# TEACHERS CONFRONTED WITH AN EDUCATIONAL INNOVATION: THE CASE OF THE INTRODUCTION OF THE COMPUTERS IN CYPRUS PRIMARY CLASSROOM (ICCPC)

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# CONTENTS

**CHAPTER THREE: The teacher's involvement in an educational innovation**



**CHAPTER FOUR: Integrating computers into classroom practice: an example of innovation in education**

# LIST OF TABLES

# LIST OF DIAGRAMS

**DIAGRAM** **PAGE**

# ABSTRACT

The purpose of this thesis is to describe the teacher's voluntary involvement in a current example of an educational innovation implemented in Cyprus. The broad argument of the thesis is that the teacher is the most important contributor to the successful implementation of the innovation.

Chapter One introduces the problem and identifies the main research questions:

- What are the views of the teachers, at both the organisational and the personal level, when confronted with an educational innovation, e.g. the ICCPC programme, concerning their own role in the setting?
- Is it possible to profile the range of responses that might be anticipated among teachers when confronted with an innovation?
- What are the specific implications for successful involvement of the teacher in the innovation?

Then Chapter Two draws on the issues of curriculum development, innovation and change in education, in an attempt to present the main concepts that this thesis examines. Chapter Three presents the main literature review on the teacher's role in an educational innovation and change. Chapter Four presents a selected review of the literature on issues concerning the Introduction of the Computers in Education, as an example of educational innovation.

Chapter Five provides the reader with certain information about the Cyprus Educational System and the structure of the case under investigation, the Introduction of the Computers in the Cyprus Primary Classroom (ICCPC).

Chapter Six presents the methodological decisions of the empirical research undertaken. Both quantitative and qualitative methods were undertaken in order to enable an overall conclusion on the topic.

In Chapter Seven the quantitative results as emerging from a questionnaire survey among all the teachers participating in the project are presented. Chapter Eight presents the results of the in-depth interviews that were conducted to a sample of nine teachers involved in the ICCPC.

Further on, Chapter Nine presents the discussion of the results of this thesis and provides the overall view of the teacher's involvement in the innovation. It answers to the first research questions, presenting the teacher's role in the ICCPC and the teacher's profile while involved in the innovative setting.

Finally, this thesis concludes with Chapter Ten, providing specific implications for successful implementation of the educational innovation and mainly successful involvement of the teacher in this setting, in a collaborative and decentralised approach.

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*To my father*

# CHAPTER ONE

# INTRODUCTION – STATEMENT OF THE PROBLEM

## STRUCTURE OF THE CHAPTER

This chapter consists of the rationale of the thesis. It presents the statement of the problem and the importance of the study, according to the researcher. The purpose and the objectives of the study are defined and finally, the structure of the whole thesis is given.

## 1.1 STATEMENT OF THE PROBLEM

> *" I feel like the last wheel of the carriage...They threw us in the deep ocean and told us now swim"*

The above are the exact words of a teacher involved in a technological innovation concerning the introduction of the computers in the primary classroom and are typical of an old Greek saying. It is neither extraordinary nor rare. And it is a fact that teachers involved in innovations tend to have similar feelings.

The literature review reveals that the efforts undertaken throughout the last decades to reform several educational systems in different countries proved to be significantly unsuccessful. Educational change or innovation in education is often implemented in various ways and through numerous educational settings; though, it seems that such procedures have largely failed in practice due to several reasons.

A key factor affecting the implementation of the innovation or change in education is the teacher herself. All the efforts to examine and investigate change in education in its various phases present the teacher as the most important change agent, the crucial factor in innovative practices. It is the teacher who can act as a facilitator of change under certain circumstances. However, nearly all these efforts seem to ignore the teacher in their key feature.

More specifically, it has been found that educational change and reform efforts simply neglected teachers in their design, implementation and evaluation stages. The outcomes of the forty-fifth session of the International Conference on Education (ICE, 1996) emphasised the teacher as key agent of innovation and change, and concluded that the teacher's role must be strengthened in order to have successful change processes. The three fundamental principles of the ICE report were the following:

- today, more than ever before, educational changes must take place primarily in the school and in the classroom. This means acceptance of the role of teachers as the key players in the change process,

- recognition of the need to design complete policies for teachers, which will replace piecemeal approaches based on the idea that it is possible to change the situation by tackling one aspect of the problem at a time,

- moving away from the idea of teachers as isolated individuals, and to start considering them as professionals who will work together within an institution and as members of a team. (Detesco, 1996)

It becomes obvious that the teachers should act as an important factor improving educational practice and specifically, implementing educational innovation.

Limited literature findings dealt with the teacher's stances toward innovation and change in education, although a lot of them have studied the theory that embraces such settings. The main argument of this research study is, therefore, that the teacher is a key factor for successful implementation of the innovation. The study attempts to describe the teacher's involvement in a specific innovative programme and her role in a specific innovative setting, giving certain implications for successful involvement of the teacher in innovation or change procedures. The instance chosen is the Introduction of the Computers in Cyprus Primary Classroom (ICCPC) and it is treated as an example of an imposed change, based on volunteer participation on behalf of the teachers. The study addresses questions concerning the meaning of imposed changes for teachers, their perceptions and experiences within the innovation. In addition, the research asks about the specific implications for the successful realisation of change.

## 1.2 THE IMPORTANCE OF THE PRESENT RESEARCH STUDY

The research on the teacher's role in an innovative setting attempts to offer useful implications to several interested parties who are involved in the innovation procedure.

- Directly, the administrators, curriculum planners and the policy - makers will be provided with specific results concerning successful innovation or change in an educational setting. This will enable them to 'evaluate' their own practice, design better innovative plans, and consider the teacher in a more practical sense, as the person who puts flesh and bones on to their vision. They will be able to use the results in order to

make their plans more concrete, meet the teacher's needs, and make the change efforts more successful, by anticipating the problems that may arise.

- The in-service teacher trainers, people who train teachers and put the theory into practice by communicating the rationale to teachers, will be able to build their syllabus, the content of the seminars, on teachers' needs which will be based on teachers' ideas. Teaching experiences and demonstration lessons should be focused on the existing situation and reflect the teacher's needs.

- The Curriculum Development Personnel will have data that will enable them to create new or evaluate and revise old material that will serve the purpose of change.

- The teachers themselves will be helped by the implications of the research study since they will 'understand and evaluate' their own role in an innovative setting. This will enable them to be more interested in getting involved in such settings and trying to promote change.

- Indirectly, the pupils and the parents will benefit by research studies like the one presented here; they will become aware of the implications for successful involvement of the teachers in innovations and they will be able to act in a positive way in order to promote change.

- The study of this innovative programme is a first attempt to investigate teachers' stances towards the ICCPC and any other similar innovative setting. Therefore, it will provide researchers and pedagogues in similar settings with useful knowledge, directed from empirical data.

- The introduction of the computers in education, and generally I.T. in education, will be examined as an example of educational innovation. This will enable the interested parties to appreciate their role in the setting and try to promote change in a practical manner. The description of the setting and the teachers' role in it will help administrators and teachers understand the structure, the interactions going on in the programme, and the roles of the key people in it, in a way that will help them to anticipate problematic situations and solve already existing problems.

- Finally, this thesis is an attempt to provide useful information about educational innovation and teachers' role in it in order to promote success, adding to the existing literature in the field of educational change and innovation, some original findings which may prove useful .

## 1.3 RESEARCH QUESTIONS - PURPOSE OF THE STUDY

This research study attempts to present the teacher's reaction towards an educational innovation and investigate the teachers' involvement in a specific innovative setting, namely the Introduction of the Computers in the Cyprus Primary Classroom (ICCPC programme). Moreover, the research will explore the teachers' involvement in an imposed change and will investigate the specific implications for her* successful involvement in the setting. More specifically, the research questions that arise are:

- **RQ1: What are the views of the teachers, at both the organisational and the personal level, when confronted with an educational innovation e.g. the ICCPC programme, concerning their own role in the setting?**

** In this thesis, when I refer to the teacher, the pronouns 'her'/'she' will be used since the majority of primary teachers in Cyprus are female.*

- **RQ2: Is it possible to profile the range of responses that might be anticipated among teachers confronted with an innovation?**

- **RQ3: How could the teacher be more successfully involved in the implementation of the innovation?**

For the purposes of this investigation, each of these questions requires further elaboration, in order to ensure a comprehensive coverage of the issues under study.

### 1.3.1 RQ1

The first main research question of this study is more explicitly defined below, in two sub questions:

***RQ1.1*** What are the teacher's views about her own role in the ICCPC, concerning the organisational level of the innovation, which consists of the following:

- the decision making
- the rationale of the innovation
- the organisation of the innovation (school and classroom organisation)
- the administrators' involvement in the innovation (school head, Inspector, co-ordinator)
- collegiality between the teachers
- the in-service teacher training provided

***RQ1.2*** What are the teacher's views about her own role in the ICCPC, at the personal level of the innovation, which consists of the following:

- teachers' attitude toward the innovation

-teachers' concerns about the innovation

-teachers' expectations about their involvement in the innovation

### 1.3.2RQ2

The second main research question is explicitly defined below, with two sub questions:

***RQ2.1*** Are there any typical profiles of teacher behaviour when confronted with educational innovation?

***RQ2.2*** How could different teacher profiles promote the successful implementation of educational innovation?

### 1.3.3 RQ3

The following are the sub questions of the third main research question:

***RQ3.1*** What should the teacher's role be, in order to have a successful implementation of the ICCPC, at both the organisational and personal level?

***RQ3.2*** What are the implications for the successful implementation of the innovation?

In order to accomplish the above aims, the research study presents a literature review on change and innovation within education; a consideration of the introduction of computers into educational setting as an example of innovation; and a commentary on the teacher's role in an innovative setting. Moreover, the specific example of innovation is described within the Cyprus educational system. Research is undertaken in order to investigate the teacher's role in the ICCPC programme, her reaction to this imposed educational change, and finally, conclusions are given based on the results of the study, in order to provide the reader with practical implications for successful involvement of the teacher in educational innovation.

## 1.4 STRUCTURE OF THE STUDY

This thesis is divided into three broad parts: the review of the literature, which consists of the first five chapters; the methodology and the fieldwork presentation for the specific case under investigation, which consists of three chapters; and finally, the conclusions, which is the last chapter.

The structure of each chapter is given below. In the ***first chapter*** of the study, the reader is provided with the framework, the rationale and the structure of the study as a whole.

***Chapter two*** presents the literature review on the concept of innovation and change, and identifies the terms that will be used throughout the presented research study.

In ***chapter three*** the teacher's role in the innovation is described with specific reference to the factors determining it, as demonstrated by the literature review. More specifically, in this chapter, the researcher distinguishes between external factors (the organisational level) and internal factors (the personal level).

In ***chapter four***, a description of the integration of computers into education is given as an example of curriculum innovation. In this chapter the intention is to demonstrate that the integration of computers is and should be regarded as an example of educational and specifically technological innovation.

In addition, ***in chapter five,*** the reader is provided with brief, necessary information about the educational setting in Cyprus and in a more detailed form, about the ICCPC programme.

The methodology of the research undertaken is described (aims and objectives, methodological decisions) in ***chapter six,*** in order to investigate the teacher's role in the specific example of the innovative programme. This chapter discusses general issues concerning the whole methodological procedure followed in the study.

***Chapter seven*** presents the results of the pilot study and the results of the research undertaken through a survey questionnaire in relation to the research aims and objectives. Tables and Diagrams are used, in order to make the results as communicable as possible.

***Chapter eight*** presents the results of the interviews that followed. Specific original extracts are used, in order to demonstrate the teachers' feelings on the topic under study.

In ***chapter nine***, both the theory and the practice (ie the empirical data) are combined, and the practical application of the theory is examined through the case under investigation, in order to suggest certain answers to the pre-stated research questions. Profiles of teachers confronted with an educational innovation are described, as they emerge from the results of this study.

In the last chapter, ***chapter ten,*** the researcher concludes with specific implications for the successful involvement of the teacher in an innovative setting. The following diagram presents the structure of the thesis:

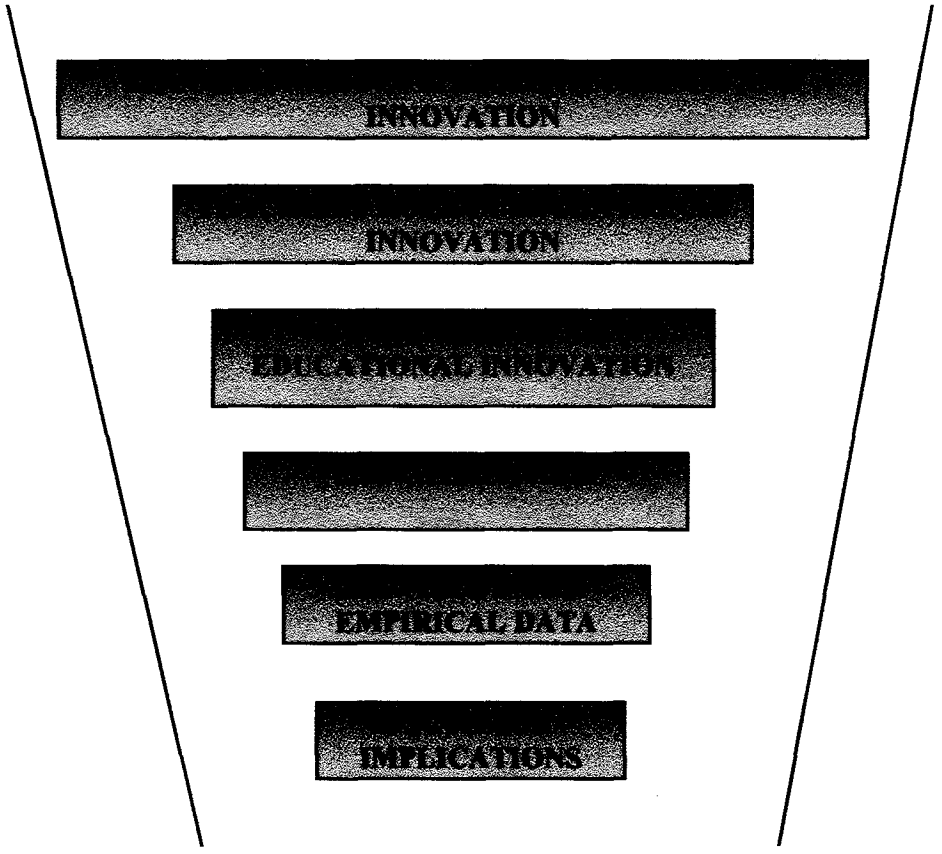


***Diagram 1: The structure of the thesis***

## CONCLUSION OF THE CHAPTER

In this chapter, the statement of the problem was briefly given, as well as the aims and objectives of this thesis. The importance of this research study lies in the emphasis that is given on the teacher as the most important contributor to successful educational change and innovation. The chapter also presents the structure of this thesis.

# CHAPTER TWO

# EDUCATIONAL INNOVATION AND CHANGE: TERMINOLOGY

## STRUCTURE OF THE CHAPTER

In this chapter, the reader is given a brief review of selected literature on the general area of curriculum development, which is the broad theme of this thesis. The term 'curriculum development' is examined as the general field within which educational innovation and change take place. The two terms of educational innovation and change are then examined as parallel terms. Finally, the procedures of innovation and change, which are used interchangeably, are briefly given through a review of selected literature.

## 2.1 EDUCATIONAL DEVELOPMENT

> *"Today, few things in our world are certain. If there is one certainty, it is that whatever the future holds it must be different from anything we can imagine: that change, not stability, will be the one sure force in our society"*
>
> (Henderson & Perry, 1981, p.1).

By its nature, education and the curriculum which guides it is committed to change - directed, purposive, intentional change. Change and innovation in education, curriculum development or curriculum reform have been discussed in many studies, and the close link between those terms has been identified by a number of writers. In the following pages an attempt is made to present these terms. Curriculum development is examined, first, as the

general field within which the procedure of educational innovation and change takes place. Then, the two key concepts of innovation and change will be reviewed as parallel terms describing the situation under study. The literature presented has been chosen as the most appropriate for the topic under investigation among a wide range of references in the fields of educational reform, change and innovation.

Dean (1985), stated that in a world which is constantly changing, the curriculum of schools should also be changing all the time. A lot of researchers and theorists of education have attempted to give a description of curriculum. Through this attempt, some of them have dealt with curriculum development, innovation and change. Kerr (1968) pointed out that the range of meanings given to the concept of curriculum has been one of the sources of confusion in curriculum studies. Many writers use the term loosely as being synonymous with 'syllabus', 'courses of study' , 'subjects' or even 'timetable'. Kerr (1968) gave the meaning of curriculum as something beyond the 'school', as sole source of planning and guiding, and he defined curriculum as '' all the learning which is planned and guided by the school, whether it is carried on in groups or individually, inside or outside the school" (p.16).

The concept of curriculum development is not easy to grasp and impossible to pin down definitively. It is elastic with a range of meanings, from one which involves almost every type of educational change to one which refers to the specific processes of planning a course of study. Taylor and Richards (1979) adopted a middle course as follows:

> *"The term curriculum development is considered as comprising those deliberately planned activities through which courses of study or patterns of educational activity are designed and presented as proposals for those in educational institutions"* (p.48).

Literature on the topic reveals that curriculum development implies a degree of systematic thinking and planning in which individual decisions about content, teaching, and learning are taken, not in isolation, but in relation to an overall design or framework. At one extreme, curriculum development may result in curriculum innovation where radically new proposals are produced with far reaching implications for teacher - pupil transactions. On the other hand, curriculum development may just result in the modification and reshaping of current courses of study with few new components but with a clearer articulation of the various elements comprising the course.

The object of curriculum development was, according to Stenhouse (1975), the improvement of schools through the improvement of teaching and learning. Its characteristic insistence is that ideas should encounter the discipline of practice and that practice should be principled by ideas. Elliot (1991) claims that the curriculum development movement is an attack on the separation of theory and practice.

Lawton (1983) pointed out that curriculum development takes place for a variety of motives. According to him, it happens when individuals or groups, especially teachers and others concerned with the planning of curricula, are dissatisfied with what is being taught or with the methods employed in the classrooms.

Several factors within the school are important for the success of curriculum development and reform: local industrial and employment conditions; the social origins and interests of the pupils and their parents; and the expectations the community has of the school. The most significant of these factors though, seem to be the teachers themselves and their attitude within the school setting.

## 2.2 CHANGE IN EDUCATION

Although separate literature references have emerged specifically on curriculum innovation and change, the nature of this distinction has seldom been theorised. Regrettably, the literature confuses the two terms. An attempt to present the basic literature on the two terms reveals the problem. Despite the fact that most of the studies on change and innovation do not differentiate between the two terms, different pedagogues and theorists have tried to present a terminology which refers to either change or innovation.

According to Hoyle (1972), change is a generic term embracing a whole family of concepts such as innovation, development and renewal, which are used in education in relation to the curriculum. However, Hoskins and Anderson (1992) point out that, when speaking of change, innovation is included. Wray (1984) writes about innovation as a change process, although, one could argue that talk of innovation must imply change for the better. Others (Blenkin et al., 1992) point out that change does not necessarily mean development.

Curriculum innovation involves changes in the premises of teaching -its aims and values- and consequent thinking and classroom practice. However, Doll views change in a post-modern light. "Change is seen in transformative, not incremental terms; and errors are seen as necessary actions in the process of development - the motors which drive development" (1989, p.249). In addition, Kendall (1987) defines change as "...a social process involving the perceptions of all the people concerned, and each of them will see it in a different light"(p.46).

Several researchers and educators view change as a continuum; at one end invention exists and at the other, adoption. Trying to differentiate between the two terms, we would say that invention of change involves something new, whereas adoption of change involves the

acceptance of innovation, as far as the adopting individual group or organisation is concerned.

