	0.1436	0.02909
CMTH96	0.01623	0.001554					
PSEX	-0.3097	0.03358	1	CONS	/CONS	0.439	0.01504
AGE1	-0.01446	0.04492					
AGE2	-0.07467	0.04752	-2*log(lh) is		3694.26		
AGE3	-0.3228	0.05235					
FEDUC	0.01911	0.007008					
PRBOOK	0.04987	0.01988					
MFPROP	-0.08557	0.1109					

APPENDIX D.6c
EXAMINING SCHOOL VARIABLES FOR GRADE 6 INDONESIAN LANGUAGE

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.004054	0.09855
CIND96	0.03634	0.002188
CMTH96	0.01623	0.001554
PSEX	-0.311	0.03353
AGE1	-0.01478	0.04492
AGE2	-0.07487	0.04753
AGE3	-0.3231	0.05235
FEDUC	0.01907	0.007009
PRBOOK	0.0496	0.01991
HSEX	0.02393	0.1075

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.145	0.02933
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3694.8

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1826	0.486
CIND96	0.03633	0.002187
CMTH96	0.01624	0.001554
PSEX	-0.3111	0.03353
AGE1	-0.01471	0.04492
AGE2	-0.07473	0.04753
AGE3	-0.3229	0.05235
FEDUC	0.01914	0.007012
PRBOOK	0.04969	0.01988
HAGE	-0.003394	0.009077

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1448	0.02937
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3694.71

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.07344	0.2274
CIND96	0.03633	0.002187
CMTH96	0.01625	0.001555
PSEX	-0.3111	0.03353
AGE1	-0.01478	0.04492
AGE2	-0.07468	0.04753
AGE3	-0.3229	0.05235
FEDUC	0.01909	0.007009
PRBOOK	0.04959	0.01989
HTCHEXPR	-0.002204	0.006626

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1449	0.02931
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3694.74

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.007488	0.115
CIND96	0.03632	0.002187
CMTH96	0.01623	0.001555
PSEX	-0.3112	0.03353
AGE1	-0.01469	0.04492
AGE2	-0.0747	0.04753
AGE3	-0.323	0.05235
FEDUC	0.01908	0.007015
PRBOOK	0.0498	0.01989
HEADEXPR	-0.0003321	0.006996

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1451	0.02935
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3694.85

STEP 5:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.288	0.2037
CIND96	0.03625	0.002186
CMTH96	0.01624	0.001553
PSEX	-0.3111	0.03352
AGE1	-0.01503	0.04491
AGE2	-0.07411	0.04752
AGE3	-0.3228	0.05234
FEDUC	0.019	0.007006
PRBOOK	0.05133	0.01988
HEDUC	0.03597	0.02247

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.139	0.02823
1	CONS	/CONS	0.4389	0.01504

-2*log(lh) is 3692.33

STEP 6:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.05949	0.4176
CIND96	0.03633	0.002187
CMTH96	0.01622	0.001555
PSEX	-0.3112	0.03353
AGE1	-0.01475	0.04492
AGE2	-0.07468	0.04753
AGE3	-0.323	0.05235
FEDUC	0.01902	0.007015
PRBOOK	0.0499	0.01989
HRANK_OR	0.008208	0.05253

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1451	0.02937
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3694.83

STEP 7:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.02781	0.2475
CIND96	0.03633	0.002187
CMTH96	0.01623	0.001554
PSEX	-0.3112	0.03353
AGE1	-0.01472	0.04492
AGE2	-0.07468	0.04753
AGE3	-0.323	0.05235
FEDUC	0.01908	0.007009
PRBOOK	0.04971	0.0199
PROFGRW	0.007657	0.05506

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1451	0.02934
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3694.83

STEP 8:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-1.072e-05	0.1649
CIND96	0.03632	0.002188
CMTH96	0.01623	0.001557
PSEX	-0.3112	0.03353
AGE1	-0.0147	0.04492
AGE2	-0.0747	0.04753
AGE3	-0.323	0.05235
FEDUC	0.01906	0.007009
PRBOOK	0.04981	0.01988
MEETING	0.0009537	0.03129

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1451	0.02935
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3694.85

STEP 9:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.09186	0.2063
CIND96	0.03634	0.002187
CMTH96	0.01623	0.001554
PSEX	-0.3109	0.03353
AGE1	-0.01444	0.04492
AGE2	-0.07446	0.04753
AGE3	-0.3229	0.05235
FEDUC	0.0191	0.007009
PRBOOK	0.04992	0.01988
CLSHOUR	-0.01383	0.02917

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1446	0.02936
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3694.63

STEP 10:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.07234	0.1582
CIND96	0.03631	0.002187
CMTH96	0.01625	0.001555
PSEX	-0.3114	0.03353
AGE1	-0.01471	0.04492
AGE2	-0.07451	0.04753
AGE3	-0.3228	0.05235
FEDUC	0.01896	0.007012
PRBOOK	0.04904	0.01993
HMHOUR	-0.009092	0.01722

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1444	0.02922
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3694.57

STEP 11:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.08987	0.2951
CIND96	0.03633	0.002187
CMTH96	0.01624	0.001554
PSEX	-0.311	0.03353
AGE1	-0.01448	0.04492
AGE2	-0.07472	0.04753
AGE3	-0.3229	0.05235
FEDUC	0.01913	0.007012
PRBOOK	0.04971	0.01989
SCHLBOOK	-0.0001661	0.0005439

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.145	0.02932
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3694.76

STEP 12:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2092	0.2102
CIND96	0.0364	0.002188
CMTH96	0.0162	0.001554
PSEX	-0.3114	0.03353
AGE1	-0.01569	0.04493
AGE2	-0.07481	0.04752
AGE3	-0.323	0.05234
FEDUC	0.01856	0.007023
PRBOOK	0.04854	0.01991
MALEP	0.002221	0.001973

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1419	0.02877
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3693.6

STEP 13:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2693	0.1867
CIND96	0.03643	0.002187
CMTH96	0.01621	0.001553
PSEX	-0.3107	0.03353
AGE1	-0.01606	0.04492
AGE2	-0.07508	0.04752
AGE3	-0.3227	0.05234
FEDUC	0.01836	0.00702
PRBOOK	0.04742	0.01991
FMLP	0.003021	0.001805

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1381	0.02807
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3692.11

STEP 14:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.349	0.3121
CIND96	0.03633	0.002186
CMTH96	0.01627	0.001554
PSEX	-0.3101	0.03354
AGE1	-0.0147	0.04492
AGE2	-0.07496	0.04752
AGE3	-0.3227	0.05235
FEDUC	0.01907	0.007007
PRBOOK	0.04904	0.01988
MFPUP	-0.3178	0.275

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1416	0.02874
1	CONS	/CONS	0.439	0.01504

-2*log(lh) is 3693.53

STEP 15:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.0336	0.1363
CIND96	0.03634	0.002187
CMTH96	0.01624	0.001555
PSEX	-0.311	0.03354

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.1449	0.02935
1	CONS	/CONS	0.439	0.01504

AGE1	-0.01447	0.04493						
AGE2	-0.07455	0.04753	-2*log(lh) is	3694.77				
AGE3	-0.3226	0.05237						
FEDUC	0.01912	0.007011						
PRBOOK	0.04988	0.01988						
MALETR	-0.01348	0.04631						

STEP 16:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.4516	0.212	2	CONS	/CONS	0.1315	0.02685
CIND96	0.03648	0.002186	1	CONS	/CONS	0.439	0.01504
CMTH96	0.01616	0.001552					
PSEX	-0.3107	0.03352	-2*log(lh) is	3689.47			
AGE1	-0.01412	0.04491					
AGE2	-0.0739	0.04751					
AGE3	-0.3209	0.05234					
FEDUC	0.01842	0.007009					
PRBOOK	0.04758	0.01986					
FMLTR	0.08042	0.0339					

STEP 17:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.5973	0.3406	2	CONS	/CONS	0.1308	0.02685
CIND96	0.03652	0.002187	1	CONS	/CONS	0.439	0.01504
CMTH96	0.01618	0.001552					
PSEX	-0.3105	0.03352	-2*log(lh) is	3689.17			
AGE1	-0.01448	0.04492					
AGE2	-0.07388	0.04751					
AGE3	-0.3205	0.05234					
FEDUC	0.01831	0.007012					
PRBOOK	0.04713	0.01987					
FMLTR	0.08432	0.03457					
PTRATIO	0.005149	0.009434					

STEP 18:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.8659	0.3234	2	CONS	/CONS	0.1249	0.02566
CIND96	0.0365	0.002185	1	CONS	/CONS	0.439	0.01504
CMTH96	0.01604	0.001553					
PSEX	-0.3122	0.03353	-2*log(lh) is	3686.74			
AGE1	-0.01516	0.04491					
AGE2	-0.0741	0.0475					
AGE3	-0.3218	0.05233					
FEDUC	0.01787	0.007015					
PRBOOK	0.04701	0.01983					
FMLTR	0.1336	0.04594					
MFTCR	0.2407	0.164					