Handy (1989) refers to change emphasising the conditions under which this change occurs, and describes it arguing that:

a. change is a case of learning,

b. this learning is best done with other people,

c. risk taking is demanded when change occurs,

d. the change process is like exploring the 'inverted doughnut': The doughnut is 'inverted' in the sense that the hole in the middle is the solid part and the outside is all space. The core, he argues, represents all those central values and tasks, while the outside space represents uncertainty - in the forms of risk taking and ambiguity.

McDonald and Walker (1976) refer to social change which consists of three sequential steps: invention, diffusion and consequences. Invention is the process by which new ideas are created or developed. Diffusion is the process by which these new ideas are communicated to the members of a social system. Consequences are the changes that occur within a social system as a result of the adoption or rejection of the innovation. Other theorists have distinguished between diffusion, which is simply the spread of the innovation, and dissemination, which is a more deliberate and planned pattern of diffusion.

Change can be regarded as the most important characteristic of our era, affecting not only education, but also many aspects of our lives. According to Wilson and Rosenfeld (1990, p.242), "change is about achieving a future desired state of affairs. In part, it is the act of crystal - ball gazing, looking into the future to predict what will be the context in which organisations and individuals will exist". From the above definition, it is obvious that

change happens to help organisations cope with situations they will probably face in the future. Griffin (1990, p.395) argues that "organisation change is any substantive modification to some part of the organisation". Havelock (1969,p.2) seems to agree, stating that change is any significant alteration in the status quo, which is intended to benefit the people involved. More recent references seem to add that change is more dramatic. Fullan (1993b) referring to educational change, argues that "the purpose of educational change presumably is to help schools accomplish their goals more effectively by replacing some structures, programs and/or practices with better ones" (p.15).

Change has also been defined as something more stable in terms of the teacher's reaction to it. Katz et al. (1963) gave the following explanation for change; they saw it as:

> *"(1) the acceptance, (2) over time, (3) of specific item - an idea or practice, (4) by individuals, groups or other adopting units linked to, (5) specific channels of communication, (6) to a social structure and (7) to a given system of values or cultures"* (p.238)

Major change is also defined by Salisbury and Conner as "a transition that significantly disrupts people's expectations" (1994, p.13). It is clear that change is not defined by the number of people involved, or even by whether people like or dislike the change objectives.

Cuban (1990), differentiates change between 'first order change' and 'second order change'. The first is addressed to more superficial elements of the classroom and the school system and does not involve the organisation meaningfully. The 'second order change' goes deeply into the structure of the organisation and the ways in which people work together. It is often required by current societal and educational demands and they are multifaceted,

slower and mean changing attitudes, perceptions, behaviours, relationships and the way people collaborate.

## 2.3 EDUCATIONAL INNOVATION

Innovation is often described as a noun indicating a new object, idea or practice and also as an abstract noun indicating the process by which a new object, idea or practice comes to be adopted by an individual, group or organisation. Miles (1964) defines innovation as deliberate, novel, specific change which is thought to be more efficacious in accomplishing the goals of a system. Hurst (1978) views innovation as "the idea of a change in behaviour or practice"'. Wray (1984) writes about innovation as a change process.

A discrimination between the terms under investigation, change and innovation, was attempted by Bolam (1975) who claims that innovation is distinguished from change since it is an intentional and deliberate process. Stenhouse (1975) made a distinction between innovation and renewal. He argued that "curriculum renewal is a matter of updating materials, of keeping pace with developments of knowledge and techniques of teaching".

Different authors viewed change or innovation in several ways. But, whatever terminology is used for change or innovation in education, nearly all theorists agree that it is a difficult procedure, which involves highly complex settings. The stages of the innovation in education are briefly presented below.

## 2.4 THE STAGES OF EDUCATIONAL INNOVATION

Innovation and change seem to involve passing through certain and specific stages from the initial conception to the final full functioning. A number of authors refer to five specific stages: Initiation, Planning, Implementation, Evaluation and Institutionalisation. Other

authors (Fullan, 1993a, 1993b, Griffith, 1990) refer to more stages but all are embodied in the major five ones.

It is well known that the successful change process over time is not linear, but consists of a series of stages that merge into each other. According to Fullan (1991), the three overlapping stages are initiation, implementation, and institutionalisation or incorporation.

The initiation phase is the decision of embarking on change and developing commitment towards the process. Fullan (1991) presents a list of factors that make for successful initiation: a change closely tied to a school need; a clear, well-structured approach to change; an active involvement of the staff; external support; active initiation to start the innovation (top down is all right under certain conditions); and good quality change.

Implementation is the phase of the process which has received the most attention. The key activities which occur during implementation are the carrying out of action plans, the developing of sustaining commitment, the checking of progress and the overcoming of problems. According to a number of writers (Fullan, 1993, Hopkins et al., 1994, Miles, 1987) the key factors making for success are: the responsibilities for orchestration/co-ordination; shared control during implementation; a mix of pressure and support; adequate and sustained staff development and in-service support; and rewards for teachers early in the process.

Institutionalisation is the phase when change stops being regarded as something new and becomes part of the school's usual way of doing things. This stage does not happen automatically. It requires different strategies if success is to be achieved. However, the failure of many efforts towards change is associated with many centralised initiatives which tend to be unsuccessful.

Fullan's (1991, 1993b) greatest contribution in this field is the emphasis he gives on the phase of the implementation of the innovation. He argues that implementation is about :

a. what really matters in the change process;
b. doing, trying and following through - it's about sustained effort over time;
c. mobilisation - about galvanising the teachers to change their classroom practice in significant ways;
d. rolling programmes of work which are fluid and dynamic;
e. above all, making change stick.

Certain writers attempt to describe the procedures followed, through the educational innovation. Wray (1984) points out that innovation is characterised by distinct steps beginning with the invention, that is, the creation of the 'new idea', followed by its development, diffusion, implementation, adoption or rejection leading to certain desirable or undesirable consequences.

Stiegelbauer (1994) argues that the successful implementation of new programmes and processes, or innovations, remains a dilemma due to the heavy demands on resources. The long term commitment necessary for successful implementation and continuation is hard to sustain, although the real goal of change always remains an impact on outcomes. The reason for that might be that those who allocate resources want to move on to gain more recognition and rewards through this procedure.

Back in the 1970s, when research on innovation in schools began in earnest, change was viewed primarily as classroom change - one teacher, one classroom, one innovation. Many innovations adopted a perspective of 'technical rationality' (Miles, 1992). That means that teachers seemed to accept an innovation when it was practical and largely suited their own

needs in the classroom. In fact, the central paradigm for planned educational change through the early 1980s provided an innovation focussed perspective on the implementation of single changes and instruction (Fullan, 1985). "Thinking about change was linear in those days" (Stiegelbauer, 1994, p.1). Change in those circumstances could be described as an 'event', because it was selected and announced; and it was assumed that change would then simply happen. The decision about better results was seldom the decision of the implementing teacher.

More sophisticated theorists now suggest that change and innovation should be approached rather differently. The research on change has generated an emphasis on process and its context. Effective change no longer affects one teacher in one classroom but the very culture of schools. School and classroom culture are largely emphasised since the internalisation of innovation is a fact and the reconstructionism is a reality.

In new models for innovation, an organisational capacity for continuous renewal and growth points towards the direction of the future and changing the culture of schools; what schools do, and how they work is the real agenda ( Fullan and Hargreaves, 1992, Nias et al. 1992).

Concerning the method that is used to introduce the innovation in education, Fullan (1993b), argues that neither 'top down' nor 'bottom up' strategies for educational reform work. He proposes a combination of the two and highlights the teachers' role within these procedure.

If a change is to be conceived, planned, negotiated and adopted in education, the participants in the process at the various stages must fulfil a range of roles. Kelly (1980) identifies three categories of change agent - the change generators, the change

implementers and the change adopters - each having a distinctive influence on the progress of a change.

Concerning the circumstances under which teachers are involved in the change procedure, research findings support that voluntary adoption is the best. Claxton (1989) argues that the only kind of change worth promoting is self - chosen change, where teachers have somehow got over the barrier between 'I should change' and 'I want to change'. Though, some researchers believe that even this does not lead to certain success (Fullan 1993a, 1993b, McLauglin and March, 1978). A lot more seems to be needed in order to achieve successful implementation of innovation and change in education.

David believes that previous waves of reform have amply demonstrated the futility of mandating challenging curriculum without changing the rest of the system in ways that support teachers. "Policy changes from a tool to prescribe and control behaviour to a tool to empower people and facilitate change with appropriate checks and balances"(1994, p.2). Significant changes in teaching and learning require significant changes in the entire system.

Fullan points out that innovation is a highly complex situation. "Under conditions of uncertainty, learning, anxiety, difficulties and fear of the unknown are intrinsic to all change processes, especially at the early stages" (Fullan, 1993a,p.25). He identifies three dimensions of innovation: namely the use of materials, the use of new teaching approaches and the alteration of beliefs, such as pedagogical assumptions and underlying theories.

It seems that innovation in education passes through several stages and it is clear that usually the involvement in these stages is not pleasant, easy or joyful.

## 2.5 THE COMPLEXITY AND UNCERTAINTY OF EDUCATIONAL INNOVATION

It is well known through research findings that the procedure of change is complex. Change is more or less expected to be complex and difficult to the people involved in it. Due to this complexity and the nature of educational innovation and change, people become reluctant recipients of it. Central to the success of change is the individual and as such a large body of literature has been developed around the phenomenon of initial resistance to change. People are creatures of habit; they tend to follow the same path during their life. Morris (1988) argues that people are naturally resistant to changes, especially those that require a change in behaviour. "The first barrier to change centres on difficulties with altering the status quo" ( Stoddrant and Niederhauser, 1993, p.15).

Change is expected to be difficult, in several aspects. Problems are inevitable and are 'welcome', in order to help people learn through them and lead to success. A lot of research has been devoted to the difficulty of the change and innovation, as it is experienced by the teachers. Benett (1980) argues that "curriculum innovation is indeed accompanied by a building up of uncertainty, arising from the complexity, ambiguity, and which often characterise curriculum development projects" (p.72). Fullan (1993a) adds that "...if people do not venture into uncertainty, no significant change will occur" (p.25). In addition, Franklin and Strudler (1989) add that change is difficult; "it is difficult to imagine, difficult to plan for, difficult to implement, difficult to manage and difficult to measure" (p.1).

Specifically in education, if an innovation is to be successfully implemented, change should occur in several educational aspects. In education, teachers are both the agents of change and the subjects of change. As humans, they seem to react reluctantly towards any

effort for change. Schon (1971), refers to the phenomenon 'homeostasis' which is the tendency of the individual to maintain stability. In most cases, it originates from outside influences, and frequently, there is no choice but to make the change. Teachers have this tendency to seek to maintain stability, therefore, any force for change is not easily accepted.

Teachers experience a lot of difficulties when involved in an innovation setting. This is a fact that is viewed as natural. Fullan (1993a) supports the idea that all the difficulties faced by the participants in an innovation are natural and have to be coped with, in order to have the successful involvement of the teacher in the innovative setting. "Conflict is essential to any successful change effort" (p.26).

## CONCLUSION OF THE CHAPTER

It has been shown that a lot of research findings, dealing with curriculum development, attempt to clarify terms as 'change' and 'innovation', though, not always in a successful way. Change can take the form of an educational innovation, which inevitably brings with it social, moral and often, political change too. Therefore, change seems to be a more general term, with a multidimensional and complex context; while innovation, refers to something more concrete. For the purposes of the presented study the two terms could be used interchangeably, since the case that the research is dealing with can be seen as both 'change' in the curriculum or 'innovation' in the curriculum in the sense that it is a purposeful, intended change. Educational innovation or change as part of curriculum reform and development, require careful implementation, due to the complexity that embodies them. It has been shown that the process of innovation and change in education involves various elements that could promote real change. In all this effort, the teacher seems to be the crucial factor for success, as will be illustrated in the next chapter.

# CHAPTER THREE

# THE TEACHER'S INVOLVEMENT IN EDUCATIONAL INNOVATION

## STRUCTURE OF THE CHAPTER

This chapter focuses on those elements in the literature on change and innovation, which are particularly concerned with the role of the teacher. It is, therefore, directly relevant to the study which follows. It is proposed that the teacher's involvement can usefully be considered at two levels: the organisational and the personal.

## 3.1 THE TEACHER'S ROLE IN AN INNOVATION

> *" It is clear that change will not take place without the support and the commitment of teachers"*
>
> (Vandenberghe, 1984, p.14)

It seems that the teacher acts, among other factors, as the main contributor to successful implementation of educational innovation and change. This is a view supported by many authors, examples of which are given below.

Examining the factors which are associated with the efforts for change in education, Hebden et al. (1978) present five main areas that influence adoption or rejection of curriculum change. These are the teachers themselves, pupils, the project resources, school administrative structures and forces external to the school. However, they argue that the teacher is perceived as the key factor in the change process.

As school reform proponents Lieberman and Miller (1990) argue, for school restructuring to occur, a combination of factors must be present at the same time and over time - including leadership, a shared mission, school goals, necessary resources, the promotion of collegiality.

Stigelbauer (1994) refers to the elements that are important to the actual work of change: people, processes, practices, and policies. He initiates a 'model' about how change fits into today's educational systems and argues that 'the secret of change still lies in the applied common sense of the people involved' (p.1). It seems that teachers are the 'missing voices' in several educational reform efforts and in change procedures, undergoing in the curriculum fields.

In an early study, Gross et al. (1971) identified five barriers to the implementation of any innovation. Taken together these indicate the significant role played by teachers:

1. the teachers' lack of clarity about the innovation;
2. their lack of the kinds of skills and knowledge needed to conform to the new role model;
3. the unavailability of required instructional materials;
4. the incompatibility of organisational arrangements with the innovation,
5. loss of staff motivation.

Other research findings emphasise very strongly the importance of the teacher's involvement in innovation and change efforts.

## 3.2 THE TEACHER AS THE MOST IMPORTANT CONTRIBUTOR IN THE EFFORTS FOR EDUCATIONAL CHANGE

A review of the research in this area reveals that teachers themselves are the most important factors for the successful implementation of educational innovation. It is also revealed that the teachers' involvement in change or innovation efforts is not an easy task due to several external and internal factors. In the following pages, an attempt is made to present the case for the teacher's role in an innovation as it emerges from the review of the existing literature on the field.

One of the main conclusions of the forty fifth International Conference on Education (ICE, 1996) the theme of which was 'Strengthening the role of teachers in a changing world', was that the essential role of teachers in introducing the new integrated technologies into classroom practice is now even more central than ever. There are two aspects to this: first, to arrange the innovation, so it can be transformed into knowledge, and second, to transmit a new culture through the innovation (Luisoni, 1996).

It appears that for change to occur, information must build on teachers' existing knowledge, beliefs, and practice, and the teachers must see the value of the information. This mirrors the current popularity of constructivist learning theory, which emphasises the personal, individual meaning that each person must create for himself as he comes to learn and to use new knowledge.

Many writers have endorsed this view. Fullan (1993b) argues that educational change and improvement depend on what teachers think and do while Hargreaves adds that innovation and change "depend on what teachers think, say and do" (1992, p.219). Veen (1993) argues that "for any educational innovator it is important to realise that it is not the view of the innovator about the merits of the innovation that matters, but rather it is the view of the

teachers about innovation that is critical" (p.149). Hargreaves adds that "the involvement of teachers in educational change is vital to its success, especially if the change is complex and is to affect many settings over long periods of time" (1995, p.11).

Generally, the literature of the 90s shifts the teacher's pedagogic role from that of a fact teller, and always the expert, to a collaborator and sometimes a learner. It is clear that any communication about changes in educational reform efforts must start by listening to the people most affected by those changes.

It becomes obvious that to make sensible critiques of proposed reforms requires getting at the teachers' underlying assumptions, the social and historical context in which they operate, the degree to which they are congruent or not with the teachers' existing beliefs, commitments and practices, their probable consequences for students, and the ways in which they vary or converge across communities. On this argument one test of teachers' professional development is the INSET capacity to equip teachers individually and collectively to act as shapers, promoters, and well-informed critics of reforms. (Little, 1993, p.1). Little (1993) points out that in recent years elementary teachers have had to absorb the changes in content and method associated with an entire spectrum of the elementary curriculum.

The baseline of any change is working with people who will put the plans into operation; people who will lead, support, and act as resources, and people who will act as catalysts and energisers. Early research has recognised the central importance of people in the change process, but it has taken a long time to define what that recognition should mean for the planning process. Huberman (1988) argues that teachers, "...usually the objects of change, are historically independent craftspersons who often work in isolation and who place great value on the practical outcomes of their work" (p.125). Research reveals that

the more contact which occurs, especially one to one supportive contact and group problem solving or process analysis discussion (Miles 1992), the more likely it becomes that these independent individuals will take on the change.

"Teachers must immerse themselves in the mysteries, and highs and lows of the dynamic complexity in the change process" (Fullan,1993a, p.80). It is important for the teacher involved in an innovation to understand the whole setting and Rudduck argues that "...individuals need to feel that change is not something that happens to them and which they cannot control, like bereavement, but instead something which they are in principle seeking and welcoming" (1991,p.209). Stein and Wang (1988) refer to teacher's commitment to or interest in both acquiring and using the competencies which are required to effectively implement and maintain the innovation.

In his early studies, Havelock (1969) presented his three models of teacher's involvement in an educational innovation. He speaks about the diffusion of knowledge and seeks to explain the way knowledge diffuses through social systems by formulating three models of the knowledge diffusion and utilisation processes. These models (which have frequently been applied to the curriculum development process) imply differing roles for the practitioner - teacher:

a. the Research, Development and Diffusion model (R D and D) describes a process with several major stages; basic research, applied research, development and testing of prototypes, mass production and packaging; planned mass dissemination; receipt by the user. It is essentially an empirical - rational strategy. According to Bolam (1975) it was widely adopted for quite some time as the principal approach to curriculum development and innovation. However, the RD and D model has provoked increasing scepticism because of its apparent lack of success in bringing about change at the user

level. In this model the teacher is seen as the passive recipient of the centrally conceived and designed project.

b. the Social-Interaction model may also be categorised as an empirical - rational process, which derives its strengths from the well documented fact that people are more likely to be influenced by those whose judgements and opinions are respected. According to Barrow (1984) the social interaction model means no more than seeing educational systems as 'complex networks of social relationships'. Here again the project is conceived and developed centrally but this time the central team makes a point of collaborating with the practitioner at many points during the process, responding to feedback from those concerned with project implementation. Within this model, the teacher is therefore viewed as a collaborating recipient.

c. the Problem Solver model is presented by Havelock as a single model, but, arguably, consists of three quite distinct sub models. In this model the teacher is seen as the initiator of curriculum development.

Havelock presents these models as 'ideal types' and indeed it is possible to find pure versions of each of these three in the practice of curriculum development. Havelock himself later came to advocate that the best approach should reflect the strengths of all three models: it is thus clear that he saw the importance of an active role for practitioners.

Indeed many of those who have made a study of curriculum innovation have argued that teachers' beliefs, attitude and ideas, about the innovative programme are crucial for successful implementation. Fullan (1991), asserts that an individual's involvement with and commitment to change is largely motivated by his or her subjective understanding of the meaning of change (subjective reality). However, subjective meaning can be mediated

by dealing with the objective reality. Therefore, it is important for the teachers to get an objective meaning of the innovation. It is the transformation of subjective realities, or the establishment of a new meaning or relationship to the change, that is the essence of any substantive change process (Fullan,1991). The objective meaning that teachers acquire is related to the practicality issue which embodies the change (Huberman, 1988). Objectively, a change has to have practical outcomes for them and for their students.

A lot of writing highlights the personal level of the innovation, focusing on its psychological aspect from the teachers' point of view. Bennett (1980), refers to the adoption of change as the psychological acceptance of the innovation by the target group. He believes that it is through a personal psychological interaction with all aspects of the innovative environment that teachers' attitudes to curriculum innovation develop. As part of this interaction the teacher passes through a lot of anxiety and uncertainty especially in the early stages of the implementation of the innovation.

Doyle and Ponder (1977) give three criteria which influence teachers' decisions regarding the implementation of recommended practices:

a) Instrumentality - how clearly and specifically the practices are presented,

b) Congruence - how well the new practices are aligned with the teacher's present philosophy and practices and

c) Cost - the teacher's estimate of the extra time and effort the new practices require compared to the benefits such practices are likely to yield.

Research has also pointed to the importance of examining a wide range of variables: Stein and Wang (1988), emphasise the significance of the teachers' perceptions of self efficacy and of their views about the values of the innovation to be implemented. Guskey, (1988), points to self concept and clinical skills; Ingvarson and Mckenzie, (1988) mention levels

of administrative support and follow up assistance. Another significant issue is the extent to which inservice education results in a real and lasting change in professional practice (Guskey, 1988, Joyce and Showers, 1980, Mann, 1978) and, subsequently, in student achievement (Fullan, 1985, Joyce and Showers, 1988).

Research evidence reveals that all ill-conceived and misunderstood innovation may create a 'mismatch' between the 'intended innovation' and innovation 'in practice', what Zaltman and Duncan (1977) called as 'performance gap'. In order to overcome this issue, Havelock and Huberman (1977) and Hogan (1992) all suggest a problem solving approach which provides a conceptual framework to understand the curriculum change process and the nature of factors that affects curriculum changes within specific settings.

In the light of all the above, it is obviously crucial to examine the teachers' stances and 'voice' towards the innovation itself. In order to do that, one has to consider the teacher in all phases of the innovation implementation, both at the external, organisational level and also at the internal, personal one.

Miles (1987), sums up much of the previous discussions; and contends that all change initiatives need to satisfy certain conditions:

a. *clarity*: teachers must understand clearly what is expected of them;
b. *relevance*: teachers must feel that the changes being promoted are meaningful, practical, applicable and connected with their everyday concerns;
c. *action images*: teachers must be able to visualise what is expected of them - what the changes look like in practice;
d. *will:* this is the dimension of motivation, interest, and involvement. Teachers must acquire the 'internalised resolve' (Holly, 1987), to do something with their newly acquired knowledge;

e. *skill*: teachers must acquire the necessary skills to be able to do the action as envisaged.

It has been shown that a number of factors seem to be associated to the teacher's involvement into an innovative setting. In the following pages an attempt is made to clarify the teacher's involvement and role in the innovative practice. The literature implies that we may usefully discuss these matters under two broad categories: the Organisational level (external factors) - which involves school and administrative factors, and the Personal level (internal factors) - which involves several factors associated with the teacher's attitude towards the innovation and also to the motivational factors.

## 3.3. ORGANISATIONAL AND PERSONAL FACTORS ASSOCIATED WITH THE TEACHERS' ROLE IN EDUCATIONAL INNOVATION

In order to support the research which will be reported in the following chapters, the researcher has attempted to extract from this vast literature on change, material which will both examine some of the major themes and will also relate to what is seen as the key elements in the ICCPC programme. Thus, using the distinction between organisational and personal factors discussed above, the discussion which follows will focus on literature relevant to the main factors in the organisational environment which have shaped the implementation of the ICCPC and will then turn to the personal concerns of teachers as they confronted this (and indeed most) innovation. Diagram 2 presents the structure of the following pages concerning the teacher's role and involvement in the innovative setting.

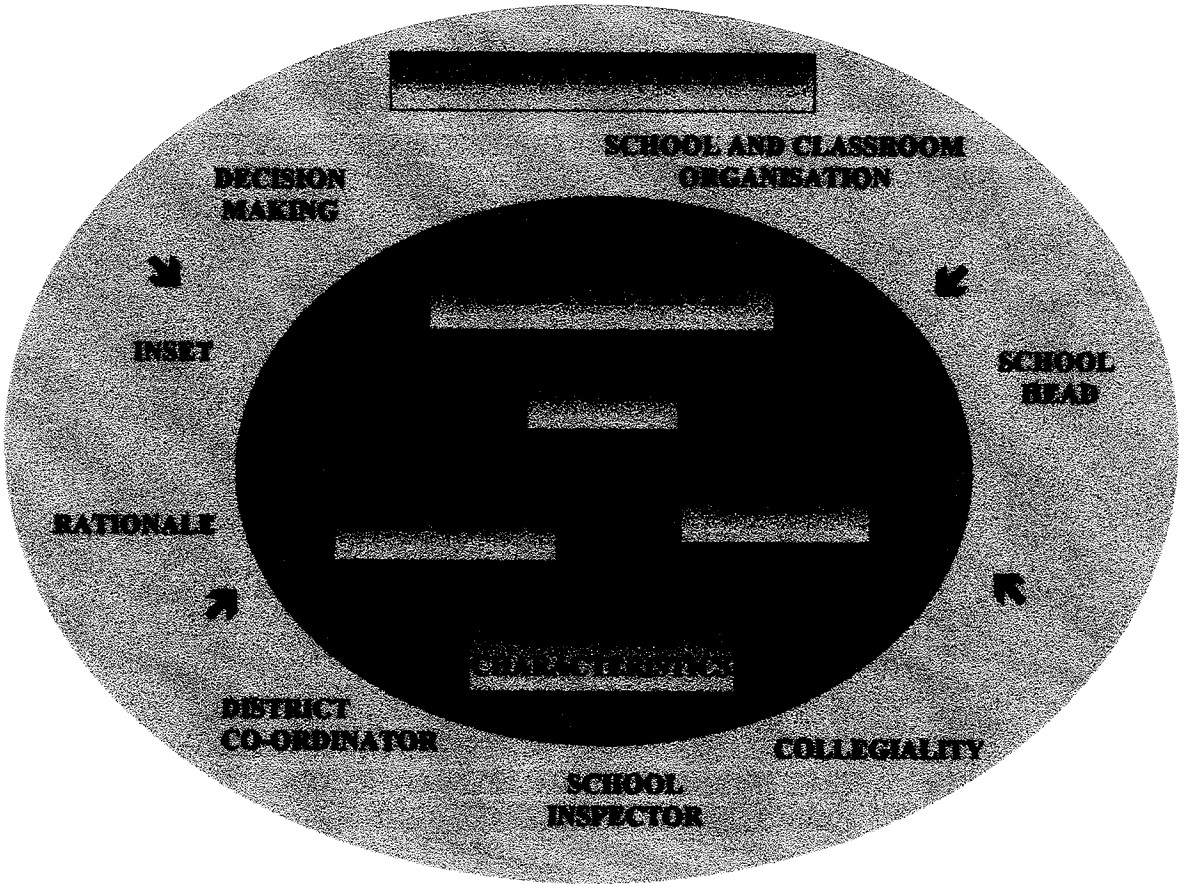


*Diagram 2: Issues relevant to teacher involvement in an innovation*

### 3.3.1 ORGANISATIONAL LEVEL

#### Decision making

Research implies that teachers involved in an educational innovation should be included in the decision making procedures quite early on, at the national - administrative level of the innovation and/or at the local level of the school.

Firstly, change requires leaders - those who keep up the pressure and provide visible sanction for what is happening. Change also requires support, in terms of policy and funding (Fullan, 1993b, Fullan and Hargreaves, 1992). Research makes it clear that district

and school administrators are key determinants of whether or not change gets implemented. Leaders may or may not be facilitators. However, they must be communicators who are committed to the goals of the change and demonstrate the sincerity of their intentions to all members of the system. Their experience can guide those who are more conservative in their response to change and who want to see more concretely what the change is all about. David (1994) argues that ideas about the role of the effective administrator have changed in the 90s. The new image is of a dynamic head who promotes and supports educational innovations.

For several years in the past, policy makers have been trying to implement new and exciting innovations into apparently resisting classrooms. Traditionally, teachers have been implementers or managers of someone else's curriculum. That is a possible reason for the failure of many innovations.

Recent studies have emphasised the role of being involved in school level decision making, as an important factor affecting teachers' attitudes and perceptions. In particular, it is expected that participating in school level decision making will promote teacher receptivity to the change, and thus, will be associated with teacher's attitude to the change (Roberston,et al, 1995). A review of the literature suggests that the involvement of the teacher in the programme is crucial from the early stages of the innovation. Franklin and Strudler (1984) argue that because change takes time and is best viewed as an ongoing process, the initial stage of the learners - in this case the teachers themselves - is an important consideration. Moreover, "successes in the early implementation phase are crucial for motivating teachers to further activities and to elicit commitment to the change efforts"( Akker et al., 1992, p.74). Herriot and Gross (1979), suggest that a first strategy to overcome staff resistance to change is involvement and participation in decisions about the

innovation. They also refer to 'group dynamics', pointing out that the involvement of all interested parties in the decision making and other procedures of the innovation, promotes success.

Pelletier (1991) admits that teachers are rarely involved in the initiation of an innovation. In fact, he refers to the teachers as the 'missing voices' in the reform movement.. " Most of the reform efforts are removed from the realities of the classroom and therefore, few of their reforms have had lasting effects on schools" (p.49). The same is implied by other researchers who reason that early participation in decision making procedures promotes successful implementation of the innovation (Fullan, 1993b, Hargreaves, 1995). Harding (1978) stresses that decision making should be a central role for the teachers involved in innovation.

Many writers discuss the concerns that teachers experience as they take on something new. Individuals will go through these stages at different rates, but facilitators can use certain guidelines for the kind of information and support individuals or groups will need at different points in time. Therefore, it is implied, the teacher who is involved in an innovative setting should also get involved in decision making procedures. Decision making can be practised at different levels: in the classroom, in the school, at the local level, and finally, at the administrative level (ministry or national committee). Recent research suggests that school based management with a high involvement of the teachers can lead to the successful implementation of change.

It seems, therefore, that teachers need to have a measure of control over the innovation or change. They need to feel that change is something they are, in principle, seeking, welcoming and helping to shape.

In conclusion, it must be said that if teachers are to be true professionals, they must have a role in generating knowledge about the curriculum and participating in all the innovative efforts from their genesis (Tanner and Tanner, 1989). It is clear that the participation of the teacher throughout the implementation of the innovation, and indeed from its early stages, can lead to success.

## RATIONALE OF THE INNOVATION -AIMS AND OBJECTIVES

It is important for teachers to understand the philosophy and the rationale of the innovation. In discussing change it is often useful to identify 'aims', 'goals', and 'objectives' quite distinctly, and separately, even though for many purposes these distinctions will blend into one another. Rudduck (1988) argues that teachers "have to understand what they are trying to achieve, why they are trying to achieve it and how" (p.208). Herriott and Gross (1979) argue that most studies on organisational change efforts in education lacked adequate theoretical underpinning; that is to say, they lacked a philosophical background or failed to make it explicit, ending in a failure. Hawkridge (1990) supports that all must be clear about the rationale behind the innovation.

In addition, Vandenberghe (1984) suggests that "a permanent clarification of the innovation is a pre - eminent activity during the implementation" (p.23). Ongoing support of the innovation, by making its rationale communicable, clear, and easy to understand, is vital. The rationale implies an understanding of the features of the innovation by the teacher on an ongoing basis. Research indicates that as a teacher becomes more deeply involved in curriculum development, so his need for support increases (Hebden et al, 1978,p.52). Ongoing involvement in discussions about the project's rationale becomes important.

It is important to note that the rationale of the innovation should be communicated to the teachers in the early stages of the innovation. In these early stages, there is a need for information about how the innovation will affect individuals personally (self); later, individuals need both time to practise the change even as they manage it (task); and finally, individuals will be interested in refining what they are doing to meet better the needs of their students (impact).

It is essential to provide teachers with the necessary mechanisms to enable them to understand and practise the philosophy, the aims and objectives, and the content of the innovation. Fullan (1993a), presents the profile of the teacher of the future who will have a deep understanding of what the change effort is, and works in highly interactive and collaborative ways, trying to get through the complex dynamics of the change process.

An interesting point made by Fullan (1993a, 1993b) was that during the innovation some teachers might experience a feeling of false clarity; that means that they think they understand the new procedure, but they actually do not. On the other hand, other teachers are very anxious when confronted with the innovation and actually know that there is something new and / or difficult that they need to be involved in; yet, they realise that they do not have the necessary understanding and / or skills for successful implementation. Fullan describes this as a feeling of painful unclarity, since they suffer while trying to achieve success.

In conclusion, Rudduck argues that "in order to feel a sense of control, (teachers) have to recognise what it is that they want to change. It is not easy, however, to help teachers to arrive to such complex understandings" (1991, p.92).

The scope of planning for change must be gradually widened for teachers by the use of external supports. Another way that this can be done, is that the rationale of the innovation can be communicated to the target group - which is the teachers- through INSET.

**INSET**

An acceptance of change as a fact must lead us to a recognition of the need to create the conditions under which it can happen, and indeed flourish. Blekin et al. (1992) point out that the only route to continuous and lasting improvement in education quality is via the professional development of teachers.

Staff development has indeed been identified as extremely important for innovation. A recent national educational goal in USA has become 'teacher education and professional development' ( Dilworth and Imig, 1995). This suggests that practising teachers are the key to the transformation of schools, and, in order for teachers to lead the reform efforts, they need to be offered explicit and enriched professional development experiences.

Since the rationale of the innovation must be clear to the teachers involved in change, the training task becomes a crucial factor in successful implementation. Teacher training must be a major task in innovation programmes.

A central component of strategies for improving the quality of education and the implementation of new government programmes and policies is often the short in - service course. Virtually every text on innovation points to the fact that adequate training is essential to success ( see for example, Joyce and Showers, 1983, Wang and Gennari, 1983). Evidence suggests that in order to have successful curriculum innovation, teachers must be

provided with the capability to understand the change process through the INSET provided (Mallatratt, 1988, Fullan, 1993b, Hargreaves,1995).

Since it is a matter of learning, teachers act as learners who seek knowledge and support. Besides, teachers themselves have asked for appropriate INSET and made their training needs on innovation clear (Rudduck, 1991, Koshy and Dodds, 1995). Tanner and Tanner (1980), have argued that the INSET provided is often insufficient if the teacher is to act as a change agent. "Our expectations of teachers continue to be unrealistic in view of the kind of preparation they receive (and the kind of assistance they get when out of the job)" (p.625).

As far as the duration of INSET is concerned, Cox et al. (1988) found that short INSET courses were not very effective in promoting uptake and that teachers need an ongoing training programme.

Other findings reveal that the impact of the present INSET which is provided to teachers varies greatly from school to school. The factors which mainly account for this variation are related to the kind and degree of support the teachers receive in their schools after the INSET courses. It appears then, that support to teachers needs to be broad enough to include school - based support as well as off - site training. Research by Stein and Wang (1988) implies that staff development programmes should include strategies for developing and sustaining teacher's motivation to use what they already know about effective teaching practices.

Concluding, one should state that, in order to ensure successful involvement of the teacher in all phases of the innovation, appropriate INSET needs to be provided for them on an organisational and personal level, and that this should extend as on - site support.

## SCHOOL AND CLASSROOM ORGANISATION

Innovations must make sense in terms of teachers' concerns. Teachers do not regard the definition of educational aims and principles as part of their job. They are primarily concerned with issues such as time, resources and classroom management (Brown and McIntyre, 1982).

Teachers like to feel that any new practice has clear benefits for them and for their students. Practices that are too similar to or too different from conventional approaches present problems of implementation. Teachers either do not clearly distinguish what is new or feel a sense of loss or resentment at being asked to change from what they perceive as successful current practice (Fullan, 1991, 1993, Hargreaves, 1992).

Time, as part of the school and classroom organisation, has been found to be a key factor influencing the teachers' role in an innovation. It has been reported as such not only by researchers but also by teachers themselves, when asked to comment on their role in the change process. "Time is the energy of freedom. Or so it seems to teachers" (Hargreaves, 1995, p.95). Time presses down on the fulfilment of their wishes. Time confounds the implementation of change. According to Barber and Brighouse (1992), teachers accept, indeed welcome, increased responsibilities, but they find it difficult if not impossible to cope with the extra work without some assistance. Many of the authors agree on the need for time and on-going support in order for such a role change to occur, in order to see any substantial impact on student learning.

Tanner and Tanner (1980) argue that time, together with expertise and materials, are three enormously important resources for problem solving by teachers in the context of

curriculum development. They even suggest that "the administration must free the teachers involved (in the innovative programme) from their classroom duties" (p.650).

Concern for the improvement of education is widely evident today in practically all countries. One major development that can be observed within the present trend is that more emphasis is being directed to the way in which the school functions. Practical issues such as the organisation of the school and the classroom are important if successful innovation is to occur. It has been found that school factors are highly associated with the successful adoption of an innovation.

According to Wray (1984), teachers are more concerned in dealing with the immediate needs of their students than in accomplishing long - term goals. He argues that even when teachers are involved in a 'change process' they do not necessarily react in the way the reformers would want them to, but rather in the way that suits them. To support this, Wray (1984) adds that teachers never really adopt innovative practices wholesale but always adapt them to suit the varying needs in the classroom as they perceive them. This implies that teachers actually practise the innovation as it suits them in the classroom and not as it is imposed on them from the top. Thus, teachers seem to respond to innovations which are immediately relevant or useful to them in terms of classroom activities; but they seem less interested in the expression of long term aims that have little to offer in terms of practical support. This may mean that a gap exists between theory and practice.

Innovation as part of the curriculum should be offered to the teachers in a well organised way with on going support. Issues of organisation in the school and most important in the classroom seem to be crucial where successful implementation is concerned. Teachers should be comfortable in their own settings in order to act as change agents.

## COLLEGIALITY

It seems that innovation is more successful when teachers work in a collegial and collaborative way." Teacher collaboration ... is where the power for change lies..." (Fullan, 1993b, p.131). In addition, Hargreaves (1992), argues that "teachers do not develop entirely by themselves...they learn from many groups...mostly perhaps from other teachers, particularly from colleagues in their own work places, their own school" (p.216). He also argues that teachers' cultures, and especially their relationships with others provide a vital context for teacher development. A truly facilitative approach to successful whole school change means " building an effective, mutually supportive team in which communication is direct, open and honest" (Campell, 1985, p.7). Others viewed collaboration in a broader sense; Nias et al (1992), through their work with primary teachers, supported that "each school had developed a culture whose unique quality was determined by the influence of its buildings, organisational arrangement, the people who worked there, their histories and that of the school" (p.45).

McBeath, (1995), describing the strategy of teacher collaboration in his project, argued that "...by the encouragement of teacher level collaboration and involvement, the strategy offered the opportunity of bottom - up interaction with a top -down mandate to change (p.14).

Fullan (1992), adds that "True understanding (...) comes only when teachers are given opportunities and time to work with the innovation in the classroom and to talk about what they are doing with others" (p.31). He also stresses that isolation is a problem for the teacher who is involved in a change process. Collaboration, on the other hand, is good. "Mentoring and peer coaching are a must" (p.26). Teachers need to work in a highly

interactive and collaborative environment, if there is to be a successful implementation of the innovation.

It is important to note that Hargreaves distinguishes between 'collaborative cultures' and 'contrived collegiality'. In collaborative cultures, collaborative working relationships between teachers and their colleagues tend to be: spontaneous, voluntary, development - oriented, pervasive across time and space. On the other hand, in a 'contrived collegiality' setting, there exists an administratively regulated climate, compulsory, implementation oriented, fixed in time and space and predictable (Hargreaves, 1995). The issue here is the notion of the danger of boundaries that exists if the collegiality is a top down, imposed procedure. In this situation, teachers tend to focus on second order issues like the sharing of resources, materials etc. and lose the real point of sharing the same vision in the innovative effort.

The factor of collegiality, and the experience that teachers gain through it, becomes very crucial when an innovation is being implemented in education. This is a common theme in the literature: collegiality in the sense of genuine collaboration is an essential factor associated with success in educational innovation.

**SCHOOL HEAD**

The head of the school occupies the key innovative role in the school - given that innovation usually has school - wide implications. But, as the teachers enjoy some degree of classroom autonomy, he or she (the school head) must contrive to gain acceptance of an innovation if it is to be institutionalised.