EXAMINING THE RANDOM PART:

STEP 1:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.4515	0.212	2	CONS	/CONS	0.1315	0.02685
CIND96	0.03648	0.002186	1	CONS	/CONS	0.439	0.01504
CMTH96	0.01616	0.001552	1	CIND96	/CONS	-1.875e-05	0.0008013
PSEX	-0.3107	0.03352					
AGE1	-0.01416	0.04491	-2*log(lh) is	3689.47			
AGE2	-0.07396	0.04751					
AGE3	-0.3209	0.05234					
FEDUC	0.01843	0.007009					
PRBOOK	0.04759	0.01986					
FMLTR	0.08039	0.03391					

STEP 2:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.4516	0.212	2	CONS	/CONS	0.1315	0.02685
CIND96	0.03648	0.002186	1	CONS	/CONS	0.439	0.01504
CMTH96	0.01616	0.001552	1	CMTH96	/CONS	2.317e-06	0.000547
PSEX	-0.3107	0.03352					
AGE1	-0.01412	0.04491	-2*log(lh) is	3689.47			
AGE2	-0.07389	0.04751					
AGE3	-0.3209	0.05234					
FEDUC	0.01842	0.007009					
PRBOOK	0.04758	0.01986					
FMLTR	0.08042	0.0339					

STEP 3:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.4481	0.2122	2	CONS	/CONS	0.1318	0.02691
CIND96	0.03654	0.002186	1	CONS	/CONS	0.423	0.02047
CMTH96	0.01618	0.001551	1	PSEX	/CONS	0.01618	0.01527
PSEX	-0.3103	0.03354					
AGE1	-0.01519	0.0448	-2*log(lh) is	3688.37			
AGE2	-0.07737	0.04741					
AGE3	-0.3229	0.05232					
FEDUC	0.01808	0.007007					
PRBOOK	0.04708	0.01982					
FMLTR	0.08062	0.03395					

STEP 4:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.4541	0.2121					
CIND96	0.03609	0.002182	2	CONS	/CONS	0.1317	0.02687
CMTH96	0.01646	0.001546					
PSEX	-0.3126	0.03336	1	CONS	/CONS	0.4634	0.03164
AGE1	-0.01268	0.04396	1	AGE1	/CONS	-0.04451	0.0203
AGE2	-0.07282	0.04821	1	AGE2	/CONS	-0.00855	0.02202
AGE3	-0.3196	0.05378	1	AGE3	/CONS	0.008367	0.02375
FEDUC	0.01891	0.006962					
PRBOOK	0.0468	0.01977	-2*log(lh) is			3681.57	
FMLTR	0.08073	0.03391					

APPENDIX D.7a
EXAMINING PUPIL VARIABLES FOR GRADE 6 MATHEMATICS

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.0108	0.07214

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2874	0.05702
1	CONS	/CONS	0.6978	0.02391

-2*log(lh) is 4524.37

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.005915	0.06747
CMTH96	0.04083	0.001327

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2571	0.04974
1	CONS	/CONS	0.4501	0.01542

-2*log(lh) is 3769.25

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.06157	0.06921
CMTH96	0.04019	0.00133
SQ-MTH96	0.0002968	7.332e-05

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2602	0.05039
1	CONS	/CONS	0.4457	0.01527

-2*log(lh) is 3752.95

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.05881	0.06906
CMTH96	0.0312	0.001513
SQ-MTH96	0.0002752	7.079e-05
CIND96	0.02298	0.002044

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2608	0.05029
1	CONS	/CONS	0.4149	0.01421

-2*log(lh) is 3631.04

STEP 5:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.06981	0.06966
CMTH96	0.03112	0.001514
SQ-MTH96	0.0002557	7.254e-05
CIND96	0.02314	0.002047
SQ-IND96	0.0001639	0.000134

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2609	0.05032
1	CONS	/CONS	0.4145	0.01421

-2*log(lh) is 3629.54

STEP 6:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.04943	0.07089
CMTH96	0.0312	0.001513
SQ-MTH96	0.0002749	7.079e-05
CIND96	0.0227	0.002097
PSEX	-0.01894	0.03239

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2607	0.05032
1	CONS	/CONS	0.4148	0.01422

-2*log(lh) is 3630.69

STEP 7:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.06077	0.07424
CMTH96	0.03002	0.001502
SQ-MTH96	0.0003034	7.004e-05
CIND96	0.02041	0.002053
AGE1	-0.06318	0.04272
AGE2	-0.1301	0.04476
AGE3	-0.3285	0.04852

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2604	0.05056
1	CONS	/CONS	0.4032	0.01381

-2*log(lh) is 3582.15

STEP 8:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.08154	0.07833
CMTH96	0.02993	0.001504
SQ-MTH96	0.0002975	7.024e-05
CIND96	0.02032	0.002055
AGE1	-0.0609	0.04289
AGE2	-0.1251	0.04525
AGE3	-0.3211	0.04919
F1DUM	-0.04394	0.04284
F2DUM	-0.01484	0.04264

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2603	0.05017
1	CONS	/CONS	0.403	0.01381

-2*log(lh) is 3581

STEP 9:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1255	0.08666
CMTH96	0.02983	0.001504
SQ-MTH96	0.0002975	7.002e-05
CIND96	0.02035	0.002054
AGE1	-0.05958	0.04292
AGE2	-0.1248	0.04521
AGE3	-0.319	0.04919
M1DUM	-0.09808	0.06767
M2DUM	-0.03275	0.06108
M3DUM	-0.08712	0.05498

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2597	0.05023
1	CONS	/CONS	0.4023	0.01381

-2*log(lh) is 3577.92

STEP 10:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.01693	0.08586
CMTH96	0.02981	0.001505
SQ-MTH96	0.0003035	6.996e-05
CIND96	0.02026	0.002053
AGE1	-0.0535	0.04301
AGE2	-0.1154	0.04544
AGE3	-0.3072	0.04987
FEDUC	0.01016	0.006708

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.262	0.05046
1	CONS	/CONS	0.4024	0.01378

-2*log(lh) is 3578.87

STEP 11:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.003144	0.08395
CMTH96	0.02985	0.001505
SQ-MTH96	0.000301	7.001e-05
CIND96	0.02034	0.002053
AGE1	-0.05464	0.04308
AGE2	-0.1155	0.0458
AGE3	-0.3079	0.05044
MEDUC	0.01004	0.006786

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2617	0.05041
1	CONS	/CONS	0.4026	0.01379

-2*log(lh) is 3579.96

STEP 12:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.118	0.09227
CMTH96	0.03005	0.001502
SQ-MTH96	0.0003008	7.006e-05
CIND96	0.02042	0.002053
AGE1	-0.06099	0.04276
AGE2	-0.1246	0.04506
AGE3	-0.3204	0.04911
FMSIZE	-0.009945	0.009515

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2607	0.05054
1	CONS	/CONS	0.4029	0.01382

-2*log(lh) is 3581.06

STEP 13:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.01663	0.08653
CMTH96	0.03006	0.001502
SQ-MTH96	0.000308	7.017e-05
CIND96	0.02032	0.002055
AGE1	-0.06598	0.0428
AGE2	-0.1383	0.0455
AGE3	-0.3382	0.04949
CHILDREN	0.01507	0.0152

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2601	0.05011
1	CONS	/CONS	0.403	0.01381

-2*log(lh) is 3581.17

STEP 14:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.03174	0.0783
CMTH96	0.03006	0.001501
SQ-MTH96	0.0003053	7.003e-05
CIND96	0.02036	0.002053
AGE1	-0.06864	0.04296
AGE2	-0.1384	0.04531
AGE3	-0.3391	0.04934
CHLD_ORD	0.01462	0.01255

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2603	0.05062
1	CONS	/CONS	0.4029	0.01381

-2*log(lh) is 3580.79

STEP 15:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.04651	0.07527
CMTH96	0.03009	0.001502
SQ-MTH96	0.0003036	7.001e-05
CIND96	0.02031	0.002054
AGE1	-0.06805	0.04291
AGE2	-0.1365	0.04507
AGE3	-0.3353	0.04884
SOCPRES	0.01554	0.01333

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2607	0.0504
1	CONS	/CONS	0.4029	0.01381

-2*log(lh) is 3580.79

STEP 16:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.03271	0.09682
CMTH96	0.03003	0.001502
SQ-MTH96	0.0003041	7.005e-05
CIND96	0.02037	0.002055
AGE1	-0.06483	0.04288
AGE2	-0.1326	0.04509
AGE3	-0.331	0.04883
HLANG	0.00935	0.02071

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2604	0.05023
1	CONS	/CONS	0.4032	0.01381