The personality and administrative style of the school head are seen to be key factors influencing the degree to which the principal will succeed as an innovator. " If the head is

dictatorial and traditional, all our attempts to change will be doomed to failure" (Claxton, 1989, p.146).

Gross et al. (1971), in an early study of the implementation of innovation in school setting, concluded that the school principal's strategy for change was inadequate for two main reasons:

a) it was based on the assumption that teachers would be able to «figure out» the procedures given the goals and therefore failed to create the mechanisms to cope with the anticipated needs and,

b) it did not create information systems to identify unexpected problems.

Claxton (1989) refers to heads as people who also need support, in order to be able to get involved and participate in the change process. He argues that they are probably experiencing as much doubt and uncertainty as their teachers. He emphasises the need for the administrator to listen to his teachers and give them the chance to share their experience with him.

On the other hand, "a principal alone cannot make substantive changes at the classroom level unless teachers assume ownership and accountability for them" (Foley, 1994, p.29).

As a conclusion, one might argue that the school head could have a catalytic role in the change process, if he is supportive and positive, promoting real change on the teachers' side.

**SCHOOL INSPECTOR**

Some researchers have inferred that the relationship between teachers and administrators could be the cause of problems in the innovation process. Administrators are seen as facing change from a system perspective while teachers want only minor adaptations within their

own individual classrooms (House, 1974, Wolcott, 1973). It should be mentioned here, that school Inspectors in Cyprus, as in many other countries, are ex - teachers who act as both the evaluator of the teacher and also the advisor. They acquire the role of the administrator in this sense, since the Inspector is considered as part of the Ministry, ensuring the implementation of official policy in the schools. Therefore, the school Inspectors will be viewed and their role will be examined as the administrators' one within this study.

Wolcott (1973) argues that cultural differences are very strong between technocratic administrators and teachers. The philosophy of the innovation is, therefore, faced in a different way by the two different worlds. The experience they both have of the innovation might be different.

It thus seems that another key person in the innovative procedure, together with the school head, is the Inspector. It is, therefore, important to investigate the Inspectors' role within any innovation and examine its association with the teachers' involvement.

## 3.3.2 PERSONAL LEVEL

All through the literature on change there is a continuing emphasis on the significance of teachers' personal response to change. This seems to be a complex of beliefs, concerns, and expectations so an attempt is being made to separate these matters from the organisational ones. This is a not an easy task because there is obviously an interaction between these matters; however, an investigation of these as unique issue will be attempted below.

### TEACHERS' BELIEFS, CONCERNS AND EXPECTATIONS

Educational change has been identified as one of the major sources of stress for teachers. Fullan, (1993b) makes it clear that both imposed and voluntary change involves loss,

anxiety and struggle. When innovation occurs, there are typical concerns that all interested and involved people feel and express. It has already been strongly argued that principals and other facilitators can be more effective and change can be more successful if the concerns of teachers are considered because it must be useful to listen and take into account the 'front line' user's view. Hargreaves suggests that

> *"...teaching strategies arise not just from the demands and constraints of the immediate context, but also from cultures of teaching; from beliefs, habits, and assumed ways of doing things among communities of teachers"* (1992, p.217).

Hall et al. (1979), have developed the Concerns Based Adoption Model (CBAM) for describing the concerns that professionals may have about an innovation. The CBAM is based on an assumption that the individual teacher is the primary target of interventions designed to facilitate change in the classroom and that individuals involved in change go through stages in their perceptions and feelings about that innovation. In the CBAM the concept 'concerns' is used in describing teachers' perceptions, feelings and motivations. The inventors argue that a person involved in an innovative setting experiences different levels of concerns beginning with ignorance and limited knowledge of the innovation and ending (hopefully) with a high degree of involvement and participation in the innovation. This implies that the teacher's personal attitude and involvement towards the innovation varies throughout the process.

In addition, Benett (1980) makes explicit the psychological meanings of the teacher's attitude to curriculum innovation. He points out that: "We may consider the perception of curriculum innovation as the process of classifying, recognising and interpreting diverse stimulus events, objects, persons and concepts associated to innovation" (p.72)

An identification of the teacher's attitude, general feelings and beliefs, can add to and help the innovation procedure. Stein and Wang (1988) point out that:

> *"Since individuals' values are partly determined by the values of the culture in which they live, teacher perceptions of community and school district values and goals are also hypothesized to influence the value that teachers place on given innovative programs/practices"* (p.175).

The social and cultural perspective of the teachers' view about an innovation is also stressed by other writers. Moreover, the value of a given innovation to the teachers themselves is determined by their perception of the programme's efficacy, together with its congruence with their own professional goals and their perceptions of societal and school district goals (Stein and Wang, 1988, p.175). Hargreaves (1992), argues that teacher cultures get involved in the implementation of change when they have a key role in it. The content of teacher cultures consists of "...attitudes, values, beliefs, habits, assumptions and ways of doing things that are started within a particular teacher group, or among the wider teacher community" (p.219). Hargreaves (1995) refers to teachers not just as technical learners but also as social learners. Nias et al (1992) supports the idea that each school depending on its staff, develops its own culture. Dalton (1994) also supports the idea that the 'culture' or 'ethos' of the school plays a key role in any change in classroom practice.

Certain researchers have proposed that beliefs change before knowledge and classroom practice. Others suggest that first classroom practice changes and then beliefs change. Teachers often change in one area, and then that change prompts changes in other areas. Beliefs, knowledge and practice tend to develop gradually in relationship with one another.

A conventional approach to innovation and change aims at changing the teacher's attitudes and values first and then their practice. Harding (1978) argues that to bring about change in

the classroom it is the teachers' objectives that must change first and they must be convinced both that the change is in their pupils' best interests and that the necessary resources will be available for them to effect it. However, some newer evidence would suggest otherwise. Fullan (1985) has argued that experimenting with new classroom practices can lead to success. Fullan's greatest contribution has been the focus on the implementation stage in particular. Both of he and Guskey (1986), argue that changes in attitudes, beliefs and understanding tend to follow rather than precede changes in behaviour. In addition, Goodchild and Polly (1989) refer to this by saying that "using and doing come before believing" (p.165).

Benett (1980) adds that the formation of attitudes is taken to be a learning process; "it is through a personal psychological interaction with all aspects of the new environment that teachers' attitudes to curriculum innovation develop" (p.71). "How teachers react to the innovation and how they view their own role in it seems to be an extremely important personal factor associated with the teacher's successful involvement in the innovation.

From the discussion above, it seems that the personal factors that are associated with the teachers' involvement in any innovative setting are crucial and must always be taken into account in order to promote successful implementation of the change practice.

## PERSONAL CHARACTERISTICS OF THE TEACHER

As has been shown, many factors are associated with the teacher's reaction toward the innovation. Teachers themselves are at the centre of every innovation setting. Are there any characteristics that make some more likely than others to adopt change?

Despite the fact that conventional wisdom and research data have pointed to teacher training as a key ingredient of school improvement, data on teacher characteristics

associated with success in implementing innovative programmes is sparse. Particularly lacking is information on the motivational factors which prompt some teachers towards change, including how and why innovative programmes are adopted and maintained by teachers. In Cyprus, limited research has shown that the teachers involved in innovations, and especially technological ones, tend to have similar characteristics which seem to promote the uptake of the innovation (Michaelidou, 1996, 1997).

Some writers have suggested that certain teacher characteristics are associated with a positive attitude towards innovation. For example, Kendall (1987) argues that "change is most likely to be advocated by those least committed to the organisation and probably those who have most recently joined it; those seeking prestige are more likely to favour innovation than those who are not" (p.45). Havelock (1969) however, distinguishes between different types of response to adoption. He describes: a) Innovators, who take an early risk and get involved in the innovation immediately without really thinking of it, b) Resisters, who assume an active role as critic of the innovation and may have reasons for caution, c) Leaders, who listen to both to size up the developing situation and will champion the cause if they understand that the innovation's time has come.

Doyle and Ponder (1977), classify teachers as 'classical adopters' who can be convinced by rational arguments, 'stone age obstructionists' who change strategies and try to neutralise the innovation, and 'pragmatic sceptics' who adapt rather than adopt the innovation. Also Evans and Hopkins (1988), indicate that teachers who have a very positive self image and who are self actualising are much more likely to take up new ideas.

The various arguments set out above suggest that each interest group involved in the innovation procedure sees its rationale and content in a different way. That is why almost always the teacher's perspective of the innovation is different from that of the curriculum

expert and the administrator. Harding (1978) points out that "the teachers' perception of a project may differ considerably from that of its developers" (p.352). The project may be seen variously as welcome revolution, fulfiller of a need, releaser of resources, challenger of personal responsibility, creator of unjustified commands, or as mismatch with various factors within the teacher's working context (Harding, 1978). In addition, Guskey (1988) argues that highly effective teachers in the classroom also appear to be the most receptive to the implementation of new instructional practices like those associated with mastery learning. The volunteer - teachers in an innovative setting seem to have specific characteristics that differentiate them from others. Guskey (1988) also suggests that "when participation in new programs is strictly voluntary, the teachers who choose to become involved, at least initially, are likely to be those who are already very talented and highly effective instructors" (p.68). He adds that the results of innovations undertaken on a voluntary basis, tend to be better than in other cases.

Concluding, we could say that to understand teacher development and curriculum development, and to tailor it accordingly, we need to know a great deal more about teachers - their priorities and their own beliefs, concerns and expectations.

## CONCLUSION OF THE CHAPTER

This chapter has argued that, drawing together some of the main findings about the teacher's role in innovation, it is useful to distinguish between organisational and personal factors which influence and constrain behaviour. These factors will be examined within the setting under investigation; the case of the introduction of computers into primary classrooms in Cyprus. The organisational factors are clearly important and they will obviously feature in the research, but the personal factors also proved to be very significant and are, perhaps, of particular interest.

# CHAPTER FOUR
# INTEGRATING COMPUTERS INTO CLASSROOM PRACTICE: AN EXAMPLE OF INNOVATION IN EDUCATION

## STRUCTURE OF THE CHAPTER

In this chapter, the attempt to integrate computers into educational practice is briefly presented as an example of educational innovation. The teacher's role in this kind of educational change is highlighted. The chapter begins with a section on the importance of technology in both society and education. The factors associated with this educational innovation are briefly presented, as well as the teacher's role in the setting.

## 4.1 TECHNOLOGY AND COMPUTERS IN EDUCATION: AN INNOVATION

As we enter the 21st century, the changing nature of the world becomes more obvious. The technology revolution imposes itself on every aspect of our lives. The information explosion and its dissemination through new technologies, coincides with increased concern about the relationship between education and economy, anxiety in educational standards, and the loss of confidence in education systems in general.

The enormous changes in our contemporary and dynamic society together with the information explosion inevitably affect education, which cannot simply react to the present, but must prepare children to live in the unpredictable world of the future. Thus, it is argued that schools should prepare students to be adaptive and self - managing learners

and should focus attention on independent thinking and learning as important educational goals. In addition, learning should be situated so that students can acquire an understanding of important ideas for application to life outside school. As such, "schools should provide ample opportunities for students to think critically and creatively, to construct meaningful knowledge through classroom interaction, and to develop personal ownership and appreciation of the knowledge constructed" (Lai, 1993, p.128).

It could be argued that, given the extent to which our children are now exposed to technological change, it seems inevitable that we improve the way that we prepare them for living with it. And indeed, if education is to fit children for the society into which they will grow up, and provide them with all essential capabilities to understand their culture and deal with all future issues, then introducing computers into the school environment from the early school years must be important. This issue is, therefore, strongly entrenched in the thinking of today's curriculum developers, educators and researchers, who emphasise the fundamental educational value of the use of Information Technology in achieving a wide range of educational objectives.

Many writers nowadays refer to the integration of IT (information technology) into education meaning all the technologies that are integrated into a classroom. They use the term CAI (Computer Assisted Instruction) when they refer to the teachers, or CAL (Computer Assisted Learning) when they refer to the students.

The last decade in education has seen a constant stream of change; both the curriculum operating in our schools and the technological platform through which that curriculum is delivered have changed at rates which are "dramatic for observers and challenging to

practitioners" (David, 1994, p.11). Indeed as early as 1973, Lawton referred to the technological change and the requirements of the economy as key issues that promoted change in the educational system.

It is increasingly becoming widely recognised that almost all tomorrow's citizens will have to acquire computer literacy if they are to be able to cope with the technological complexities of everyday life; at the very least, they should be given an idea of the vital role of computers in the modern world. Consequently, the enrichment of the curriculum with an additional subject about computers is inevitable. At the same time, the computer appears to be most beneficial when ways are found to use it to support the existing curriculum. Therefore, given the curriculum objectives for a particular subject and grade level, the best computer curriculum is that which determines where and how the instructional capability of the computer can be used to help students achieve the objectives of an established curriculum.

The introduction of computers into the school has been an innovation in UK and the US over the last two decades. Fullan (1992) refers to the introduction of microcomputers in schools as "one of the more central innovations in the past few years" (p.28) ), while Brown (1994) refers to the changes brought about by the introduction of computers into the school. In addition, Franklin and Strudler (1989), argue that introducing computers into the school is a difficult change. They suggest that computers are used for a) administrative purposes, b) instructional uses - learn and teach integrating computers and c) research uses - learn and teach using computers.

According to Hawkdridge (1990), in industrial countries children use computers in schools for four main purposes: 1. to become generally aware of the uses and limitations of

computers, 2. to learn computer programming, 3. to learn to use programmes for word processing, spreadsheet analysis, graphics process control and information retrieval from databases, and 4. to learn selected topics from the school subjects right across the curriculum. Hawkridge (1990) believes that schools can be changed for the better by the introduction of computers. He argues that there are four rationales for using IT in education: a) a social rationale: children should be prepared to function adequately as citizens in a society permeated by new technologies, b) a vocational rationale: children should be prepared to function adequately as professional workers in a technological society, c) a pedagogical rationale: IT may improve the teaching process and learning outcomes, d) a catalytic rationale: the use of IT may accelerate for the better another educational innovation, such as putting more emphasis on processes of information handling and problem solving and less on memorising facts.

Koshy and Dodds (1995), writing in the UK, indicate additional reasons for using IT in teaching:

1. the speed and versatility of IT creates powerful learning opportunities which cannot always be achieved through books and pencil and paper tasks,
2. IT is part of the National Curriculum.

In addition, the IMPACT project (Watson, 1993) which evaluated the impact of IT on children's achievement in the UK, outlined the following as the benefits of IT in learning:

1. computers were found to be motivators which heightened pupils' interest and enjoyment of subjects;
2. children's involvement in activities was sustained over quite lengthy periods;
3. IT offered a focus for collaborative and group activities and contributed to the development of a range of process skills;

4. some open - ended work in IT enabled pupils to become involved in more complex and challenging learning situations than normal, which were then carried over into more traditional learning settings.

Katz (1997) stated that the computer has the potential to increase the effectiveness of the learning process; it is able to supply both individualised and controlled instruction; it is capable of gathering and storing a wealth of information; it can rapidly execute complex learning tasks; it can easily present pupils with accurate evaluations and other educational outputs. However, they also argue that, although many students have acquired computers and use them in the instructional process, it is not yet clear whether a majority of pupils are in fact able to efficiently use computers for Computer Assisted Learning (CAL).

The appearance of computers and their enormous potential encouraged educators to think that this was the means for the transformation and revitalisation of all aspects of education and that their introduction to schools could be the solution to many educational problems. These expectations were based on the fact that computers can be used in education as both teaching and learning tools, contributing to more active learning, allowing students to proceed on their own pace and improving the overall efficiency of the teaching/learning process. This, it was hoped, would increase the quality of learning, decrease the time taken for students to attain desired goals, and reduce costs without affecting quality. Computers can also be used for managerial purposes both in school and classroom, helping teachers free themselves from numerous non - instructional tasks and thus devoting more time to teaching activities.

Computer integration in education is a reality that exists as a challenge for educational systems world wide. Inevitably, the use of computers in education has a considerable impact on both the teacher's role and the curriculum, and also on student achievement.

Indeed, some researchers have claimed that two decades of research show that computer-based instruction produces at least 30% more learning in 40% less time at 30% less cost compared to traditional classroom teaching (Cannings and Finkel, 1993, p.5).

However, it seems that schools, despite the remarkable shift from a teacher-center approach to a learner-center approach and the emphasis placed on the active learning, have not succeeded in achieving their goals. As Cannings and Finkel (1993) argue in discussing the computer integration,

> *" it is very clear from the results that we are getting in our schools, which are much more shocking and disappointing and disastrous than the general public knows at this time, that we need a radical transformation within our schools"*
>
> (p. 25).

An attempt is made to briefly present the unsuccessful implementation of the computer integration into education.

## 4.2 THE UNSUCCESSFUL IMPLEMENTATION OF THE INNOVATION

Despite their undeniable potential in contributing to the achievement of educational goals, computer use in education is accompanied by various problems related to the hardware and software, the instruction process, the teacher, which render their use problematical. Further problems have arisen because of the way the introduction of computers has been managed and resourced. The consequence is that their contribution to educational improvement, has not been as the expected (Cannings and Finkel, 1993).

Blummerlhuis and Plomp, (1993) argue that "the introduction of the computers in education is a complex innovation in which many obstacles need to be overcome before it is possible to speak of a successful implementation" (p.185). Besides, data from the

International Association for the Evaluation of Educational Achievement (IEA) show that in almost every school of the industrial countries activity is being made by the use of the computers. However, the number of teachers involved is small and the activity does not indicate real change in the structure of the school and classroom (Akker, et. al, 1992). There are many teachers using computers, but teachers who use them in a satisfactory way seem to be very few. The same result is revealed by Reinen and Plomp (1993) who argue that only a small proportion of 15% of the teachers who have computers really use them as a tool. Moreover, Mallatratt (1988) admits that computer assisted learning has not been widely adopted within U.K. schools. Extremely important is the work by Blummerlhuis and Plomp (1994) who conclude that :

> *"Although there is a substantial growth of computer use in primary schools, the data show that computer usage very much depends upon the individual teachers and is not embedded in the curriculum of existing subjects"* (p.291).

Research on the integration of computer applications in education reveals many similar problems as described in the literature on curriculum implementation (Akker et al, 1992, Fullan, 1993b). According to Cox and Rhodes (1989), it has been recognised that many of the barriers to the adoption of microcomputers (in schools) are specific examples of the barriers to change in general. Blummerlhuis and Plomp (1993) add that it is not clear that even when the conditional problems in schools are solved, the integration of computers in education will proceed without major problems.

Recent literature views the introduction of the computers into education as an example of educational innovation in practice and they conclude that this kind of change or innovation should not be differentiated from any other form of educational change (Fullan 1992, Cox, 1983, Underwood, 1997, Veen,1993). In fact, some researchers have recently supported

that the Information Technology and the computers in education should not be regarded as merely technology but they should rather be seen as examples of educational innovation.

David (1994), refers to the computer innovation as one that has failed mainly because "scant attention has been paid to preparing teachers and administrators to use new technology well and even less to their preferences about hardware and software" (p...). In addition, according to Veen (1993), the decision of teachers whether to use or not to use computers depends on two basic categories of factors: factors at the school level and factors at the teacher level. However, teacher factors outweigh school level factors. Research by Brown (1994) reveals that " the most striking point about teachers' current experiences of the use of the IT in classroom is its variability" (p.146).

A lot of researchers and pedagogues have questioned the CAL and its impact on pupils' learning. More recent work implies that the impact of CAI on the educational system in general should be questioned and researched in a deeper and systematic way.

Some writers have tried to identify the reasons for the non - successful innovation. Akker et al (1992), stress that there is an increasing awareness that disappointing experiences with the introduction of the computers in education are a consequences of insufficiently taking into account factors that are crucial when introducing change in educational settings.

Pelgrum and Plomp (1993), identify a number of factors as barriers to a more integrated use of computers in teaching:

a) the lack of a clear school policy on what the institution wants to achieve with the new technology and how it should be achieved,

b) lack of hardware, software and curriculum materials,

c) lack of time for the teachers to get acquainted with the new technology,

d) lack of continuous process of staff development.

Trying to examine those factors, research suggests that national context, characteristics and organisation of the school, external support and characteristics of the innovation itself, are crucial, affecting the implementation of the innovation (Akker et al, 1992, Blummerlhuis and Plomp,1993). OTA (1988), through empirical research points out that "educators and educational researchers consistently cite one factor as central to the full use of technology in the classroom - the classroom teacher" (p.87). Stoddrant and Niederhauser argue that "Introducing computers into public schools ...will not in itself change teachers' approaches to instruction. The key is how the technology is used" (1993, p.6).

Even though it is clear that the teacher acts as the most important change agent in education, little is known about the impact of CAL and CAI on teachers' attitudes and perceptions. Even less has been done on providing the interested parts with useful implications on how to have a successful implementation of an innovation through an active involvement of the teacher. The simple decision or policy to bring an innovation and integrate it in classrooms is not enough to guarantee successful ongoing implementation of the innovation.

## 4.3. THE TEACHER'S ROLE IN THE COMPUTER INNOVATION

"... People do not and cannot change by being told to do so" (Fullan,1993a, p.24). It seems clear that certain practices, occurring in curriculum innovation, prove to be useful when successful involvement of the teacher in the innovative setting is concerned. According to Visser and Jain, "technology in and of itself does not change the world. Human beings do" (1997,p.31).

At the 45th session of the International Conference in Education (1996), it was pointed out that information and communication technologies provide the teacher with a new role, that of the teacher and of the learner at the same time.

A central factor to the full development of computer use in the schools is the classroom teacher, because "computers, though powerful, are not self-implementing" (U.S. Congress, 1988, p.87). In the hands of a creative and technically competent teacher armed with appropriate software, the computers can provide a new world of teaching opportunities.

It is obvious that the use of computers in education has a lot of consequences and causes a lot of changes in the everyday practices of schools. Learning and Teaching need to change fundamentally. A good starting point to provoke such change is by reconceptualising the roles of the teachers and learners. According to Visser and Jain, (1997), technology has been posited as an opportunity to create processes that encourage teachers to become learners and learners to become teachers. This is a major shift. Teachers in a computer-supported environment can no longer assume the traditional knowledge-transmission role. As a knowledge facilitator rather than a knowledge presenter, there are certain roles which are quite different from conventional classroom teaching (Lai, 1993). It is important for this study to describe and elaborate on the different roles that teachers can have within a computer learning and teaching environment since it is crucial for understanding their own attitude towards this new situation in their classroom.

### 4.3.1 TEACHER AS A PLANNER AND MANAGER

Setting up a computer-supported environment requires considerable planning. Teachers not only have to understand clearly why computers should be used in their classes, but how computer software can be integrated into the existing school curriculum to facilitate active

learning. Teachers have also to be knowledgeable regarding where and how to locate resources they need. Most curricular materials available on the market provide little help for these new knowledge and skills. Teachers, therefore, have to be innovative and willing to take risks in their curriculum planning. Teachers also have to manage classroom computer resources. Very often there are not enough computer hardware and software in the classrooms for the students to use. Scheduling computer use often creates management problems when there is a large class and when teachers have to make sure that students get appropriate access to computing resources. The teacher has to prepare a schedule defining which students will use computers when and where, to make the necessary equipment and materials available, and to have a fall-back lesson in case the computer malfunctions. It also takes a great deal of planning to find the best ways to incorporate computers into curriculum in general, and into a lesson specifically.

### 4.3.2 TEACHER AS A GUIDE

A computer-supported environment can facilitate the active acquisition of thinking skills and the personally constructed knowledge, provided that teacher gives adequate guidance to students. The role of the teacher is not to present information, but as coach or guide to assist the learner, helping him to interpret the feedback from the computer and overcome difficulties by utilising his previous knowledge and skills. The teacher enables and guides learners to engage in a rich variety of experiences and challenge them to make these experiences meaningful for themselves, constructing knowledge through their personal experience. Teachers, therefore, have to be sensitive to the progress of the students and be willing to provide encouragement and help whenever it is needed.

## 4.4 ORGANISATIONAL AND PERSONAL FACTORS ASSOCIATED WITH THE TEACHER'S ROLE IN THE COMPUTER INNOVATION

As it appears in this example of educational innovation and in any other similar setting, the teacher's role is associated with certain organisational and personal factors, which are not different from all the factors presented as determining the teacher's role in an educational innovation in general.

Detailed description and exploration of the specific issues, concerning the factors that are associated with the teachers' role in computer innovation, will be presented in the following chapters since it is the topic of this thesis.

**Organisational factors associated to the teacher's role in a computer innovation**

The organisational factors of the rationale of the innovation, the school and classroom organisation and the administrators' role, as well as the INSET and collegiality are met here as well.

According to estimates, fewer than 20 percent of all teachers actively use computers as part of their instructional program (Cannings and Finkel, 1993). The teachers lack of confidence in themselves as computer users is the main factor in their reluctance to consider computers as part of their professional repertoire. A major part of the confidence problem of teachers is related to the fact that they feel less competent than some students using computers (Grunberg and Summers, 1992).

Winnas and Brown (1992) reveal among others, that teachers are confused about the aims and objectives of the innovation; teachers are perplexed as to how to manage students who

are not able to take their turn on the computer. They add that «most of the teachers felt that neither they nor the students should be held accountable for the teaching or learning of computer objectives» and they continue by saying that "most teachers had little understanding of the scope and sequence of the district's computer curriculum and how their grade fit into this" (p.301).

Examining the computer integration in schools, as an example of educational innovation, Akker et al, argue that

> *"...integration of computer use by teachers is complex and involves them in learning new roles and unlearning old ones. Implementation can be conceived as a learning process for the teacher in which changes are required in teaching behaviour as well as in beliefs, attitudes and understanding"* (1992, p.71-72)

Research emphasises the role of the INSET in the integration of the computers into education. There is research evidence which supports that the major obstacle for successful implementation of this innovation, the technological one, is in the teacher training area.

Research highlights the role of initial teacher training as well, for the successful implementation of the innovation. There is evidence that teacher training institutions are now beginning to provide technological education which promotes change (Robinson, 1997).

There is a need to take cognisance of the constraints under which teachers have to operate. Besides, Akker et al (1992), argue that at present, where most teachers are still in the initiation phase where personal survival concerns dominate, courseware materials should support the teachers by anticipating as much as possible potential user problems and by offering practical advice to present or solve such problems.

In addition, it has been found that initial mastery of the innovation does not guarantee lasting teacher change. Therefore, "the conditions for the new paradigm of change cannot be established by formal leaders working by themselves" (Fullan,1993b,p.26). A continuous involvement and support of the teacher is essential, in all phases of the technological innovation.

Akker et al (1992) argue that "a real integration of computer use in the curriculum can only be realised when teachers recognise the surplus value of computer use" ( p.74).

Research reveals that in certain cases, where technology implementation was successful, the technology itself was not the issue (Robinson, 1997, Cox, 1997); these projects had more to do with the philosophy of learning and conception of professional development. Project staff provided on-going assistance, facilitation, and professional development to teachers in support of transforming their practice. These people are available on site and on line to guide, cajole, answer questions, as well as to offer specific training, development and support.

As far as the administrators' and the school head's role is concerned, evidence shows that in primary school level, principals show a generally favourable disposition towards computers (Akker et al, 1992).

**Personal factors associated with the teacher's role in the computer innovation**

Research reveals that specific personal characteristics of the teacher are related to the uptake of the computer innovation (Katz and Offir, 1991, Veen, 1993). Despite the almost universal familiarity with the computers that has developed in modern society. Personality traits and attitudinal constructs are primary factors to be taken into account when deciding

the suitability of the individual teacher to computer use in the instructional process,. "Personality and attitudinal variables are related to positive computer related attitudes of teachers" (Katz, 1997, p48).

Lang's research findings highlight the 'new' perception of the willingness of teachers to have a successful innovation. Lang (1992), through research findings, concluded that there are three types of teachers, when involved in a computer innovation: the affirmative teachers, the interested in learning more and the sceptical. She adds that the reasoning that teachers first have to change negative attitudes in order to use computers is not convincing. " Sceptical teachers do not refuse to learn more about computers and do not use problems as arguments against computers" (p.301).

All teachers should be helped towards an understanding of the phenomenology of technology innovation and of educational change, so that they might better plan for their own professional development and for the development of the organisations within which they teach (Robinson, 1997).

It is crucial to listen to what teachers do, think and say within this innovation. They must be given a chance to describe the situation in which they are, acting as change agents. It becomes obvious that certain conditions have to be fulfilled to expect changes at the schools and classrooms as a consequence of the introduction of the computers. "Changes may only be expected when computers are used extensively" (Pelgrum and Plomp, 1993, P.188). One might argue that schools need time to build up enough expertise, knowledge and experience among teachers before any impact might be expected.

## CONCLUSION OF THE CHAPTER

The above chapter concludes that schools and teachers are still at the stage of the 'easiest responses' to the pressure of joining the computer revolution. It is made clear that computer integration in education, as a part of IT in education, is an example of educational innovation. All the factors that are associated to the teacher's role in the educational innovation, exist in the computer innovation as well. A very brief presentation of these issues is made in this chapter. In the following chapter necessary information is given for the case under investigation, the Cyprus educational system and the ICCPC.

# CHAPTER FIVE

# THE CYPRUS CASE: DESCRIPTION OF THE EDUCATIONAL SYSTEM AND THE ICCPC PROGRAMME

## STRUCTURE OF THE CHAPTER

This chapter attempts to briefly describe the Cyprus educational system and provide the reader with necessary information about its aims and structure. Moreover, information about the specific programme under study, the ICCPC, is provided so as to enable the reader to obtain an overall picture of the setting under investigation.

## 5.1 THE CYPRUS EDUCATIONAL SYSTEM

In order to enable the reader to understand the content in which this specific innovation setting takes place, it is important to briefly present the Cyprus educational system. Is aims and objectives, as well as the main issues about the curriculum and training

### 5.1.1 AIMS AND OBJECTIVES

The general aim of education in Cyprus, as stated in the official documents of the Ministry of Education and Culture (1996), is the development of free and democratic citizens with a fully developed personality, mentally and morally refined, healthy, active and creative, who will contribute generally with their work and their conscientious activity to the social, scientific, economic and cultural progress of our country and to the promotion of the co-operation, mutual understanding, respect and love among individuals and people for the prevalence of freedom, justice and peace (Ministry of Education and Culture, CDS, 1996).

The objectives of education as they relate to the possibilities, the interests, and the social, cultural and educational needs of the population are:

(a) the fulfilment of the Island's social, economic, cultural and other needs,

(b) the provision of specialised education after a common general education for both vertical and horizontal mobility,

(c) the preparation of young people for a profession and lifelong education,

(d) the strengthening of Cyprus as an independent State,

(e) the promotion of equal educational opportunities,

(f) the creation of democratic citizens,

(g) the promotion of friendship and co-operation between the various communities of the country. (Ministry of Education and Culture, CDS, 1996).

The priorities of Cyprus education, as emerging from the official documents, are the following:

(a) democratisation: by this is meant:

- respect for the dignity and uniqueness of each individual
- respect for the opinion of the majority
- opportunities for participation in the decision-making process
- encouragement of co-operation and responsibility, and equality of opportunity in all aspects of school life.

(b) provision of the required manpower for the socio-economic development of Cyprus

(c) the development of all basic conditions required for the functioning of the newly-established University of Cyprus

(d) the qualitative improvement of education

(e) the expansion of pre-primary education

(f) the development of curricula to fit the new social and educational needs and the production of new teaching materials and equipment

(g) the in-service training of school administrators and teachers

(h) the increase of possibilities for recurrent education

(I) the better transition of young people from school to work

(j) the reorganisation of educational administration so as to improve communication and to share responsibilities,

(k) the expansion of children's afternoon clubs.

(Ministry of Education and Culture, CDS, 1996).

In general, it is believed that the aims of the education service in Cyprus, as they are officially stated, are excellent but too theoretical; therefore, they require further clarification and extension into practical implications (UNESCO, 1997). Nevertheless several of these objectives and priorities can be readily linked to programmes designed to encourage computer literacy and the use of IT to promote learning. The actual focus of the service requires reassignment to ensure that it can deliver those aims. The above is the conclusion of the recent evaluation of Cyprus educational System by UNESCO experts (UNESCO, 1997).

### 5.1.2 THE STRUCTURE OF THE EDUCATIONAL SYSTEM

Education is perhaps the greatest achievement of Cyprus since independence in 1960. Given a small population, as well as, the lack of natural resources, there has been a collective determination to substitute human resources with intellectual achievements (Persianis, 1981).

The education service in Cyprus is highly centralised. The Ministry of Education controls the curriculum, the textbooks and the other resources required to deliver it. The appointment of teachers is highly centralised through the Education Service Commission appointed by the Government. Local school boards are funded by the Ministry and their role is restricted to matters of building maintenance and supplies. Schools are directly controlled by the Ministry through the Inspectorate and the school heads, the latter having less devolved responsibility than in many other school systems.

Direct control of activities in schools is undertaken by the Inspectorate which, apart from inspecting teachers, has responsibility for teacher support, disciplinary matters, and curriculum development. It also carries out a wide range of administrative functions.

The Ministry of Education is organised into departments which largely reflect the structure of the system. Pre-primary and primary education are administered by the Primary Department. Secondary education is administered by the Secondary Department. Tertiary education, is the responsibility of the Tertiary and Higher Education Department. Secondary technical education is administered by the Technical Education Department. There is also a Department for Personnel Administration and a Department of Technical Services for planning the building of schools.

Each school service department is responsible for its own curriculum provision and has its own team of Inspectors. Curriculum development is similarly carried out by separate curriculum development centres for pre-primary and primary, for secondary and for technical education. The Pedagogical Institute, responsible for the in-service training of teachers and for certain aspects of curriculum support, functions as a department of the Ministry. The diagram below shows the structure of the Ministry as it functions today.

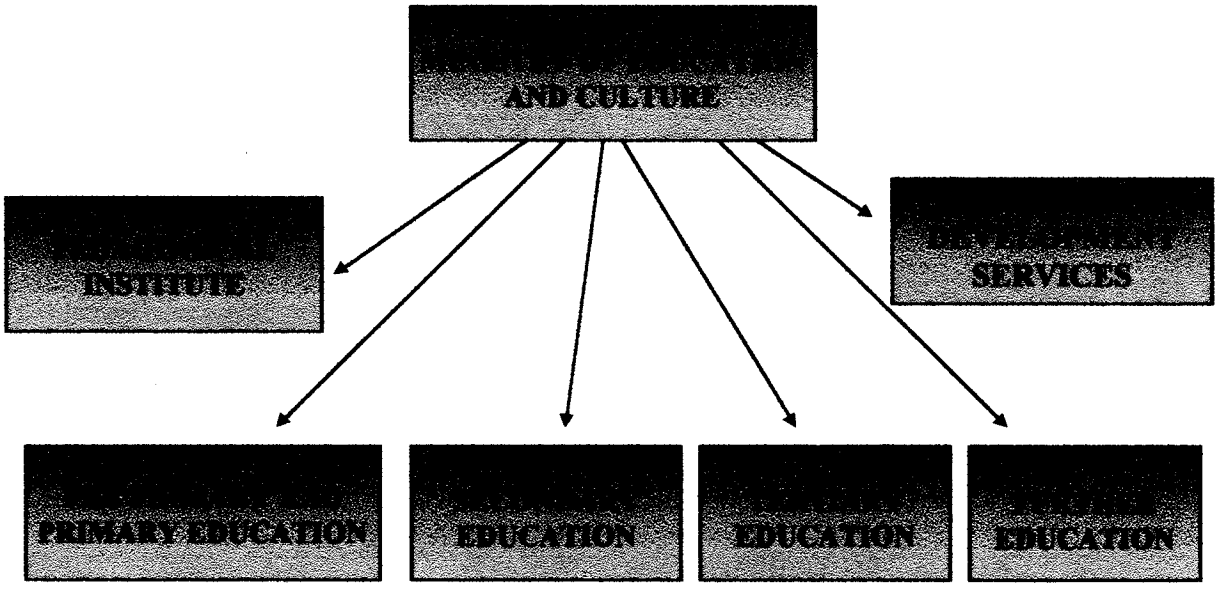


*Diagram 3: The structure of the Cyprus educational system*

The structure of the Ministry reflects the history of education in Cyprus where, during the British colonial period, primary education was administered by the British and secondary education was a private matter for the church and the community (Persianis, 1981). It has been noted that these different agencies not only produced different structures but also different attitudes. Primary education tended to mirror the system developing in the United Kingdom, whereas, secondary education was more greatly influenced by the thinking from France, Greece and Germany. Maratheftis (1986), argues that emphasis is given to the development of the character of the children during the first nine years of the system (in the pre primary and primary) whereas, emphasis is given to the knowledge and the preparation for several exams in the following six years (in the lower and upper secondary education). In the upper levels, the colleges and the University, specialisation is the main purpose of education.

The current structures enable the administration to focus on each of the areas of provision and to provide a clear link to their specific sets of establishments. In particular, the

Technical Education Department ensures that technical education is given appropriate attention and some links with industry have been forged.

The recent evaluation of the Cyprus educational system undertaken by UNESCO experts, has revealed a lot of problems. The main question that they posed was whether the structure permits the Ministry to achieve the aims of education which have been set. The main problems are co-ordination and communication. If education is to be seen as a whole in its approach to developing young people as a whole in all aspects of their lives, then the Ministry must be able to approach education in a similarly holistic manner through strategic planning for quality (UNESCO, 1997). A comprehensive and unified approach does not appear to exist at present (UNESCO, 1997). It seems that there is insufficient contact and joint working between the departments, especially the Primary and Secondary Departments and the Technical Department. This affects the concept of continuity in the curriculum which is required to support the aim of nine years of basic education for all. This discontinuity is noted also in the separate endeavours of the curriculum development centres.

### 5.1.3 CURRICULUM : BREADTH AND BALANCE

As referred in the UNESCO report, curriculum committees have been in operation and the content and balance of subjects has been scrutinised at both Primary and Secondary levels. The stated balance of subjects is broadly in line with other European countries although there is concern that the amount of content in the curriculum is now excessive for the allocations. In particular, for instance, the introduction of French in the Gymnasium has required the subtraction of time from other subjects and this has reduced the periods available for science. Teachers are finding this hard to accommodate. This implies that when such changes are being considered, there should be a re-examination of the content,

breadth and balance of the whole curriculum in order to try and avoid adverse effects caused by piecemeal change.

Curricula for primary education are prescribed by the Ministry of Education and Culture and developed on the basis of suggestions made by standing departmental committees consisting of members of the Inspectorate, representatives of the Teachers' Union, the Department for Curriculum Development, and the Pedagogical Institute.

Curriculum development and reform has always been a top down procedure in Cyprus (Persianis, 1981). The general principles for planning the new curriculum were described by the Pancyprian Conference of Inspectors (1992). An Inter - departmental Committee for each curriculum subject is responsible for the subject curriculum and controls the process of designing and introducing the new curriculum. Inspectors, as mentioned before, have the responsibility for the implementation of the new curriculum and at the same time appraising teachers. Due to the centrality of the system, school based curriculum is extremely weak in Cyprus.

Recent basic developments and curriculum reform efforts which have undergone in Cyprus primary curriculum are briefly described below.

- The implementation of the programme 'Design and Technology'. The subject has been introduced in 25 primary schools all over Cyprus on an experimental basis. Books for the teacher, curriculum and lesson plans have been prepared. A total of 250 teachers have been trained by a British expert on the subject and another 150 will be trained during the current academic year.

- Cyprus education is part of the European project 'Eco Schools', for the environmental education. Environmental education is being promoted as an innovation in a certain number of schools. Training is provided for teachers of those schools by the Pedagogical Institute.

- Museum education has recently been promoted in a very small number of schools in collaboration with the Archaeological Department of the Ministry of Internal Affairs.