-2*log(lh) is 3581.95

STEP 17:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.05981	0.07426
CMTH96	0.03008	0.001501
SQ-MTH96	0.0003	7.001e-05
CIND96	0.0204	0.002052
AGE1	-0.06679	0.04274
AGE2	-0.136	0.04487
AGE3	-0.3382	0.04883
PARENCT	-0.0249	0.01506

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2607	0.05033
1	CONS	/CONS	0.4026	0.01381

-2*log(lh) is 3579.42

STEP 18:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.03731	0.0888
CMTH96	0.03002	0.001502
SQ-MTH96	0.0003043	7.006e-05
CIND96	0.02037	0.002055
AGE1	-0.06279	0.04273
AGE2	-0.1293	0.04479

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2604	0.05018
1	CONS	/CONS	0.4032	0.01381

-2*log(lh) is 3581.92

AGE3	-0.3277	0.04854
TIMEHW	0.008698	0.01807

STEP 19:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.05474	0.09063
CMTH96	0.0299	0.001501
SQ-MTH96	0.0003021	6.995e-05
CIND96	0.02006	0.002057
AGE1	-0.059	0.04271
AGE2	-0.122	0.04485
AGE3	-0.3165	0.04876
PRBOOK	0.04236	0.01919

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2584	0.05026
1	CONS	/CONS	0.4022	0.01381

-2*log(lh) is 3577.28

STEP 20:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.05894	0.09104
CMTH96	0.02988	0.001501
SQ-MTH96	0.0003015	6.995e-05
CIND96	0.02001	0.002059
AGE1	-0.05764	0.04279
AGE2	-0.1202	0.04499
AGE3	-0.3139	0.04903
PRBOOK	0.04133	0.0193
NEWSPPR	0.01767	0.03551

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2587	0.0498
1	CONS	/CONS	0.4021	0.01378

-2*log(lh) is 3577.04

STEP 21:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.04617	0.09148
CMTH96	0.02986	0.001501
SQ-MTH96	0.0003009	6.991e-05
CIND96	0.02004	0.002056
AGE1	-0.05718	0.04279
AGE2	-0.1158	0.04512
AGE3	-0.3089	0.04904
PRBOOK	0.04172	0.01923
STPL1	-0.007814	0.0381
STPL2	-0.08367	0.05478

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2579	0.0498
1	CONS	/CONS	0.4016	0.01378

-2*log(lh) is 3574.94

APPENDIX D.7b
EXAMINING CLASS VARIABLES FOR GRADE 6 MATHEMATICS

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.05128	0.1068
CMTH96	0.0299	0.001501
SQ-MTH96	0.0003021	6.995e-05
CIND96	0.02007	0.002057
AGE1	-0.059	0.04271
AGE2	-0.122	0.04485
AGE3	-0.3165	0.04876
PRBOOK	0.04237	0.01919
TSEX	-0.008356	0.1368

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2584	0.04957
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3577.28

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.2103	0.4059
CMTH96	0.02987	0.001501
SQ-MTH96	0.0003022	6.995e-05
CIND96	0.02009	0.002057
AGE1	-0.05913	0.04271
AGE2	-0.1221	0.04485
AGE3	-0.3165	0.04875
PRBOOK	0.04263	0.01919
TAGE	-0.006523	0.00974

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2565	0.0498
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3576.84

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2655	0.2679
CMTH96	0.02989	0.001501
SQ-MTH96	0.000303	6.996e-05
CIND96	0.02006	0.002057
AGE1	-0.05905	0.04271
AGE2	-0.1217	0.04485
AGE3	-0.3161	0.04876
PRBOOK	0.04195	0.01919
TEDUC	0.02694	0.03225

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2552	0.04931
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3576.59

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.06418	0.2059
CMTH96	0.0299	0.001501
SQ-MTH96	0.000302	6.995e-05
CIND96	0.02006	0.002057
AGE1	-0.05899	0.04271
AGE2	-0.122	0.04485
AGE3	-0.3165	0.04876
PRBOOK	0.04233	0.0192
TCREXPER	0.0005165	0.01012

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2584	0.04986
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3577.28

STEP 5:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.04456	0.3551
CMTH96	0.0299	0.001501
SQ-MTH96	0.000302	6.995e-05
CIND96	0.02006	0.002057
AGE1	-0.05904	0.04271
AGE2	-0.122	0.04485
AGE3	-0.3166	0.04876
PRBOOK	0.04255	0.0192
TRANK_OR	-0.01876	0.06488

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.258	0.04981
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3577.2

STEP 6:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1374	0.1632
CMTH96	0.0299	0.001501
SQ-MTH96	0.0003022	6.995e-05
CIND96	0.02007	0.002057
AGE1	-0.05901	0.04271
AGE2	-0.1217	0.04485
AGE3	-0.3162	0.04876
PRBOOK	0.04236	0.01918
TCORRECT	0.01988	0.03266

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2566	0.04948
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3576.91

STEP 7:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.05946	0.1621
CMTH96	0.0299	0.001501
SQ-MTH96	0.0003021	6.995e-05
CIND96	0.02006	0.002057
AGE1	-0.05898	0.04271
AGE2	-0.122	0.04486
AGE3	-0.3164	0.04876
PRBOOK	0.04239	0.0192
LESSNPLN	0.0009979	0.0284

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2584	0.04981
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3577.28

STEP 8:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.05369	0.2045
CMTH96	0.02986	0.001502
SQ-MTH96	0.0003018	6.995e-05
CIND96	0.0201	0.002057

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2569	0.0498
1	CONS	/CONS	0.4022	0.01378

AGE1	-0.05915	0.04271	
AGE2	-0.1219	0.04485	-2*log(lh) is 3576.93
AGE3	-0.3165	0.04876	
PRBOOK	0.04241	0.01919	
HMWEEK	-0.02315	0.03914	

STEP 9:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2228	0.1475
CMTH96	0.02994	0.001499
SQ-MTH96	0.000297	6.993e-05
CIND96	0.02011	0.002056
AGE1	-0.05816	0.04271
AGE2	-0.119	0.04485
AGE3	-0.3126	0.04875
PRBOOK	0.04155	0.01917
MTH1TR	0.01958	0.1753
MTH2TR	0.362	0.166

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2279	0.04429
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3570.2

STEP 10:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2214	0.1472
CMTH96	0.02996	0.0015
SQ-MTH96	0.0002973	6.993e-05
CIND96	0.02009	0.002056
AGE1	-0.05809	0.04271
AGE2	-0.1192	0.04486
AGE3	-0.3128	0.04875
PRBOOK	0.04156	0.01917
MTH1TR	0.006752	0.1763
MTH2TR	0.3599	0.1656
TRADITIO	0.0388	0.0692

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2267	0.04423
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3569.89

STEP 11:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2028	0.1504
CMTH96	0.02993	0.001499
SQ-MTH96	0.0002977	6.994e-05
CIND96	0.0201	0.002056
AGE1	-0.05802	0.04271
AGE2	-0.119	0.04485
AGE3	-0.3128	0.04875
PRBOOK	0.04137	0.01917
MTH1TR	0.001923	0.1769
MTH2TR	0.3288	0.1736
INOVATIO	-0.03998	0.06316

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2262	0.04391
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3569.8

STEP 12:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2231	0.1475
CMTH96	0.02994	0.0015
SQ-MTH96	0.0002971	6.993e-05
CIND96	0.02011	0.002056
AGE1	-0.05813	0.04271
AGE2	-0.119	0.04486
AGE3	-0.3126	0.04875
PRBOOK	0.0415	0.01917
MTH1TR	0.01949	0.1752
MTH2TR	0.3636	0.1664
TASK	-0.008853	0.06528

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2278	0.04426
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3570.18

STEP 13:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2139	0.1436
CMTH96	0.02991	0.001498
SQ-MTH96	0.0002982	6.992e-05
CIND96	0.02018	0.002055
AGE1	-0.05831	0.0427
AGE2	-0.1198	0.04485
AGE3	-0.3134	0.04875
PRBOOK	0.04135	0.01915
MTH1TR	-0.01527	0.1708
MTH2TR	0.3572	0.1609
PEOPLE	-0.1265	0.06503

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2132	0.04157
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3566.54

STEP 14:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1917	0.1631
CMTH96	0.02994	0.001499
SQ-MTH96	0.0002974	6.993e-05
CIND96	0.0201	0.002056
AGE1	-0.05822	0.04271
AGE2	-0.1192	0.04486
AGE3	-0.3129	0.04876
PRBOOK	0.04182	0.01918
MTH1TR	0.01979	0.175
MTH2TR	0.3583	0.1659
MTHBOOK	-0.0019	0.004295

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2271	0.04431
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3570.01

STEP 15:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.3212	0.2923
CMTH96	0.02993	0.001499
SQ-MTH96	0.0002969	6.993e-05
CIND96	0.02011	0.002056
AGE1	-0.05823	0.04271
AGE2	-0.1188	0.04486
AGE3	-0.3125	0.04875