- The introduction of the computers in Cyprus primary schools (the ICCPC), is the next innovative programme to be implemented. This programme is the focus of this research study and it will be examined in more detail in the following pages.

It is worth mentioning that all the curriculum reform efforts in Cyprus are top - down and usually involve small numbers of teachers at first, and gradually are implemented in all schools.

### 5.1.4 TEACHER TRAINING

Primary teachers receive full initial training before appointment. The training course, which includes teaching practice, appears to be of good quality. However, those who have not undertaken the BEd course at the University of Cyprus receive training in the teaching of Greek language at the Pedagogical Institute during their first year of teaching. One wonders if other topics should also be covered at this time.

Secondary teachers must undergo in-service training during the first year of their probationary period. This compulsory training is also provided by the Pedagogical Institute. It involves 2 days per week with a reduction in teaching hours to accommodate it. Thus the newly-appointed teacher receives 'sandwich course' training between the

Pedagogical Institute and the school in which he or she is serving. The content seems well balanced between general pedagogical considerations and subject teaching. Moreover, this training ensures a homogeneity of approach to pedagogy for graduates who have taken their degrees in countries other than Cyprus.

Deputy Principals also receive compulsory in-service training for one day per week over a period of one year at the Pedagogical Institute. The programme appears relevant and well prepared. However, although this should in theory be undertaken during the first year in the promoted post, in practice it is often delayed for several years. Although this may mean that the course participants have greater personal experience to share, it reduces the intrinsic interest and relevance of the course itself.

Other training courses offered to teachers are optional and are prepared in consultation with the Inspectorate. Each year the Pedagogical Institute publishes a programme of seminars available and teachers are invited to apply. The programme is interesting and well-attended despite the fact that attendance is in the afternoon during the teachers' free time. It is perhaps unfortunate that the decision to undertake this training is purely individual and does not relate to the identified needs of the school. This suggests once again a lack of coherent educational planning in the schools.

The Inspectorate receives no specific training to guide them in the planning and provision of INSET. In the following pages the ICCPC is presented in more detail since it is the case under study.

## 5.2 THE INTRODUCTION OF COMPUTERS IN THE CYPRUS PRIMARY CLASSROOM – ICCPC PROGRAMME

The previous section has provided some information about the aims, structures, curriculum planning procedures and teacher training system of Cyprus. In this part, there is a turn to consideration of the development and progress of the ICCPC programme within that content.

Information Technology is, beyond any doubt, gradually pervading every aspect of business, commerce and public service, bringing about significant changes in working practices through the automation of human manual and cognitive skills. It is a commitment for any National Government to prepare children for tomorrow's world in which Information Technology will continue to be at the leading edge of the technological revolution. For these reasons, it becomes a crucial need for a National Curriculum to include frameworks for the implementation of Information Technology across the curriculum in almost every subject area.

Taking into consideration the experience of other educational systems which have already implemented this innovation into their curriculum, the Ministry of Education and Culture of Cyprus has decided to integrate Information Technology (IT) into primary schools. The following data emerge from the analysis of the documents in the Ministry of Education and are emphasised by the Curriculum Development Service personnel (1997).

### 5.2.1 AIMS AND OBJECTIVES OF THE ICCPC PROGRAMME

In particular, as of September 1993, the Primary Education Department has initiated an experimental programme (which in documents is referred to as project) for the implementation of Information Technology in a number of primary schools in Cyprus. As mentioned in official documents (CDS, 1996), the purpose of this programme is to determine the integration of computers as an educational aid into the existing curriculum of these schools, identify which facts may affect the computer use in a school and highlight the areas of success, as well as, the difficulties encountered by all people participating in the project. The general aim of the ICCPC is "to promote the integration and the use of the computers and other informatics tools in all Cyprus primary schools as a tool in teaching and learning within a period of five years" (CDS, 1997). More specifically, the objectives of the programme are as follows:

- to encourage teaching methods with the student as the centre of teaching
- to enrich the teaching tools so as to enhance the acquisition of knowledge and concepts
- to encourage the use of the individualised teaching in order to cater for the variability in the levels of student standards and interests
- to promote the active involvement of the student in the learning process, by encouraging him to take up more responsibilities for his own learning
- to help the student acquire higher level cognitive abilities, such as observation, discovery, analysis, synthesis and problem solving
- to promote communication skills among people, schools or different educational organisations
- to enable children to develop Informatics skills such as recalling, handling and presentation of data

- to help students understand the capabilities of Informatics in the upgrading of the quality and standard of living.

The philosophy underpinning the project is that the microcomputer can be used as a dynamic educational device across several areas of the curriculum, which may allow children both to learn IT skills and to use them to enhance learning in other areas of the curriculum.

### 5.2.2 THE STRUCTURE OF THE ICCPC PROGRAMME

It is important to mention that the whole effort was unofficially initiated by school teachers. More specifically, two or three teachers wrote letters to the Ministry to ask for permission and resources to buy and use computers in their own schools. Later, during 1992-93, the first 'experimental' efforts took place under the direction of the Cyprus Pedagogical Institute at two schools in Nicosia. This small scale project used the software 'PC Globe', which is a small programme for geography.

In the same year, the Gnomodotiko Council of the Ministry of Education and Culture responsible for the ICCPC, prepared a fire-year plan which proposed the introduction of computers to all the primary schools in Cyprus in five phases. The five phases are presented below, as were prepared and suggested by the Curriculum development personnel in 1996. Special reference to the key persons' role in this programme and to its development is done:

***Phase 1***

During the first year of the implementation of the project (1993-1994) a special committee was appointed to be responsible for the implementation of the ICCPC project. The head of this Committee is an Inspector. Below him, are two administrators, who are responsible for the co-ordination of the programme across the whole country. Under their jurisdiction are four district co-ordinators, who are responsible for the computer co-ordination in each one of the school districts. More specifically these I.T. Co-ordinators are expected to co-operate closely with the Information Technology Unit and be responsible for visiting the pilot schools, to co-operate with the head teacher and staff in the organisation and management of I.T. in these schools, to provide educational support and counselling to the teachers who use I.T. in their classrooms, to install and present new educational software as well as to suggest ways of implementing it into the curriculum, and to organise school - based training etc. Officially, the role of the District co-ordinator is:

- to transmit the philosophy and the decisions of the Ministry of Education and Culture to the schools involved in the ICCPC and to transmit at the same time, the teachers' suggestions to the Ministry. "They are the mediators between the schools, the responsible Committee and the CDS" (CDS, 1995, p.2).
- to visit the schools of their district and offer educational and technical help to the teachers, as well as co-operation with the teachers, the head teachers and the Inspectors of the schools to train the teachers on a school basis.

Each school has a teacher who is the school co-ordinator and acts as the link between the school and the above committee. This appointment is on a voluntary basis , ie. no allowance or other privileges are offered. The duties of the school co-ordinator were set up

in the reports of the Ministry of Education and Culture, the official document on ICCPC (1996). As officially stated, the role of the school co-ordinator is the following:

- to co-ordinate the ICCPC implementation on the school level. It is stated that "the programming and the organisation of the implementation at the school level depends on them" (CDS, 1995, p2).
- To be in constant communication with the district co-ordinator, so as to refer to him any problems, educational or technical, that appear in the school, making their own suggestions and comments.

By the end of each academic year, all the school co-ordinators and the classroom teachers, as well as the District co-ordinators are asked to complete an 'evaluation form' referring to the problems they faced throughout the school year.

The role of the teacher who is using the computers in the classroom is not mentioned in the official documents.

An Information Technology Unit was established in the Curriculum Development Unit, which was responsible for the co-ordination and implementation of the project. One trained teacher who has an MEd in Educational Technology was initially appointed as the responsible person for the implementation of the programme, together with one Inspector. Later on, as time passed, two more trained teachers (MEd and PhD holders) were posted to the Curriculum development service (CDS) to support the implementation of the ICCPC. Eight schools were initially selected to participate in the project. On average, most of them were equipped with two computers and some of them with a printer; all of them (8) were provided with the same software: 'Paintbrush' and 'Word Processor'.

A set of handouts was prepared for the teacher to use as an 'informal guide'. The Pedagogical Institute of Cyprus introduced a special programme for the in-service training of teachers. Within the same phase, nineteen teachers and one Inspector were offered a scholarship to attend training in the field in the U.S.A. During 1993-94, the Committee for I.T. in primary education was formed.

The INSET course provided by the PI contains two courses on DOS and WINDOWS which aim to enhance the skills of the teachers in the use of the computer, followed by two courses on computer applications in education which aim to enhance the teachers' knowledge about the use of computers in the classroom. In addition, a separate course on computer programming using TOOLKIT is offered to the teachers. All the above courses are on a volunteer basis. Teachers apply to the PI, in order to be accepted for the seminars. It is a Ministry policy that teachers who have attended one or more of these courses are placed in 'experimental schools'. However, this is very difficult to bring about in practice, so a lot of teachers who attend these seminars do not work in schools where the computer programme is taking place.

***Phase 2***

By the end of the second year of the project (1994-95), a sample of twenty seven primary schools from all over the island were chosen by the Primary Education Department to participate in this project. These pilot schools were equipped with the necessary hardware and educational software to begin the project. One teacher in each school was appointed as the responsible school co-ordinator for IT implementation in the school unit. These teachers do not necessarily have a common background of knowledge, experience or qualifications on IT in education with the rest of the co-ordinators or with the other teachers in the school unit. However, the majority of the teachers using the computers in

the school have been trained by the Pedagogical Institute of Cyprus on at least one of the seminars offered to them in connection with the ICCPC programme.

- In addition, as already described, four District I.T. Co-ordinators were appointed to provide educational and technical support for the pilot schools in their district.

***Phase 3 and 4***

During the third and fourth year of the project (1995-96, 1996-97) schools were provided with new hardware and educational software and the old machines were upgraded. At the same time, the Ministry of Education and Culture, in co-operation with the Government of Israel, organised two series of seminars for primary school teachers, on the theme of introducing computers into primary education. During these seminars 90 Greek Cypriot teachers were trained in the use and implementation of the new technology within the primary curriculum. The course covered issues such as: the development of policy and practice in the area, the placement of the hardware, the evaluation and purchase of software, teacher training, etc. School based seminars were promoted, trying to get all the teachers in the same school to participate during school time.

Separate educational centres for Informatics were established in the same year. These centres are the base for the District Co-ordinators and provide help and support to the teachers of each district. More specifically, they provide:

- training for the teachers (seminars, workshops etc.)
- a library of educational software
- a lawn service for hardware devices

The software that is used in the schools should be the kind of software that has already been approved by the Ministry. Very strict guidelines have been given to the schools so as

to keep the software which are used in all the schools common and 'controlled', according to the documents.

The number of schools officially participating in the project remains the same, in order to be 'controlled', trying to prepare a project that can be easily applied at a later stage to all schools. But, as a result of this policy of the Ministry, there are teachers and parents from schools outside the ICCPC programme, who are demanding computers to be placed in their schools; in some occasions there are schools who own computers bought with the financial support from the parents, without the official license or approval of the Ministry.

A further complicating factor is that the Primary Education Department in co-operation with the University of Cyprus and the University of Crete has recently began a new experimental project for distance in-service training of primary school teachers through Internet. A sample of seven primary schools will be provided with all the necessary hardware and software to participate in this project. In addition to the above, the Information Technology Department has developed its own pilot curriculum for the implementation of Information Technology in the Primary Education, which has not yet been evaluated.

***Phase 5***

During 1997-98, the I.T. Unit is planning to develop a teacher's book as well as to establish four District Information Technology Centres for the teachers and the pilot schools. By this year five hundred teachers will have been trained in the area of Information Technology in primary education with new software which will be presented to them at school based seminars.

A future target of the CDS is to promote small scale experimentation on the use of the computers for administrative purposes and for the teaching of several subjects of the curriculum. The diagram below summarises the structure of the ICCPC as it has been described in this chapter.

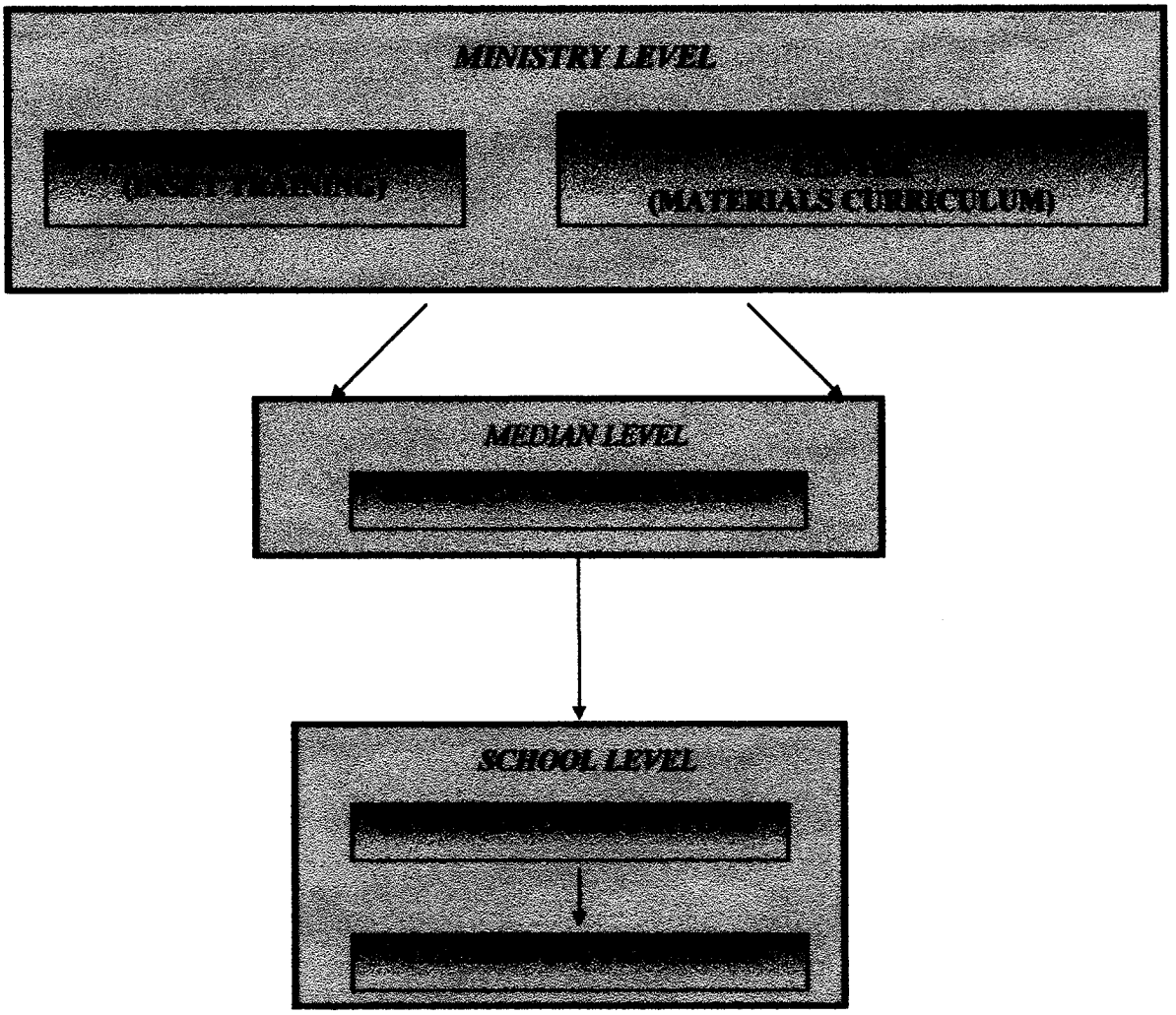


*Diagram 4: The structure of the ICCPC programme*

The above presentation of the situation within the ICCPC, its structure, provides a basis for the identification of certain problematic areas of the implementation as they emerge from the official documents (CDS, 1996, 1997), the UNESCO report (1997) and other research findings (1996, 1997) .

The lack of an official governmental ICCPC policy and of a strategic plan specifically targeted towards the implementation of the ICCPC and its philosophy and rationale, appears to prohibit its further development. More specifically, the official policy that exists is not explicitly defined and does not include certain guidelines for action on the following:

- the schedule for the implementation on a national basis
- administrative guidance for all the participants separately, namely, the Inspectors, the heads and the teachers
- the hardware and software implications and specifications
- the curriculum
- budgets and financial support on both a school and a national basis
- the evaluation of the programme implementation.

All the above provide the basis for a further investigation of the ICCPC and the teachers' role in it.

## CONCLUSION OF THE CHAPTER

This chapter provided a brief description of the Cyprus educational system and focused on the ICCPC main features, as it is the programme under investigation in this thesis. The research which follows will demonstrate the achievements of the programme while also recognising the problems created by the deficiencies identified above.

# CHAPTER SIX

# METHODOLOGY

## STRUCTURE OF THE CHAPTER

In this sixth chapter of the thesis the reader is provided with the general issues concerning the methodological procedures followed, in order to examine the research questions of the study. Firstly, the aims and objectives of the study are presented, as clarified by the review of the literature. Then, each method used is justified and described. The pilot focus groups, the survey and the in - depth interviews are analysed here, as the means for data gathering. Moreover, the procedure of coding and data analysis is explained.

## 6.1 AIMS AND OBJECTIVES OF THE RESEARCH STUDY

The purpose of the research study is to investigate the teacher's reactions and behaviours when confronted with an innovative setting, in order to suggest ways for successful implementation of innovation and change in education. Due to the importance of the teacher's role in an innovative setting, it is critical for this thesis to describe and comment on the teachers' views when confronted with an educational innovation.

In particular, the aims of the research are, as stated in the first chapters:

- **RQ1: What are the views of the teachers, at both the organisational and the personal level, when confronted with an educational innovation, e.g. the ICCPC, concerning their own role in it?**

- **RQ2: Is it possible to profile the range of responses that might be anticipated among teachers confronted with an educational innovation?**

- **RQ3: How could the teacher be more successfully involved in the implementation of the innovation?**

The sub – questions of this research study are as follows:

### 6.1.1. RESEARCH QUESTION ONE:

***RQ1.1*** What are the teacher's views when confronted with an educational innovation, e.g. the ICCPC, concerning the organisational level of the innovation, which consists of the following factors:

- decision making about the project

- rationale of the innovation

- organisation of the innovation at the level of the school and the classroom

- administrators' point of view, the school head, the Inspector, the District co-ordinator)

- the nature of the collegiality between the teachers and other parties involved in the innovation

- the in - service training provision

***RQ1.2*** What are the teacher's views when confronted with an educational innovation, i.e. the ICCPC, at the personal level of the innovation, which consists of the following factors:

- teachers' attitude towards the innovation

-teachers' concerns about the innovation

-teachers' expectations from the innovation

In order to describe the teacher's role in an innovative setting it is essential to investigate all the aspects of the innovation. These aspects form two main levels of the teacher's role

in an innovation: the organisational and the personal level, as presented in chapter three of this study.

Diagram 5 presents the framework of the first aim, as implied by the literature.