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2273	0.04439
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3570.05

PRBOOK	0.04113	0.0192
MTH1TR	0.03956	0.1824
MTH2TR	0.3656	0.166
MLPUP	0.005613	0.01439

STEP 16:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2645	0.2689
CMTH96	0.02994	0.001499
SQ-MTH96	0.0002967	6.995e-05
CIND96	0.02012	0.002057
AGE1	-0.05813	0.04271
AGE2	-0.1189	0.04486
AGE3	-0.3125	0.04876
PRBOOK	0.0414	0.01918
MTH1TR	0.02155	0.1755
MTH2TR	0.3645	0.1665
FMPUP	0.002468	0.01332

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2278	0.04422
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3570.17

STEP 17:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.3867	0.347
CMTH96	0.02993	0.001499
SQ-MTH96	0.0002964	6.994e-05
CIND96	0.02013	0.002056
AGE1	-0.05821	0.04271
AGE2	-0.1187	0.04486
AGE3	-0.3122	0.04876
PRBOOK	0.04092	0.0192
MTH1TR	0.03754	0.1782
MTH2TR	0.3643	0.1657
CLSIZE	0.004867	0.009332

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2268	0.04403
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3569.93

STEP 18:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2735	0.2119
CMTH96	0.02994	0.001499
SQ-MTH96	0.0002972	6.993e-05
CIND96	0.02009	0.002056
AGE1	-0.05826	0.04271
AGE2	-0.1191	0.04486
AGE3	-0.3128	0.04876
PRBOOK	0.04154	0.01917
MTH1TR	0.02642	0.1763
MTH2TR	0.3575	0.1664
MFPROP	0.04649	0.1397

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2275	0.04419
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3570.09

APPENDIX D.7c
EXAMINING SCHOOL VARIABLES FOR GRADE 6 MATHEMATICS

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2222	0.1487
CMTH96	0.02994	0.001499
SQ-MTH96	0.0002971	6.995e-05
CIND96	0.0201	0.002056
AGE1	-0.05814	0.04271
AGE2	-0.119	0.04486
AGE3	-0.3126	0.04876
PRBOOK	0.04156	0.01918
MTH1TR	0.0207	0.1798
MTH2TR	0.363	0.1695
HSEX	-0.003799	0.1358

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2279	0.04423
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3570.2

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.3948	0.6309
CMTH96	0.02993	0.001499
SQ-MTH96	0.0002971	6.993e-05
CIND96	0.0201	0.002056
AGE1	-0.05809	0.04271
AGE2	-0.1188	0.04486
AGE3	-0.3125	0.04875
PRBOOK	0.04161	0.01917
MTH1TR	0.01708	0.1754
MTH2TR	0.3692	0.1678
HAGE	0.00322	0.01148

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2275	0.04423
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3570.13

STEP 3:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.3041	0.3076
CMTH96	0.02993	0.0015
SQ-MTH96	0.0002971	6.993e-05
CIND96	0.0201	0.002056
AGE1	-0.05805	0.04271
AGE2	-0.1189	0.04486
AGE3	-0.3126	0.04875
PRBOOK	0.04171	0.01917
MTH1TR	0.01303	0.1764
MTH2TR	0.3688	0.1673
HTCHEXPR	0.002561	0.008498

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2275	0.0442
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3570.11

STEP 4:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.06549	0.1682
CMTH96	0.03001	0.001499
SQ-MTH96	0.0002976	6.991e-05
CIND96	0.02004	0.002055
AGE1	-0.05832	0.0427
AGE2	-0.1193	0.04485
AGE3	-0.3133	0.04874
PRBOOK	0.04114	0.01915
MTH1TR	0.03157	0.1709
MTH2TR	0.349	0.1619
HEADEXPR	-0.01529	0.008404

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2157	0.04201
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3566.97

STEP 5:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.02158	0.2823
CMTH96	0.02994	0.001499
SQ-MTH96	0.0002974	6.993e-05
CIND96	0.02013	0.002056
AGE1	-0.05792	0.04271
AGE2	-0.1189	0.04485
AGE3	-0.3125	0.04875
PRBOOK	0.04097	0.01918
MTH1TR	-0.006873	0.1771
MTH2TR	0.3787	0.1662
HEDUC	-0.02477	0.02969

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2251	0.04376
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3569.51

STEP 6:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1324	0.5222
CMTH96	0.02995	0.0015
SQ-MTH96	0.000297	6.993e-05
CIND96	0.0201	0.002056
AGE1	-0.05813	0.04271
AGE2	-0.1191	0.04486
AGE3	-0.3127	0.04875
PRBOOK	0.04148	0.01917
MTH1TR	0.01997	0.1753
MTH2TR	0.3618	0.166
HRANK_OR	-0.01161	0.06437

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2278	0.04428
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3570.17

STEP 7:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.702	0.3039
CMTH96	0.02993	0.001498
SQ-MTH96	0.0002952	6.992e-05
CIND96	0.02012	0.002055
AGE1	-0.05853	0.0427

RANDOM PART LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2154	0.04188
1	CONS	/CONS	0.4022	0.01378

AGE2	-0.1185	0.04485	-2*log(lh) is 3567.08
AGE3	-0.3126	0.04874	
PRBOOK	0.04069	0.01916	
MTH1TR	-0.006191	0.1713	
MTH2TR	0.3489	0.1618	
PROFGRW	0.1181	0.06594	

STEP 8:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.3154	0.2342
CMTH96	0.02997	0.001501
SQ-MTH96	0.0002971	6.993e-05
CIND96	0.02008	0.002056
AGE1	-0.05818	0.04271
AGE2	-0.119	0.04485
AGE3	-0.3127	0.04875
PRBOOK	0.04143	0.01917
MTH1TR	0.0334	0.177
MTH2TR	0.365	0.1658
MEETING	0.01979	0.03891

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2269	0.04427
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3569.95

STEP 9:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.02521	0.2564
CMTH96	0.02994	0.001499
SQ-MTH96	0.0002973	6.993e-05
CIND96	0.02012	0.002056
AGE1	-0.05774	0.04271
AGE2	-0.1185	0.04486
AGE3	-0.3123	0.04875
PRBOOK	0.04158	0.01916
MTH1TR	0.03828	0.175
MTH2TR	0.3897	0.1673
CLSHOUR	-0.03387	0.03608

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2242	0.04357
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3569.33

STEP 10:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.5385	0.2053
CMTH96	0.02987	0.001498
SQ-MTH96	0.0002991	6.992e-05
CIND96	0.02012	0.002055
AGE1	-0.05813	0.0427
AGE2	-0.1191	0.04485
AGE3	-0.3128	0.04874
PRBOOK	0.0444	0.01919
MTH1TR	-0.05724	0.1728
MTH2TR	0.3723	0.1601
HMHOUR	0.04561	0.02531

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2108	0.04119
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3565.79

STEP 11:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	0.1121	0.3894
CMTH96	0.02996	0.001499
SQ-MTH96	0.0002973	6.993e-05
CIND96	0.0201	0.002056
AGE1	-0.05773	0.04271
AGE2	-0.119	0.04485
AGE3	-0.3126	0.04875
PRBOOK	0.04139	0.01916
MTH1TR	-0.005733	0.1763
MTH2TR	0.3563	0.1651
SCHLBOOK	-0.0006256	0.000674

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2248	0.04376
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3569.35

STEP 12:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.3644	0.3174
CMTH96	0.02992	0.001499
SQ-MTH96	0.0002964	6.994e-05
CIND96	0.02014	0.002057
AGE1	-0.05839	0.04271
AGE2	-0.1189	0.04485
AGE3	-0.3123	0.04876
PRBOOK	0.04095	0.0192
MTH1TR	0.04715	0.1833
MTH2TR	0.3776	0.1685
MALEP	0.001285	0.002553

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2269	0.04418
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3569.95

STEP 13:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.3288	0.2758
CMTH96	0.02993	0.001499
SQ-MTH96	0.000296	6.997e-05
CIND96	0.02013	0.002057
AGE1	-0.05837	0.04271
AGE2	-0.1189	0.04485
AGE3	-0.3123	0.04876
PRBOOK	0.04095	0.01921
MTH1TR	0.03793	0.1795
MTH2TR	0.3675	0.1662
FMLP	0.001059	0.002329

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2271	0.04411
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3570

STEP 14:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1146	0.4116
CMTH96	0.02994	0.001499
SQ-MTH96	0.0002965	6.995e-05
CIND96	0.02011	0.002056
AGE1	-0.05818	0.04271

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2276	0.04419
1	CONS	/CONS	0.4022	0.01378

AGE2	-0.119	0.04485	-2*log(lh) is 3570.12
AGE3	-0.3125	0.04875	
PRBOOK	0.04142	0.01917	
MTH1TR	0.01668	0.1755	
MTH2TR	0.3566	0.167	
MFPUP	-0.09658	0.343	