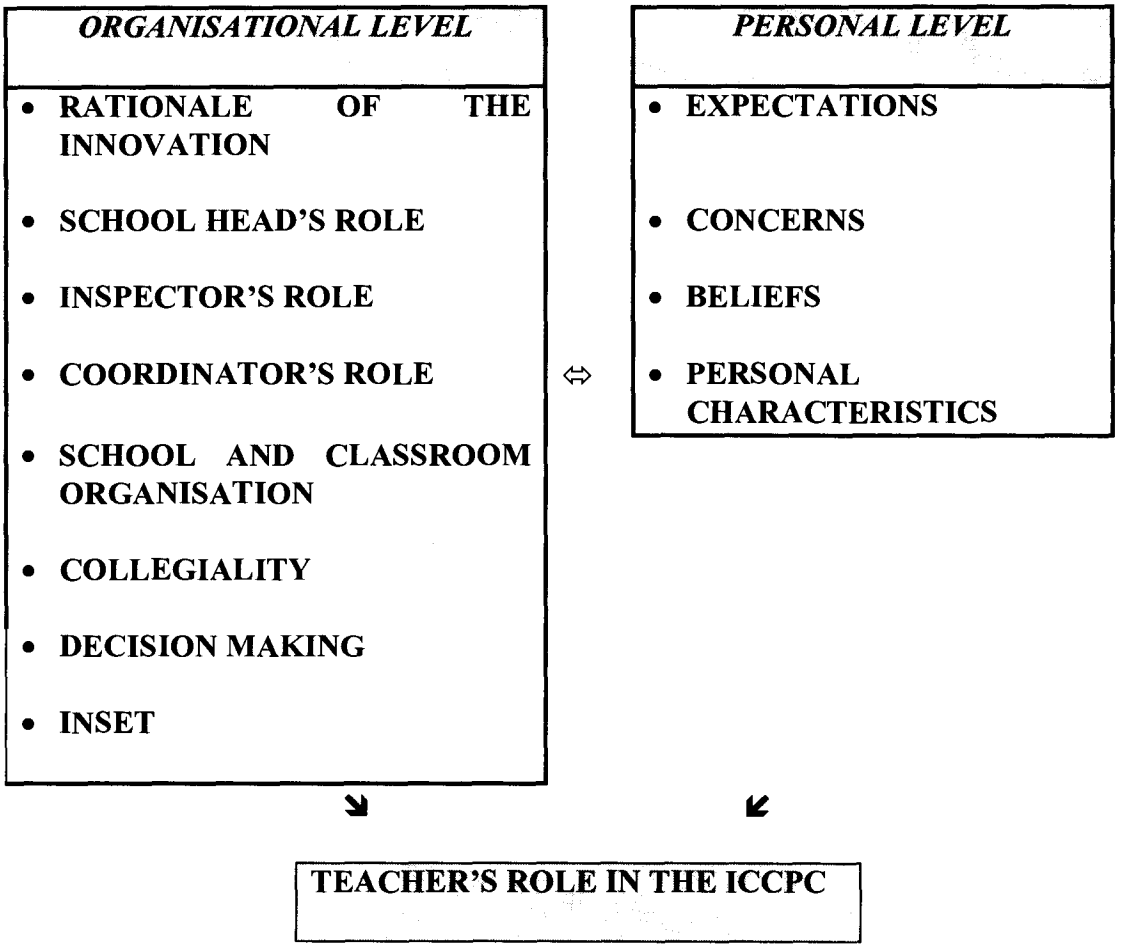


*Diagram 5: The theoretical framework of RQ1*

It is implied by the above diagram that all the organisational factors, that might be associated to the personal factors of the teachers' involvement in the innovation, determine the teacher's role in it. All these factors will be examined both through the literature and the fieldwork in this thesis.

### 6.1.2 RESEARCH QUESTION TWO:

***RQ2.1*** What are the typical reactions and stances of the teachers involved in ICCPC concerning their own role in the innovation?

***RQ2.2*** What is typical profile of teachers confronted with technological innovation?

As emerging from the results of the first aim, the thesis will present the typical stances of the teacher involved in an educational innovation and will attempt to provide a profile of her and all the teachers confronted with similar innovative programmes.

Given the teacher's involvement in the ICCPC and the responses to the empirical research that will take place, the researcher will be able to present the teacher's reaction and her involvement towards the ICCPC.

### 6.1.3 RESEARCH QUESTION THREE:

***RQ3.1*** What could the teacher's role be in order to have a successful implementation of the ICCPC at both the organisational and the personal level?

***RQ3.2*** What are the implications for the successful implementation of this, and perhaps other, curriculum innovations?

The research findings will be discussed in reference to the theory and the literature review in order to fulfil the third aim of the research, as shown above. Therefore, an 'evaluation' of the teacher's role in the ICCPI programme will be attempted and suggestions and implications for successful teacher's role will be given. Moreover, the implications will act as a 'model' for the successful involvement of the teacher in similar innovative settings.

## 6.2 RESEARCH METHODS

### 6.2.1. CASE STUDY

The ICCPC programme is considered as a typical situation warranting the use of a 'case study' (Yin, 1993). In such a situation, the 'case' is the programme under investigation, i.e the ICCPC programme, which is an example of innovative setting. According to Stake (1994 ), a case might be simple or complex. From this perspective, different techniques of data gathering will be operated in order to fulfil the multidimensional purpose of the research study. The specific research design fits into the method described by Yin (1993) as 'descriptive case study', since its main purpose is the description of the teacher's involvement in an innovative setting, the ICCPC. In addition, the case study is the most appropriate method, since it allows the researcher to be more sensitive about a complex situation. Powell (1992) refers to this method saying that the case requires discussion and analysis, including a high degree of self evaluation by participants. In this thesis, the key person and key factor is the teacher herself and, therefore, the emphasis is on the teachers' perspective.

Effort has been made in order to accomplish triangulation of data and triangulation of methods. As Denzin (1988) mentions, multiple triangulation which consists of the above two, together with theory triangulation and investigator triangulation, is the best way to achieve valid and reliable results. Burgess (1983) chooses the term 'multiple research strategies' to describe the use of diverse methods in tackling a research problem. Throughout this research study, triangulation was defined in its customary form which is "the application and combination of several research methodologies in the study of the same phenomenon" (Denzin, 1988, p.511). The researcher, herself, will act as the only investigator and try to answer to the research questions on the above basis.

### 6.2.2 THE COMBINATION OF QUANTITATIVE AND QUALITATIVE DATA

In this thesis, a link between quantitative and qualitative data was attempted in order to accomplish stronger results. It is argued that this combination of data - gathering approaches is the most appropriate for assuring quality in research. A review of the literature suggests that the quantitative - qualitative argument which has been set out for several years is essentially unproductive (Miles and Huberman, 1994, Borg and Gall, 1989, Cambell, 1985, etc). In addition, Hammersley (1992) refers to this combination arguing that the researcher's decision should depend on the nature of what she is trying to describe, or the likely accuracy of her description, on her purposes, and on the resources available; "not on the ideological commitment to one methodological paradigm or another". Miles and Huberman (1994) argue that "we have to face the fact that numbers and words are both needed if we are to understand the world" (p.40). Therefore, the issue is to make appropriate decisions as to when and how to combine qualitative and quantitative methods and data.

Rossman and Wilson (1984) as well as Oppenheim (1992) reveal three broad reasons for linking qualitative and quantitative data, as follows: a) to enable confirmation or corroboration of each other via triangulation b) to elaborate or develop analyses, providing richer detail, c) to initiate new lines of thinking through attention to surprises or paradoxes, «turning ideas around» and providing fresh insight. On a similar theme, Firestone (1987) suggests that, quantitative studies persuade the reader through de- emphasising individual judgement and stressing the use of established procedures, leading to more precise and generalisable results.

Brannen (1992) refers to the combination of quantitative and qualitative techniques and suggests that:

> *"...where the research issue is clearly defined and the questions put to respondents require unambiguous answers, a quantitative method such as a questionnaire may be appropriate. By contrast, where the research issue is less clear-cut and the questions to respondents are likely to result in complex, disruptive replies, qualitative techniques such as in depth interviewing may be called for''* (p.4).

For this research study, it was decided to apply three different research perspectives and methodologies, linking quantitative and qualitative research. Table 1 presents the methodology that was followed for each stage.

**Table 1**

**The methodological plan of the research study**

| METHOD | RESEARCH INSTRUMENT | TARGET GROUP |
|---|---|---|
| 1. Pilot group interviews | • **Semi-structured interviews** ( Informative questions) | • Administrators (3)<br>• Teachers (6) |
| 2. Survey | • **Questionnaire** (Informative and exploratory questions - combination of closed and open questions) | • All the teachers involved in ICCPC programme (n=60) |
| 3. Interviews | • **In depth interviews** ( Semi - structured Informative and exploratory questions | • 9 teachers (school co-ordinators)involved in the programme |

In the following pages a description of each methodological decision is attempted.

## 6.2.3 PILOT INTERVIEWS - FOCUS GROUP

### RATIONALE OF THE METHOD

The purpose of the pilot interviews was to provide data and useful preliminary information about the ICCPC programme and the teacher's role in it.

The ICCPC was chosen as a specific example of innovation because it provided an opportunity to consider the role played by teachers in the innovation process. Since the ICCPC programme is one of the most recent and largest efforts that are being implemented in Cyprus, it seemed that the use of group interviews at the beginning of the investigation would be useful for the researcher. The purpose of these interviews was to raise awareness about the key issues surrounding this programme and also to enable the planning of the most suitable methodological approach for this research. Due to the researcher's role as an external investigator and to the relatively short time since the implementation of the programme, it was necessary to have a clear idea of the situation under study. It was decided that the questions be aimed at eliciting information and would deal with general issues of the ICCPC programme and the teacher's role in it. Fontana and Frey (1994, p.361), refers to interviewing as "one of the most common and most powerful ways we use to try to understand our fellow human beings".

It was decided that the interviews would take the form of 'group interviews'; that means that the interviewees were more than one, as shown in Table 1. This enabled the researcher to gain as much information as possible about the programme and brought up a lot of material 'new' to the researcher. Fontana and Frey (1994, p.364), refer to the group interview as a "systematic questioning of several individuals simultaneously in a formal or informal setting". They add that group interview is something new in research

methodology, as a developing form of interviewing that can be implemented in a structured, or unstructured format and that is gaining popularity among social scientists. Moreover, Van Dalen (1979) argues that in a group interview "the participants may not only present a wide range of information but also help one another recall, verify, or rectify items of information" (p.159).

Research reveals certain advantages and disadvantages of this method of group interview. It seems to be a) inexpensive, b) data rich c) flexible d) stimulating to the respondents, e) cumulative and elaborate and f) elaborates on the individual responses. However, in a group interview the interviewer a)must keep one person from dominating the group b) must encourage shy or reluctant respondents to participate, c) must obtain responses from the entire group to ensure the fullest possible coverage of the topic and d) must balance the directive interviewer role with the role of the moderator.

All the above were considered seriously before the operation of the group interviews. The advantages were appreciated and it was decided that this particular method with its specific advantages was appropriate for the purpose of the research at this initial stage. The weaknesses of the method were seriously considered and a great effort was made to overcome them as far as possible.

The group interviews provided certain hypotheses to the researcher. Research implies that qualitative methods, such as interviews, may act as a source of hunches or hypotheses which quantitative work may then go on to test (Brannen, 1992). Furthermore, pilot interviews may lead to the development and piloting of research instruments.

For the specific setting of the ICCPC, the group interview had mostly an exploratory purpose and was also used for triangulation, as it was applied in conjunction with other

data gathering techniques. The researcher participated in the group interview, giving emphasis to the respondents' voices and having loose control of the conversation.

## THE SAMPLE OF THE PILOT FOCUS GROUPS

It was decided to have pilot interviews with both administrators and teachers since they are the main sources of information for the programme under investigation. This would enable the researcher to get a clearer idea of how the two populations involved in the programme face the innovation. Moreover, it would give useful information to the researcher mainly on the organisational plan for the innovation and this in turn would lead to the formulation of a more valid questionnaire on specific issues.

Two groups were interviewed in this manner. One was formed by four administrators (an Inspector responsible for the ICCPC implementation; the responsible teacher appointed at the CDS for the ICCPC; an INSET trainer from the PI; and a District Co-ordinator). The second group was formed by six teachers representing all the districts. The two groups were independently interviewed, in order to enable maximum reliability.

## THE TYPE AND CONTENT OF THE FOCUS INTERVIEWS

A loose, semi - structured interview was used in both settings in order to let people talk freely about issues concerning the innovation and their role in it. There was a «hidden agenda» and the researcher tried to be as non - directive as possible, while maintaining loose control of the group. The issues covered by the pilot group interviews were briefly the following:

**Table 2**

**Questions for the pilot focus groups**

| *TEACHERS* | *ADMINISTRATORS* |
|---|---|
| • *What is the ICCPC programme to you?* | • *What is the ICCPC programme to you?* |
| • *What is it about?* | • *What is it about?* |
| • *How does it work in your school?* | • *How does it work in Cyprus?* |
| • *What is your role in it?* | • *What is your role in it?* |
| • *Why was it implemented in Cyprus?* | • *Why was it implemented in Cyprus?* |
| • *Is it successful?* | • *Is it successful?* |
| • *What problems do you face?* | • *What problems do teachers face?* |
| • *How could it be more successful?* | • *How could it be more successful?* |
| • *What can you do to promote change?* | • *What can you do to promote change?* |

It is shown from the above table that all the above questions were open ended and were almost the same for each group. They focused on general issues concerning the rationale and the implementation of the innovation, for the reasons explained above. The results of the pilot study will be presented later, in chapter seven.

## 6.2.4 THE QUESTIONNAIRE

The pilot focus groups and the review of the literature provided specific issues about the teachers' involvement in an educational innovation which needed to be examined.

### RATIONALE OF THE QUESTIONNAIRE SURVEY METHOD

The purpose of the questionnaire was to provide the researcher with information on specific issues concerning the teacher's role in the innovative setting. The population of

the survey questionnaire was all the teachers involved in the ICCPC programme, and using a computer in their school during 1995-96 and 1996-97.

The questionnaire was seen as the most appropriate instrument for data gathering from all the teachers involved in the ICCPC programme. The aim was to have information both on the organisational and the personal level of the innovation, as implied by the literature review and later confirmed by the pilot study. Due to the number of the teachers as well as the content and the amount of the information required together with the issue of generalisability that occurred , it was judged that the questionnaire survey would be the most appropriate method.

Brannen (1992), refers to surveys as a type of quantitative research and argues that they provide a 'pre-determined' 'finely- tuned' 'technological tool' which allows for less flexibility than in the case of qualitative techniques. It was obvious that once the research issue was clearly defined as a result of the group interviews, the questions required unambiguous answers, therefore a quantitative method such as a questionnaire would be appropriate.

## THE VARIABLES EXAMINED IN THE QUESTIONNAIRE

In the preparation of the questionnaire, considerable emphasis was given to ensuring that each question or item should be explicitly or implicitly related to a particular research question. The questionnaire was seeking information on areas that were shown in the literature to be crucial if there is to be successful involvement of the teacher in an innovative setting. The only exception was the decision making area which proved not to exist outside the classroom. This was applied in the form of expression of their own opinion. Moreover, the questionnaire covered the teachers' personal characteristics in

order to examine any possible association between them and the expressed opinions. The survey was thus a practical way to investigate the link between theory and practice in an existing innovative setting. All the variables that were found to be important by the literature review are examined here.

Diagram 6 presents the theoretical framework of the questionnaire with the dependent and independent variables examined.

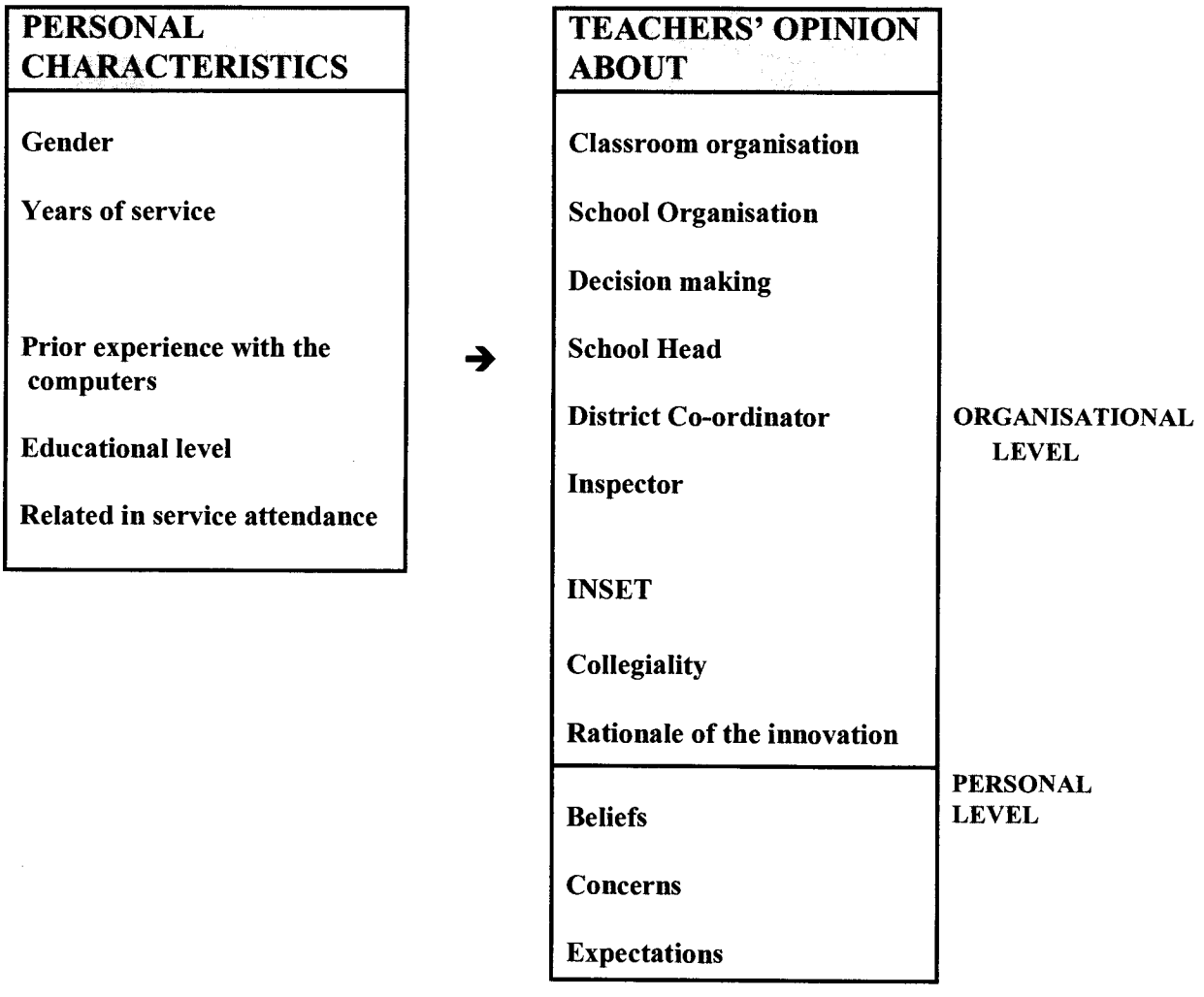


*Diagram 6: The variables examined in the questionnaire*

As shown above, specific variables were examined through the questionnaire as suggested by the literature review. More specifically, the questionnaire asked for information concerning the teacher's personal characteristics and their opinion on the areas that were

shown to be crucial as far as the teacher's role in an innovation is concerned. Moreover, it gathered information on personal issues that have been found to be associated to the teacher's involvement in change procedure.

The pilot interviews and the literature provided the salient variables that needed to be investigated through the questionnaire. Each research question, together with the findings of the group interviews, were analysed and 'broken down' into specific , straight forward, questions, that formed the questionnaire.

## TYPE OF QUESTIONS USED

In order to investigate the teacher's opinion through a questionnaire, it was decided that statements on a five point Likert - type scale should be adopted. According to Anderson (1988, p. 427), "Likert scales consist of a series of statements all of which are related to a person's attitude toward a single object". This would enable the teachers to express their opinions, ideas, views, feelings on the issues concerned in a natural way (Cohen and Manion, 1989). Moreover, the use of the above scale enabled the enhancement of both the validity and the reliability of the questionnaire since a statistical check became possible.

When measuring attitude, questions should be grouped. Borg and Gall (1989), mention that "... a questionnaire dealing with attitudes must generally be constructed as an attitude scale and must use a number of items .... In order to obtain a reasonable picture of the attitude concerned" (p.432). In the presented research study, each area/factor under investigation was examined using several questions with similar meaning, under the same heading. Therefore, several clusters of statements are constructed by the items and form the underlying dimensions of the questionnaire.