STEP 15:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.3757	0.2147
CMTH96	0.0299	0.001499
SQ-MTH96	0.0002972	6.993e-05
CIND96	0.02009	0.002056
AGE1	-0.05864	0.04271
AGE2	-0.1194	0.04486
AGE3	-0.3135	0.04876
PRBOOK	0.04117	0.01917
MTH1TR	0.06795	0.1808
MTH2TR	0.3847	0.1663
MALETR	0.05725	0.05876

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2241	0.04356
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3569.26

STEP 16:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2615	0.2941
CMTH96	0.02993	0.0015
SQ-MTH96	0.000297	6.993e-05
CIND96	0.02011	0.002057
AGE1	-0.05812	0.04271
AGE2	-0.1189	0.04486
AGE3	-0.3125	0.04876
PRBOOK	0.04143	0.01918
MTH1TR	0.0219	0.1759
MTH2TR	0.3615	0.166
FMLTR	0.006657	0.04379

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2278	0.04424
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3570.18

STEP 17:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.1572	0.3348
CMTH96	0.02993	0.001499
SQ-MTH96	0.0002975	6.997e-05
CIND96	0.0201	0.002056
AGE1	-0.05806	0.04271
AGE2	-0.119	0.04486
AGE3	-0.3128	0.04876
PRBOOK	0.04167	0.01918
MTH1TR	0.01586	0.176
MTH2TR	0.3583	0.1668
PTRATIO	-0.002603	0.01193

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2277	0.0445
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3570.16

STEP 18:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2762	0.1698
CMTH96	0.02992	0.001499
SQ-MTH96	0.0002971	6.993e-05
CIND96	0.02009	0.002056
AGE1	-0.05843	0.04271
AGE2	-0.1192	0.04486
AGE3	-0.3131	0.04876
PRBOOK	0.04169	0.01917
MTH1TR	0.04079	0.1779
MTH2TR	0.3739	0.1665
MFTCR	0.08705	0.1386

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2263	0.04395
1	CONS	/CONS	0.4022	0.01378

-2*log(lh) is 3569.81

EXAMINING THE RANDOM PART:

STEP 1:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2213	0.1479
CMTH96	0.03003	0.001492
SQ-MTH96	0.0002982	6.953e-05
CIND96	0.01992	0.002048
AGE1	-0.06216	0.04286
AGE2	-0.1171	0.04483
AGE3	-0.3098	0.04843
PRBOOK	0.0407	0.01907
MTH1TR	0.01863	0.1759
MTH2TR	0.3641	0.1666

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2297	0.04455
1	CONS	/CONS	0.4019	0.0138
1	CMTH96	/CONS	0.0009861	0.0005008

-2*log(lh) is 3565.53

STEP 2:

FIXED PART PARAMETER	ESTIMATE	S. ERROR(U)
CONS	-0.2218	0.1479
CMTH96	0.03005	0.001491
SQ-MTH96	0.0002982	6.95e-05
CIND96	0.01993	0.002048
AGE1	-0.0623	0.04284

RANDOM PART

LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
2	CONS	/CONS	0.2297	0.04455
1	CONS	/CONS	0.4019	0.0138
1	CMTH96	/CONS	0.001046	0.0005808

AGE2	-0.1171	0.04483	1	CIND96	/CONS	-0.0001789	0.0008479
AGE3	-0.31	0.04844					
PRBOOK	0.04084	0.01907	-2*log(lh) is	3565.49			
MTH1TR	0.01876	0.1759					
MTH2TR	0.3646	0.1666					

STEP 3:

FIXED PART			RANDOM PART				
PARAMETER	ESTIMATE	S. ERROR(U)	LEV.	PARAMETER		ESTIMATE	S. ERROR(U)
CONS	-0.2179	0.1489	2	CONS	/CONS	0.2322	0.04496
SQ-MTH96	0.0003152	6.909e-05					
CIND96	0.01984	0.002034	1	CONS	/CONS	0.4638	0.03183
AGE1	-0.06142	0.04468	1	CMTH96	/CONS	0.0009702	0.0005074
AGE2	-0.119	0.04545	1	AGE1	/CONS	-0.02607	0.02119
AGE3	-0.3129	0.04884	1	AGE2	/CONS	-0.04963	0.02029
PRBOOK	0.03786	0.01896	1	AGE3	/CONS	-0.05039	0.02098
MTH1TR	0.0241	0.1767					
MTH2TR	0.3642	0.1674	-2*log(lh) is	3556.97			

APPENDIX D.8a

DIAGNOSTIC RESIDUALS OF SCHOOLS

Grade 4:

School ID	Indonesian Language Residual	Indonesian Language S.Error	Mathematics Residual	Mathematics S.Error
1	0.91394	0.48529	0.29371	0.37388
2	0.098305	0.45102	-0.16164	0.36904
3	-0.90332	0.45548	0.29644	0.37437
4	-0.27745	0.45443	-0.32114	0.37276
5	0.62207	0.45291	0.21464	0.37125
6	-0.62782	0.44811	-0.29966	0.36567
7	0.88343	0.44890	0.58384	0.36651
8	-0.48835	0.45257	0.57848	0.37102
9	-0.093404	0.45159	0.37070	0.36973
10	0.098021	0.44660	-0.19696	0.36385
11	-0.061137	0.45658	0.29211	0.37584
12	0.0010917	0.45557	0.19696	0.37442
13	-0.30828	0.44665	0.33474	0.36398
14	0.074705	0.45639	-0.010886	0.37555
15	0.51461	0.44041	0.42531	0.35640
16	-0.12739	0.45356	0.21403	0.37214
17	-0.027666	0.44560	-0.29008	0.36271
18	0.29114	0.43872	0.020145	0.35477
19	-0.20434	0.44570	-0.38942	0.36276
20	-0.55213	0.45417	-0.63867	0.37293
21	1.2448	0.65317	0.36877	0.37164
22	-0.27803	0.45298	-0.36590	0.37144
23	1.0397	0.55027	0.83834	0.46821
24	-0.61423	0.44667	-1.0621	0.56402
25	0.023965	0.45426	-0.059316	0.37310
26	0.22110	0.44978	0.047361	0.36763
27	0.095631	0.44753	0.21880	0.36506
28	-0.090744	0.44442	0.056571	0.36137
29	0.041670	0.45486	-0.36011	0.37385
30	-0.45791	0.45301	-0.18941	0.37134
31	-0.33727	0.45359	-0.073200	0.37229
32	-0.39463	0.45710	-0.016050	0.37631
33	-0.42126	0.45267	0.10660	0.37086
34	0.85278	0.45322	-0.055578	0.37162
35	-0.63559	0.45209	-0.78723	0.39027
36	-0.15750	0.45050	0.17508	0.36834
37	-0.51829	0.45202	-0.43878	0.37027
38	0.13341	0.44900	-0.23245	0.36659
39	0.15965	0.45332	-0.12952	0.37189
40	0.17812	0.45229	-0.014612	0.37038
41	0.12766	0.45262	0.57547	0.37101
42	0.044313	0.44811	0.14017	0.36509
43	0.46543	0.45620	0.55186	0.37521
44	-0.51450	0.45168	-0.17554	0.36977
45	0.36166	0.45544	-0.13539	0.37447
46	0.098799	0.44052	-0.016358	0.35676
47	0.40479	0.44658	-0.14595	0.36386
48	-0.46308	0.44341	0.23574	0.36017
49	-0.39436	0.45257	-0.79171	0.47090
50	-0.18209	0.45254	-0.0021097	0.37069
51	-0.33237	0.44488	-0.14873	0.36189
52	-0.096290	0.45257	-0.038755	0.37081
53	-0.45301	0.45360	-0.31139	0.37219
54	0.0028531	0.44604	0.58790	0.36319
55	0.44723	0.44911	0.56061	0.36680
56	0.26113	0.43991	-0.10232	0.35614
57	0.29389	0.45094	0.10141	0.36897
58	-0.70714	0.45225	-0.55685	0.37095
59	0.53356	0.43655	0.30430	0.35239
60	0.19021	0.44706	-0.17229	0.36442

Grade 5:

School ID	Indonesian Language		Mathematics	
	Residual	S.Error	Residual	S.Error
1	-0.082222	0.39200	0.22607	0.39869
2	0.37380	0.39121	-0.10588	0.39756
3	1.0049	0.59544	0.48608	0.40206
4	-0.15608	0.39155	-0.35194	0.39804
5	-0.37198	0.39232	-1.0469	0.39889
6	0.33141	0.38871	0.22129	0.39490
7	0.040226	0.39171	-0.17610	0.39822
8	0.65461	0.39203	0.67945	0.39870
9	-0.057572	0.39015	-0.084608	0.39659
10	-0.70410	0.38019	0.076709	0.38676
11	-0.14898	0.39468	-0.035509	0.40107
12	-0.67763	0.39270	-0.11662	0.39903
13	0.43612	0.38660	-0.040498	0.39293
14	0.40903	0.39377	0.0077473	0.40019
15	-0.13286	0.37865	-0.031225	0.38515
16	0.43661	0.39200	-0.59191	0.39823
17	-0.57263	0.39313	0.090945	0.39957
18	0.33528	0.38502	0.097215	0.39150
19	-0.018311	0.38445	-0.16686	0.39095
20	-0.31197	0.39193	-0.073041	0.39841
21	0.77233	0.39160	0.38848	0.39795
22	-0.47460	0.39089	-0.057141	0.39744
23	-0.38331	0.38828	0.40795	0.39480
24	-0.37194	0.38936	-0.29911	0.39537
25	0.15072	0.39369	0.11875	0.40016
26	-0.13529	0.38884	-0.28501	0.39537
27	0.40882	0.38760	-0.020682	0.39408
28	-0.033908	0.38802	-0.33630	0.39442
29	0.26895	0.39349	-0.20392	0.39993
30	0.16278	0.38759	0.062218	0.39404
31	-0.16774	0.39468	0.24573	0.40118
32	-0.062578	0.39392	0.11453	0.40035
33	-0.40651	0.38769	-1.5492	0.39410
34	-0.36847	0.39028	0.34186	0.39678
35	0.32755	0.39219	0.061181	0.39857
36	-0.40109	0.39214	-0.60722	0.39846
37	0.26965	0.38965	0.62893	0.39598
38	-0.22568	0.38763	-0.11725	0.39415
39	-0.14978	0.38904	0.37148	0.39549
40	-0.19809	0.38679	0.39953	0.39331
41	-0.035843	0.39163	0.44487	0.39814
42	-0.092006	0.39236	-0.13882	0.39893
43	-0.12187	0.39240	0.13150	0.39875
44	-0.076699	0.38566	0.27702	0.39206
45	-0.61183	0.39409	-0.30184	0.40053
46	0.42503	0.38376	0.17321	0.39028
47	0.94742	0.38372	0.30055	0.39025
48	0.010520	0.38606	-0.35746	0.39257
49	-0.088718	0.39126	-0.54721	0.39773
50	-0.098573	0.38739	0.0045928	0.39395
51	-0.22685	0.38698	0.30515	0.39351
52	0.76016	0.38931	1.0391	0.59583
53	0.16351	0.38745	0.17186	0.39396
54	0.24184	0.38961	0.0088272	0.39602
55	-0.66142	0.38480	-0.35317	0.39100
56	0.065866	0.38948	-0.050672	0.39611
57	-0.30844	0.38162	-0.40542	0.38800
58	-0.36225	0.38819	-0.070929	0.39453
59	-0.16342	0.38279	0.094863	0.38932
60	0.46414	0.39212	0.54467	0.39843

Grade 6:

School ID	Indonesian Language		Mathematics	
	Residual	S.Error	Residual	S.Error
1	-0.056887	0.36429	0.35966	0.49700
2	0.19196	0.36082	0.42838	0.49401
3	-0.042121	0.36321	-0.28534	0.49609
4	-0.38865	0.36373	0.33285	0.49629
5	0.13937	0.36169	0.24494	0.49505
6	-0.11656	0.35350	-0.57410	0.48912
7	-0.63529	0.35795	-0.19211	0.49205
8	0.21127	0.36165	0.15804	0.49469
9	0.13980	0.36018	-0.61317	0.49365
10	0.29171	0.35541	-0.062913	0.49045
11	-0.045704	0.36176	0.70099	0.49498
12	0.15075	0.36230	-1.0872	0.59519
13	-0.14421	0.35796	0.067691	0.49253
14	0.61900	0.36454	0.14912	0.49677
15	-0.18013	0.35401	-0.30276	0.48910
16	0.17421	0.36275	-0.28179	0.49478
17	0.070748	0.36013	-0.19537	0.49355
18	-0.76947	0.39812	-1.2424	0.58449
19	-0.10545	0.35751	-0.38285	0.49156
20	0.19747	0.36157	-0.074991	0.49436
21	0.065264	0.35820	-0.12659	0.49208
22	-0.37743	0.35964	-0.95174	0.49318
23	0.54494	0.35482	0.75363	0.48974
24	0.48000	0.35529	0.37285	0.49001
25	-0.39961	0.36266	0.27334	0.49538
26	-0.16499	0.34795	1.0231	0.48439
27	0.13861	0.35578	-0.47767	0.49033
28	0.35131	0.35486	0.86813	0.48969
29	0.64496	0.36291	0.73232	0.49556
30	0.34734	0.35582	0.029406	0.49041
31	-0.47902	0.36470	-0.65462	0.49688
32	-0.17190	0.35907	0.26562	0.49288
33	-0.20733	0.36019	0.22825	0.49353
34	-0.35261	0.36234	-0.47340	0.49512
35	-0.075349	0.35853	0.19818	0.49246
36	0.15380	0.35676	0.36654	0.49102
37	0.11845	0.35834	0.39673	0.49240
38	0.25415	0.35828	-0.69257	0.49231
39	-0.24647	0.36056	0.078442	0.49392
40	-0.36750	0.35842	-0.61502	0.49225
41	0.17849	0.36208	-0.25374	0.49502
42	0.40399	0.35969	-0.029711	0.49330
43	0.96596	0.49474	0.91680	0.49695
44	0.25346	0.35263	0.52144	0.48828
45	0.026697	0.35965	-0.59276	0.49367
46	0.030669	0.35644	-0.10387	0.4900
47	-0.0091884	0.35770	-0.0065746	0.49180
48	0.38064	0.35309	-0.42593	0.48827
49	0.20897	0.36029	-0.30882	0.49370
50	0.12350	0.35563	0.40542	0.49022
51	-0.54537	0.35556	-0.53804	0.49009
52	-0.33655	0.36048	-0.16944	0.49374
53	-0.70580	0.35690	0.41074	0.49135
54	-0.98870	0.56017	-0.014109	0.49370
55	0.42195	0.34580	-0.079038	0.48322
56	0.018492	0.36077	0.16698	0.49402
57	0.044921	0.35484	0.41123	0.48963
58	-0.35247	0.35856	0.81449	0.49249
59	-0.24143	0.35787	0.44217	0.49195
60	0.16332	0.35670	-0.30882	0.49106

APPENDIX D.8b

COMPARATIVE RESIDUALS OF SCHOOLS

GRADE 4 INDONESIAN LANGUAGE RESIDUALS:

SCHOOL ID	RESIDUAL	STANDARD ERROR	STANDARDISED RESIDUAL[2]
1	0.91394	0.12542	7.2871
2	0.098305	0.14000	0.70220
3	-0.90332	0.12473	-7.2420
4	-0.27745	0.12847	-2.1596
5	0.62207	0.13373	4.6516
6	-0.62782	0.14905	-4.2122
7	0.88343	0.14666	6.0237
8	-0.48835	0.13489	-3.6205
9	-0.093404	0.13813	-0.67622
10	0.098021	0.15351	0.63854
11	-0.061137	0.12063	-0.50682
12	0.0010917	0.12440	0.0087756
13	-0.30828	0.15335	-2.0103
14	0.074705	0.12135	0.61564
15	0.51461	0.17046	3.0188
16	-0.12739	0.13152	-0.96862
17	-0.027666	0.15637	-0.17692
18	0.29114	0.17475	1.6661
19	-0.20434	0.15610	-1.3091
20	-0.55213	0.12941	-4.2666
21	1.2448	0.13285	9.3693
22	-0.27803	0.13352	-2.0824
23	1.0397	0.14238	7.3020
24	-0.61423	0.15330	-4.0066
25	0.023965	0.12907	0.18567
26	0.22110	0.14391	1.5363
27	0.095631	0.15079	0.63422
28	-0.090744	0.15970	-0.56822
29	0.041670	0.12696	0.32821
30	-0.45791	0.13340	-3.4327
31	-0.33727	0.13143	-2.5661
32	-0.39463	0.11863	-3.3265
33	-0.42126	0.13457	-3.1303
34	0.85278	0.13268	6.4275
35	-0.63559	0.13650	-4.6563
36	-0.15750	0.14165	-1.1119
37	-0.51829	0.13673	-3.7907
38	0.13341	0.14635	0.91159
39	0.15965	0.13235	1.2063
40	0.17812	0.13584	1.3113
41	0.12766	0.13474	0.94743
42	0.044313	0.14903	0.29735
43	0.46543	0.12205	3.8135
44	-0.51450	0.13784	-3.7325
45	0.36166	0.12484	2.8969
46	0.098799	0.17018	0.58056
47	0.40479	0.15355	2.6362
48	-0.46308	0.16249	-2.8500
49	-0.39436	0.13491	-2.9232
50	-0.18209	0.13500	-1.3488
51	-0.33237	0.15842	-2.0980
52	-0.096290	0.13488	-0.71388
53	-0.45301	0.13138	-3.4481
54	0.0028531	0.15513	0.018392
55	0.44723	0.14600	3.0633
56	0.26113	0.17175	1.5204
57	0.29389	0.14025	2.0956
58	-0.70714	0.13597	-5.2007
59	0.53356	0.18011	2.9624
60	0.19021	0.15215	1.2501

[2] The coefficient significant if it is equal to or greater than 2. Schools with positive significant coefficients are the most effective in Grade 4 Indonesian Language. On the other hand, those with negative significant coefficients the the leaaast effective.

GRADE 4 MATHEMATICS RESIDUALS:

SCHOOL ID	RESIDUAL	STANDARD ERROR	STANDARDISED RESIDUAL[3]
1	0.27475	0.12329	2.2284
2	-0.15727	0.13656	-1.1516
3	0.29260	0.12119	2.4144
4	-0.32515	0.12611	-2.5784
5	0.20638	0.13053	1.5811
6	-0.30348	0.14537	-2.0877
7	0.58185	0.14309	4.0665
8	0.56731	0.13129	4.3210
9	0.36841	0.13468	2.7355
10	-0.19826	0.14983	-1.3232
11	0.28658	0.11666	2.4565
12	0.17547	0.12138	1.4456
13	0.37921	0.15029	2.5232
14	-0.013992	0.11753	-0.11905
15	0.41383	0.16660	2.4840
16	0.21903	0.12794	1.7120
17	-0.28747	0.15254	-1.8846
18	0.010978	0.17005	0.064559
19	-0.36503	0.15286	-2.3880
20	-0.63760	0.12550	-5.0804
21	0.36567	0.12936	2.8267
22	-0.36051	0.12987	-2.7761
23	0.83382	0.13858	6.0168
24	-1.0649	0.14914	-7.1401
25	-0.061216	0.12503	-0.48963
26	0.055678	0.14033	0.39677
27	0.23647	0.14685	1.6103
28	0.061978	0.15572	0.39802
29	-0.35473	0.12281	-2.8885
30	-0.18973	0.13019	-1.4573
31	-0.068754	0.12745	-0.53946
32	-0.0075098	0.11518	-0.065199
33	0.097879	0.13164	0.74351
34	-0.056907	0.12940	-0.43977
35	-0.78087	0.13326	-5.8600
36	0.17442	0.13838	1.2605
37	-0.44470	0.13327	-3.3369
38	-0.23186	0.14291	-1.6223
39	-0.13170	0.12865	-1.0237
40	-0.0082265	0.13294	-0.061882
41	0.58532	0.13101	4.4677
42	0.13561	0.14681	0.92372
43	0.53842	0.11888	4.5290
44	-0.17499	0.13446	-1.3015
45	-0.14808	0.12096	-1.2242
46	-0.022000	0.16594	-0.13258
47	-0.15198	0.14967	-1.0154
48	0.23723	0.15844	1.4973
49	-0.79050	0.13138	-6.0168
50	-0.0025213	0.13190	-0.019115
51	-0.15231	0.15433	-0.98689
52	-0.032333	0.13176	-0.24540
53	-0.31519	0.12777	-2.4668
54	0.59032	0.15137	3.8998
55	0.56809	0.14233	3.9914
56	-0.11469	0.16745	-0.68490
57	0.10718	0.13680	0.78350
58	-0.54470	0.13150	-4.1423
59	0.30801	0.17503	1.7597
60	-0.17331	0.14844	-1.1675

[3] The coefficient significant if it is equal to or greater than 2. Schools with positive significant coefficients are the most effective in Grade 4 Mathematics. On the other hand, those with negative significant coefficients the the leaaast effective.

GRADE 5 INDONESIAN LANGUAGE RESIDUALS:

SCHOOL ID	RESIDUAL	STANDARD ERROR	STANDARDISED RESIDUAL[4]
1	-0.082222	0.12561	-0.65459
2	0.37380	0.12804	2.9194
3	1.0049	0.11431	8.7908
4	-0.15608	0.12702	-1.2288
5	-0.37198	0.12461	-2.9852
6	0.33141	0.13546	2.4466
7	0.040226	0.12652	0.31795
8	0.65461	0.12551	5.2155
9	-0.057572	0.13125	-0.43863
10	-0.70410	0.15779	-4.4622
11	-0.14898	0.11691	-1.2744
12	-0.67763	0.12339	-5.4916
13	0.43612	0.14136	3.0851
14	0.40903	0.11996	3.4096
15	-0.13286	0.16146	-0.82285
16	0.43661	0.12560	3.4761
17	-0.57263	0.12204	-4.6920
18	0.33528	0.14561	2.3027
19	-0.018311	0.14710	-0.12448
20	-0.31197	0.12583	-2.4793
21	0.77233	0.12686	6.0880
22	-0.47460	0.12903	-3.6782
23	-0.38331	0.13668	-2.8044
24	-0.37194	0.13356	-2.7847
25	0.15072	0.12023	1.2537
26	-0.13529	0.13508	-1.0016
27	0.40882	0.13859	2.9498
28	-0.033908	0.13743	-0.24673
29	0.26895	0.12087	2.2252
30	0.16278	0.13863	1.1742
31	-0.16774	0.11691	-1.4348
32	-0.062578	0.11947	-0.52381
33	-0.40651	0.13834	-2.9385
34	-0.36847	0.13086	-2.8158
35	0.32755	0.12500	2.6203
36	-0.40109	0.12519	-3.2039
37	0.26965	0.13271	2.0318
38	-0.22568	0.13852	-1.6292
39	-0.14978	0.13449	-1.1136
40	-0.19809	0.14083	-1.4066
41	-0.035843	0.12677	-0.28274
42	-0.092006	0.12449	-0.73907
43	-0.12187	0.12436	-0.97996
44	-0.076699	0.14391	-0.53298
45	-0.61183	0.11889	-5.1464
46	0.42503	0.14889	2.8546
47	0.94742	0.14901	6.3580
48	0.010520	0.14282	0.073662
49	-0.088718	0.12789	-0.69372
50	-0.098573	0.13919	-0.70820
51	-0.22685	0.14031	-1.6168
52	0.76016	0.13371	5.6850
53	0.16351	0.13900	1.1763
54	0.24184	0.13285	1.8204
55	-0.66142	0.14620	-4.5240
56	0.065866	0.13322	0.49442
57	-0.30844	0.15430	-1.9990
58	-0.36225	0.13694	-2.6453
59	-0.16342	0.15137	-1.0796
60	0.46414	0.12523	3.7063

[4] The coefficient significant if it is equal to or greater than 2. Schools with positive significant coefficients are the most effective in Grade 5 Indonesian Language. On the other hand, those with negative significant coefficients the the leaaast effective.

GRADE 5 MATHEMATICS RESIDUALS:

SCHOOL ID	RESIDUAL	STANDARD ERROR	STANDARDISED RESIDUAL[5]
1	0.22607	0.12563	1.7994
2	-0.10588	0.12916	-0.81974
3	0.48608	0.11438	4.2496
4	-0.35194	0.12767	-2.7567
5	-1.0469	0.12498	-8.3766
6	0.22129	0.13707	1.6144
7	-0.17610	0.12711	-1.3854
8	0.67945	0.12558	5.4103
9	-0.084608	0.13210	-0.64047
10	0.076709	0.15859	0.48369
11	-0.035509	0.11780	-0.30144
12	-0.11662	0.12453	-0.93642
13	-0.040498	0.14263	-0.28393
14	0.0077473	0.12074	0.064164
15	-0.031225	0.16245	-0.19221
16	-0.59191	0.12706	-4.6585
17	0.090945	0.12279	0.74068
18	0.097215	0.14651	0.66355
19	-0.16686	0.14795	-1.1278
20	-0.073041	0.12652	-0.57733
21	0.38848	0.12794	3.0366
22	-0.057141	0.12951	-0.44121
23	0.40795	0.13736	2.9700
24	-0.29911	0.13572	-2.2039
25	0.11875	0.12086	0.98253
26	-0.28501	0.13571	-2.1002
27	-0.020682	0.13941	-0.14835
28	-0.33630	0.13846	-2.4289
29	-0.20392	0.12162	-1.6767
30	0.062218	0.13953	0.44593
31	0.24573	0.11742	2.0927
32	0.11453	0.12021	0.95275
33	-1.5492	0.13935	-11.117
34	0.34186	0.13153	2.5992
35	0.061181	0.12599	0.48558
36	-0.60722	0.12636	-4.8056
37	0.62893	0.13392	4.6963
38	-0.11725	0.13920	-0.84229
39	0.37148	0.13537	2.7442
40	0.39953	0.14158	2.8220
41	0.44487	0.12737	3.4928
42	-0.13882	0.12486	-1.1118
43	0.13150	0.12544	1.0483
44	0.27702	0.14500	1.9105
45	-0.30184	0.11963	-2.5231
46	0.17321	0.14973	1.1568
47	0.30055	0.14980	2.0064
48	-0.35746	0.14360	-2.4893
49	-0.54721	0.12863	-4.2543
50	0.0045928	0.13977	0.032859
51	0.30515	0.14100	2.1642
52	1.0391	0.13436	7.7340
53	0.17186	0.13974	1.2299
54	0.0088272	0.13379	0.065977
55	-0.35317	0.14783	-2.3889
56	-0.050672	0.13353	-0.37948
57	-0.40542	0.15554	-2.6065
58	-0.070929	0.13813	-0.51351
59	0.094863	0.15220	0.62326
60	0.54467	0.12643	4.3080

[5] The coefficient significant if it is equal to or greater than 2. Schools with positive significant coefficients are the most effective in Grade 5 Mathematics. On the other hand, those with negative significant coefficients the the leaaast effective.

GRADE 6 INDONESIAN LANGUAGE RESIDUALS:

SCHOOL ID	RESIDUAL	STANDARD ERROR	STANDARDISED RESIDUAL[6]
1	-0.056887	0.11155	-0.50999
2	0.19196	0.12230	1.5697
3	-0.042121	0.11500	-0.36627
4	-0.38865	0.11334	-3.4289
5	0.13937	0.11971	1.1643
6	-0.11656	0.14206	-0.82049
7	-0.63529	0.13045	-4.8699
8	0.21127	0.11981	1.7634
9	0.13980	0.12416	1.1260
10	0.29171	0.13721	2.1260
11	-0.045704	0.11949	-0.38251
12	0.15075	0.11782	1.2794
13	-0.14421	0.13044	-1.1056
14	0.61900	0.11070	5.5916
15	-0.18013	0.14081	-1.2793
16	0.17421	0.11645	1.4959
17	0.070748	0.12430	0.56915
18	-0.76947	0.15479	-4.9710
19	-0.10545	0.13167	-0.80090
20	0.19747	0.12005	1.6450
21	0.065264	0.12978	0.50289
22	-0.37743	0.12573	-3.0019
23	0.54494	0.13873	3.9281
24	0.48000	0.13752	3.4903
25	-0.39961	0.11672	-3.4237
26	-0.16499	0.15517	-1.0633
27	0.13861	0.13626	1.0172
28	0.35131	0.13865	2.5339
29	0.64496	0.11596	5.5620
30	0.34734	0.13617	2.5508
31	-0.47902	0.11017	-4.3481
32	-0.17190	0.12733	-1.3500
33	-0.20733	0.12415	-1.6700
34	-0.35261	0.11770	-2.9958
35	-0.075349	0.12886	-0.58475
36	0.15380	0.13369	1.1505
37	0.11845	0.12939	0.91551
38	0.25415	0.12955	1.9618
39	-0.24647	0.12307	-2.0028
40	-0.36750	0.12916	-2.8454
41	0.17849	0.11851	1.5061
42	0.40399	0.12559	3.2167
43	0.96596	0.11007	8.7763
44	0.25346	0.14421	1.7576
45	0.026697	0.12568	0.21242
46	0.030669	0.13452	0.22799
47	-0.0091884	0.13113	-0.070069
48	0.38064	0.14308	2.6603
49	0.20897	0.12385	1.6872
50	0.12350	0.13665	0.90375
51	-0.54537	0.13682	-3.9859
52	-0.33655	0.12330	-2.7296
53	-0.70580	0.13331	-5.2944
54	-0.98870	0.12419	-7.9610
55	0.42195	0.15989	2.6390
56	0.018492	0.12244	0.15103
57	0.044921	0.13869	0.32389
58	-0.35247	0.12876	-2.7373
59	-0.24143	0.13068	-1.8474
60	0.16332	0.13384	1.2203

[6] The coefficient significant if it is equal to or greater than 2. Schools with positive significant coefficients are the most effective in Grade 6 Indonesian Language. On the other hand, those with negative significant coefficients the the leaaast effective.

GRADE 6 MATHEMATICS RESIDUALS

SCHOOL ID	RESIDUAL	STANDARD ERROR	STANDARDISED RESIDUAL[7]
1	0.32507	0.11644	2.7917
2	0.42449	0.12766	3.3253
3	-0.32870	0.12085	-2.7200
4	0.30791	0.11909	2.5856
5	0.20192	0.12481	1.6179
6	-0.62299	0.14694	-4.2398
7	-0.17579	0.13524	-1.2999
8	0.16177	0.12495	1.2947
9	-0.61269	0.12907	-4.7469
10	-0.10548	0.14209	-0.74235
11	0.66176	0.12491	5.2979
12	-1.0775	0.12310	-8.7531
13	0.013978	0.13552	0.10314
14	0.12377	0.11668	1.0608
15	-0.27899	0.14567	-1.9153
16	-0.26261	0.12490	-2.1026
17	-0.18234	0.12961	-1.4068
18	-1.2441	0.15983	-7.7837
19	-0.37279	0.13689	-2.7233
20	-0.066189	0.12534	-0.52809
21	-0.11795	0.13501	-0.87365
22	-0.94519	0.13084	-7.2238
23	0.77533	0.14354	5.4013
24	0.38868	0.14243	2.7288
25	0.28488	0.12238	2.3278
26	1.0397	0.16026	6.4873
27	-0.44702	0.14123	-3.1652
28	0.88410	0.14351	6.1603
29	0.73131	0.12144	6.0222
30	0.016836	0.14100	0.11940
31	-0.66244	0.11611	-5.7051
32	0.22806	0.13258	1.7202
33	0.23497	0.12956	1.8135
34	-0.47216	0.12332	-3.8288
35	0.22308	0.13402	1.6645
36	0.37597	0.13880	2.7087
37	0.42824	0.13455	3.1827
38	-0.66696	0.13445	-4.9608
39	0.10966	0.12841	0.85397
40	-0.60306	0.13444	-4.4858
41	-0.23455	0.12405	-1.8908
42	-0.038083	0.13039	-0.29208
43	0.89281	0.11623	7.6816
44	0.47353	0.14938	3.1701
45	-0.63987	0.13081	-4.8918
46	-0.071342	0.13969	-0.51071
47	0.0069625	0.13610	0.051158
48	-0.41737	0.14806	-2.8189
49	-0.28937	0.12921	-2.2396
50	0.42195	0.14155	2.9809
51	-0.52517	0.14121	-3.7190
52	-0.15731	0.12874	-1.2220
53	0.37821	0.13836	2.7334
54	0.019857	0.12943	0.15342
55	-0.031426	0.16521	-0.19021
56	0.16609	0.12735	1.3042
57	0.41592	0.14351	2.8983
58	0.80417	0.13349	6.0244
59	0.45776	0.13559	3.3762
60	-0.32925	0.13891	-2.3701

[7] The coefficient significant if it is equal to or greater than 2. Schools with positive significant coefficients are the most effective in Grade 6 Mathematics. On the other hand, those with negative significant coefficients the the leaaast effective.

APPENDIX E

Primary School Variances Across Developing Countries

Study Country using multilevel analysis	% variation between schools	
	Language	Mathematics
Columbia (Loera & McGinn, 1992)*		
- Spanish 1	18	
- Spanish 2	29	
Egypt (Egypt Ministry of Education, 1993)*		
- Arabic 5	53	
- Mathematics 5		60
Honduras (Reimers, 1992)*		
- Reading 1	33	
India (Bashir, 1994)*		
- Reading comprehension 4	54	
- Mathematics 4		55
India (Singh & Saxena, 1995)*		
- Language 4/5	14-45	
- Mathematics 4/5		20-61
Jordan (Riddell, 1994)*		
- Arabic 5	27	
Namibia (Namibia Ministry of Education and Culture, 1994)*		
- English 7	66	
- Mathematics 7		64
Zimbabwe (Riddell, 1989)		
- English 7 (language & literature)	42	
- Mathematics 7		42
Zimbabwe (Nyagura, 1991)		
- English	44	
- Mathematics		26
Zimbabwe (Riddell & Nyagura, 1991)		
- English 7	40	
- Mathematics 7		53
Zimbabwe (Nyagura & Riddell, 1993)*		
- English 7	56	
- Mathematics 7		74
Pakistan (Warwick & Jatoi, 1994)		
- Mathematics 4		54
- Mathematics 5		52
Thailand (Raudenbush et al., 1991)		
- Thai 3	35	
- Mathematics 3		31
Indonesia (van der Werf & Creemers, 1998)		
- Indonesian Language	39	
- Mathematics		46
This Indonesian study (1998)		
- Indonesian Language, Grades 4 to 6	**14-23**	
- Mathematics, Grades 4 to 6		**20-29**
Range	**14-66**	20-74

* From Riddell (1995, 1997).