It was decided that most of the questions should be closed, both to help the respondents to answer easily and also to enable a straightforward statistical analysis of the data. Each question has either a simple numerical answer or a set of alternatives to choose from either by circling or ticking. However, at the end of the questionnaire, after the closed questions, an open ended question was given to the respondents. This was there to give useful data since it allows the respondents to freely state what they think which will be of considerable value if some potential opinions have been overlooked. The whole original questionnaire that was administered to the teachers (both in English and in Greek is attached in Appendix I)

## THE CONTENT OF THE QUESTIONNAIRE

The questionnaire was designed to fit the earlier analysis and was formed based on the organisational and personal level of factors affecting the teacher's role in the ICCPC. Table 3 formed the 'dummy table' for the questionnaire construction, providing the rationale of the instrument, which was divided into three Part: part I, contains questions related to the organisational level of the teachers' involvement in the ICCPC (group questions A to I); part II contains questions related to the personal level of the teachers' involvement in the ICCPC (group questions A - D); in part III there are questions related to the teachers' personal characteristics (questions 1 to 6).

## Table 3

## The content of the questionnaire

| ORGANISATIONAL LEVEL CATEGORIES (PART I) | SPECIFIC AREAS FOR EACH FACTOR | SPECIFIC QUESTION |
|---|---|---|
| **A. School Organisation** | • number of computers in school<br>• separate room<br>• teacher co-ordinator<br>• district co-ordinator<br>• grades using computers | a1<br>a3<br>a4, a5,a6<br>a9,a6<br>a8 |
| **B. Classroom organisation** | • Lessons where computers are used<br>• Number of computers<br>• Frequency of use | b2<br>a2<br>b1 |
| **C. School Head** | • Knowledge/Information about ICCPC<br>• Information about the philosophy<br>• Emotional support<br>• Promotion of ICCPC | c1,c2,c10<br>c7, c8,c9<br>c6<br>c3, c2 |
| **D. District Co-ordinator** | • Technical / practical help<br>• Emotional support<br>• Trainer / provides information | d1,d2,d3,d4,<br>d7,d8<br>d5,d6 |
| **E. School Inspector** | • Knowledge/information about ICCPC<br>• Emotional Support<br>• Promotion of ICCPC | e1, e3<br>e2,e5<br>e3,e4,e2 |
| **F. Collegiality** | • Sharing experiences with colleagues<br>• Training colleagues (cascade)<br>• Receive help | f1,f4,f5<br>f2, f4<br>f3 |
| **G. - H. INSET and materials, support** | • Technical help<br>• Classroom organisation<br>• School organisation<br>• Philosophy of the ICCPC | g1, h5<br>g3, h6, h2<br>g2, h6<br>g4, g5, g6, g7, 1,h2,h4 |
| **I. Rationale of the ICCPC - Decision making** | • students' benefit<br>• teacher's benefit<br>• teaching benefit<br>• impact on the system | i1<br>i2<br>i3<br>I4, i5 |

*(Table 3 continued)*

| **PERSONAL LEVEL CATEGORIES (PART II)** | | |
|---|---|---|
| **A. Beliefs** | • «Likes» | a.1, a.2, a.3 |
| | • Satisfaction | d.1, d.2, d.3, d.4, d5 |
| | • Results on teaching | d.4, a4 |
| **B. - C. Expectations - Concerns** | • Better teacher | c.1 |
| | • better programme implementation | b2 |
| | • Learner | b.1 |
| | • Promotion | b.4, c.4, c.5, c.6 |
| | • Change agent | b.3, c.2, c.3, c.7,c.8 |
| **D. General satisfaction** | • Generally, you are satisfied | d1,d2,d3, d4, d5 |
| **PERSONAL CHARACTERISTICS (PART III)** | | |
| | • Gender | 1 |
| | • Years of service - Age | 2 |
| | • Level of Education | 3 |
| | • Previous experience with the computers | 4, 5 |
| | • Use of the computer on their own time | 6 |

The table above presented the underlying rationale for the questionnaire construction. Obviously, some aspects of the theory, as explained in previous chapters (mainly chapter three), are examined in detail, whereas others are only covered by a single question or are not covered at all in the questionnaire. This is mainly due to the nature of each issue; since the questionnaire was intended to provide primary data which would enable the researcher to go on with in-depth analysis of all the issues at the later interview stage, this was not seen as a problem. The list below presents, in detail, issues that were not fully covered in the questionnaire and they (together with others) will be examined in depth through the interviews which will form the main research instrument for data collection in this thesis.

**Table 4**

**Issues not covered in the questionnaire**

| ISSUES NOT COVERED IN THE QUESTIONNAIRE | REASONS |
|---|---|
| 1. Teachers' background characteristics - biographical factors that made them get involved in the ICCPC. | Sensitive issue that needs in depth analysis and open ended questions |
| 2. Teachers' participation in the decision making procedures (classroom level, school level, policy level) | Partly investigated through documentary analysis |
| 3. Rationale of the innovation | Expanded through the interview - Cross-checking with the questionnaire |
| 4. Personal level (attitude, beliefs, concerns etc.) | Sensitive issues - will be covered fully in the interviews.<br>- reasons for participating<br>- expectations<br>- what is your role in ICCPC<br>- what should it be?<br>Satisfaction , Success issues |

The questionnaire thus enabled the researcher to obtain specific information on several areas of the teacher's role in an educational innovation, as implied by the literature. In the following pages, the method of data analysis used for questionnaire is briefly explained as well as the reasons for making certain methodological - statistical decisions.

A copy of the questionnaire can be seen in Appendix I.

## PILOT QUESTIONNAIRE

A pilot questionnaire was administered to a small group of teachers involved in the programme (n=10). The pilot survey took place in the presence of the researcher. This enabled the researcher to listen to the respondents' comments on the content of the questionnaire; From this she got a preliminary idea of the time allocated for completion

and the practical problems that emerged. As a result, certain questions were paraphrased in order to make the content of the questionnaire more explicit, and two questions were amended. None were deleted.

## LETTER OF TRANSMITTAL

In the letter that was sent to the respondents along with the questionnaire, special attention was given, in order to include the following:

- the name of the researcher and her capacity
- the research purpose and its importance
- the assurance of confidentiality
- the explanation of how to return the questionnaire to the researcher through internal mail
- the promise that the results will be announced to them, if they wish
- the emphasis on the importance of the respondents in this research

The letter is attached to the questionnaire that is presented in Appendix I.

## RESEARCH POPULATION

The population of the research was formed by all the primary teachers that were using computers in their schools all over Cyprus, during the academic year 1996 - 97 (n=60).

## RESEARCH RESPONDENTS

Completed questionnaires were received from 44 out of the 60 teachers. The response rate is 74% which is considered to be high and acceptable, representing the population (Cohen and Manion, 1989).

## QUESTIONNAIRE DATA ANALYSIS

In order to get an overview of the teachers' opinions on all the questions asked, descriptive statistics were operated using the statistical package SPSS (version 6.0). More specifically, the mean, standard deviation, frequencies and percentages were calculated for each one variable/question.

In order to have more in depth information about the teachers' views and an overall idea of their opinion, descriptive statistics were also carried out for each group of questions.

In order to examine whether certain subgroups exist in each of the categories, factor analysis was performed within each group of questions. Due to the small number of the sample, analysis to all the questions was not recommended (Kline, 1994, Oppenheim, 1992). Therefore, factor analysis was operated only within the groups of questions separately and not for the entire questionnaire. This enabled the researcher to examine any underlying dimensions of the teachers' responses and stances towards each of the groups of questions in the questionnaire. For the first part of the questionnaire (the organisational level issues), factor analysis was performed for each one of the groups whereas for the second part of the questionnaire, investigating the personal level of the teachers' role, factor analysis was performed for nearly all the statements together, since it is implied by the literature and by the correlation matrix on those statements that they are highly related to each other (Kline, 1994, Child, 1990). The factor analysis enabled the researcher to get a data reduction having a descriptive view of the teachers' opinion in several subgroups of the questionnaire and not in every single variable. In Appendix III, the factor analyses and factor matrices of the groups of questions in the questionnaire are presented.

In addition, inferential statistics enabled the researcher to investigate the association of each of the personal characteristics with the categories of opinion. T- tests were performed where the independent variable was two-categorical and one-way analysis of variance when the independent variable was formed by more than two categories. In all the cases, the dependent variables were the grouped variables as they were formed after the factorial analysis (Nurisis, 1992, Cohen and Manion, 1989).

The analysis of the questionnaire data revealed interesting issues partly answering to the research questions posed early on in this study. However, as anticipated, it was necessary to examine the issues revealed more deeply by the use of a more personal method of data gathering, the in-depth interviews. In the following pages, the interview method is presented and its place and rationale in this thesis is explained

## 6.2.5 INTERVIEWS

As mentioned before, after the analysis of the questionnaire data, it was decided to operate in-depth semi - structured interviews on specific issues with immediate relevance to the research questions.

### RATIONALE OF THE INTERVIEW METHOD

Owing to the respondent - oriented nature of this research the qualitative approach was chosen as the researcher - interviewer could elicit the immediate responses of the interviewees in the setting and clarify the questions where needed. Interview is the most relevant means available and it can be described as a kind of purposive conversation. Cohen and Manion (1989), claim that the interviewer's main task is to elicit from the interviewee as much specific and research relevant information as possible. Throughout face to face personal contact, close interaction between the interviewer and the interviewee is permitted.

Additionally, the interview allows direct and flexible conventional data collection which cannot be achieved by postal questionnaires.

Due to the nature of this part of the research, the relationship between the researcher and the respondents becomes very delicate in this study, because during the one- hour interview, the involvement of the interviewee is the major source of findings.

The interviews enabled the researcher to gain useful information on sensitive issues and on the teacher's personal level of commitment to the innovation. Teachers gave their views in response to the following questions:

- What is your role in the ICCPC?
- Why?
- What is expected from you concerning the innovation?
- Why have you entered the programme?
- What do you expect of it?
- How does the organisation of the innovation help you?
- Do you find the ICCPC successful?
- What is its future?
- Do you think it will change the Cypriot educational system? etc.

"Using the interviews, the possibility for understanding latent, underlying, or non obvious issues is strong" (Miles and Huberman, 1994, p.10). It is hoped that through the interviews with the teachers, the researcher would be able to answer to the 'whys' and 'hows' of the setting under investigation. Qualitative interviewing is a way of finding out what others feel and think about their worlds. The nature of this thesis, which is mainly based on the

teachers' stances towards innovation, seeks for this kind of methodology, in order to get an overall view of the topic under investigation. Teachers' stances, attitude and role within an innovation are best described through personal approaches of data gathering.

## TYPE OF INTERVIEW

The interview took the form of a semi -structured one, since it was largely depended on the pre-scheduled agenda, though, at the same time, it offered the interviewees the opportunity to expand and explore the issues under investigation. The questions were all open ended in order to enable the respondents to answer freely and expand on their feelings or opinions. Miles and Huberman (1994), refer to this type of interview as 'semi-standardised' and supports that in this case the interviewer asks certain, major questions the same way each time, but is free to alter their sequence and to probe for more information, which is exactly the procedure followed in the presented interviews. he argues that the researcher is " ...able to handle the fact that in responding to a question people also provide answers to the questions we were going to ask later" (p.136). In addition, Fielding (1993), refers to this type of interview as a 'structured but open ended' one, and argues that it is an advantage to the research to keep the procedure standardised, using open ended questions.

## INTERVIEW SAMPLE

Nine teachers were selected using a 'quota' sampling procedure. In this specific procedure, "the strategy is to obtain representatives of the various elements of a population, usually in the relative proportions in which they occur in the population" (Robson, 1993, p.140). The sample consisted of teachers who lived in all the districts of Cyprus; they were all school co-ordinators with the longest possible involvement in the ICCPC. It was decided to have only school co-ordinators in the interview sample since it was revealed in previous results that they were deeply involved in the innovation, and had had a more or less 'common'

experience with the programme and also similar characteristics. On the other hand, classroom teachers using the computers seem not to have had similar experiences of the programme, as a result of their prior experience with computers, and their existing level of competency. The sample's characteristics are shown below, on table 4.

**Table 5**

**The personal characteristics of the interview sample**

| CASE | GENDER | AGE | QUALIFICATIONS | DISTRICT |
|---|---|---|---|---|
| ONE (1) | Male | 27 | MEd in Education<br>USA Seminar* | Nicosia |
| TWO (2) | Male | 32 | PI seminars<br>Private Sector** | Nicosia |
| THREE (3) | Male | 45 | PI seminars<br>Private Sector | Nicosia |
| FOUR (4) | Male | 26 | PI seminars*** | Nicosia |
| FIVE (5) | Male | 27 | PI seminars | Larnaca |
| SIX(6) | Male | 32 | MEd in Education<br>PI seminars | Limassol |
| SEVEN (7) | Male | 32 | MEd in Education<br>PI seminars | Limassol |
| EIGHT(8) | Female | 25 | MEd in Educational Technology | Famagusta |
| NINE(9) | Female | 29 | Bed in Educational Technology | Paphos |

* Attendance in a summer seminar in USA
** Attendance of training in private schools
** * Attendance of training at the Pedagogical Institute, Ministry

The table above indicates that the majority of the sample is young teachers with relatively high qualifications, as far as the innovation is concerned in detail.

## THE CONTENT OF THE INTERVIEW - THE AGENDA

Table 6 shows the general questions which formed the interview schedule, which were in turn derived from the questionnaire results and the literature review. Miles and Huberman (1994) support the creation of a provisional 'start list' of codes prior to fieldwork. "That list comes from the conceptual framework, list of research questions, hypotheses, problem areas, and/or key variables that the researcher brings into the study"(p.58). Table 6 presents the issues and the relevant area of the theoretical background that they cover.

**Table 6**
**Questions and rationale of the interview agenda**

| QUESTION | RELEVANT TO... |
|---|---|
| 1. For how long have you been involved in the ICCPC? | Background characteristics |
| 2. Do you enjoy working with the computers? Why? | Satisfaction |
| 3. Do you enjoy working with the computers in your classroom? Why? | Rationale |
| 4. Why have you entered the innovation? | Expectations- motives |
| 5. Do you understand the innovation's rationale? What is its purpose, aims and objectives? Why use computers in schools? | Rationale |
| 6. Are you satisfied with the ICCPC? Why? | Satisfaction- personal |
| 7. Will computers help Cyprus educational system? Why? How? | Rationale |

*(Table 6 continued)*

| | |
|---|---|
| 8. Why are you using computers in your school? | Expectations-motives |
| 9. How much do you occupy yourself with the computer out of the school? Why? | Involvement - Decision making |
| 10. Do you experience any kind of stress while working with the computers in school? Why? | Concerns |
| 11. Do pupils enjoy working with the computers? | Rationale |
| 12. Do they learn through the computers? | Rationale |
| 13. Do computers help the children learn? How? Why? | Rationale |
| 14. Do computers help the teachers in their work? How? Why? | Rationale |
| 15. How can those problems be overcome? | Suggestions |
| 16. Does the school head support you? Why? How? | School head |
| 17. Does the school co-ordinator support you? Why? How? | Co-ordinator |
| 18. Does the school Inspector support you? Why? How? | Inspector |
| 19. Do you cooperate with other teachers in the ICCPC? Why? How? | Co-operation |
| 20. What is the practical help you receive? | Help |
| 21. Did the INSET help you? How? Why? | INSET |
| 22. What would you find useful as INSET offered to you? What subjects? | INSET |
| 23. How would you like to be trained for this innovation? e.g. School based seminars | INSET |
| 24. Do you worry about the innovation's implementation? Why? | Concerns |
| 25. How do you see yourself in the programme? Why? | Personal role |
| 26. What is expected of you? Why? | Expectations-personal |
| 27. What do you expect of the programme? Why? | Expectations |
| 28. What do you expect to gain being part of the programme? Why? | Expectations |

*(Table 6 continued)*

| | |
|---|---|
| 29. How will your involvement in ICCPC help you as a teacher? Why? | Expectations-Decision making |
| 30. How do you see yourself in ten years from now? | Personal |
| 31. How will the innovation be more successful? | Suggestions- personal |
| 32. How would you organise the innovation if you were responsible for that? | Personal -suggestions |
| 33. What could the teachers do for successful implementation of the innovation? | suggestions - personal |
| 34. What else do you want to add concerning the innovation and yourself in it? | personal |

Robson supports this way of structured data gathering by saying that "when you know what you are after, there is no reason not to plan in advance how to collect the information" (1993, p.34). These main questions which are prepared in advance, structure the discussion by breaking the subject into specific answerable parts , according to Rubin and Rubin (1995). It becomes obvious from the table above, that nearly all the questions are open ended and require high personal involvement of the respondent in the answering itself. In addition, Fielding (1993), argues that "the questioning should be as open -ended as possible, in order to gain spontaneous information about attitudes and actions" (p.137). It was decided that the same agenda should be kept for all the interviews in order to enable the researcher to compare cases and to answer the research questions based on reliable data. "We need common instruments to build theory, to improve explanations or predictions, and to make recommendations about practice" (Robson, 1993, p.34).

## INTERVIEW PROCEDURE

The interview appointment was arranged by phone with each of the interviewees at a time to suit their own convenience. The interviews took place from late May until early July

1997. This initial contact consisted of explanations about the purpose of the research and the interview in particular: It also assured the confidentiality and anonymity of the interviewees. The respondents' contribution to the research as a whole was highlighted in order to convince them to participate. All the respondents willingly offered to participate and that was worth noting.

All interviews took place after school time, in Nicosia in the PI, in Limassol in a conference hall, and at Larnaca, Famagusta and Paphos in hotel halls.The interviews lasted from 45 minutes in one case, to one and a half hours in two cases. For most of the cases it lasted approximately one hour. The entire interview was recorded on tape, after agreement with the interviewee. None of the interviewees had any objections to the use of the tape recorder since the researcher made it explicit that the data was only to be used for the purpose of the research. Together with the recording, the researcher took notes, mainly on the sequence of the questions posed and about any interesting points of the research. Note taking was also used to record any 'signs' transmitted silently by the interviewee, i.e. facial expressions. "Tape recordings alone are usually insufficient for most researchers" (Powney and Watts, 1987, p.124).

The researcher always based her questions on the pre-arranged agenda, though she let the interviewees talk about all the issues which emerged from the initial questions. According to Robson, (1993) interviews are based on a descriptive framework. " The more open the interview, the more complicated the analysis" (Powney and Watts, 1987, p.125).That is why each question might be differently posed and in a different order in each case, according to the flow of the conversation. Sometimes it was necessary to pose the same question again since the first answer seemed not to be clear or not convincing to the researcher. In addition, some interesting answers needed further explanation so the

researcher asked for it and the length of each answer varied from case to case. Probes were used in order to encourage the interviewee to expand on the matter in hand, complete an example or narrative, or explain a statement that the interviewer did not understand. Follow up questions were used to get richer, more in-depth answers; to explore newly discovered avenues and to test and modify emerging themes.

The interviewer tried to create a friendly atmosphere and put the respondents at their ease. With a pleasant, confident approach, making explicit the interviewer's role and the purpose of the interview, the conversation went on. She tried to be flexible, objective, empathic, persuasive and most of all, a good listener. She explained the purpose of the interview from the beginning and introduced the interviewees between them. She emphasised the exploratory nature of the conversation and asked for their permission to record the conversation. Everybody agreed but she also made notes especially for 'hidden' happenings that the recorder would definitely miss. The researcher also used prompts, in order to help the respondents express themselves (opinions and feelings). The questions started from the easiest ones, to the more 'concrete' ones like "how long have you been involved in the ICCPC?"; according to the conversation, it went on, moving gently to the more difficult and sensitive questions, which demanded personal expression of feelings, like, " What do you expect to gain from your participation in the ICCPC?".

The sequence of the question -asking is of great importance and enables the researcher to gather valid, reliable results in order to answer to her research questions. Even the manner in asking each question, the tone of the voice and the whole atmosphere in which it is questioned, proved to be important. " The interviewer's art consists in asking the questions properly and intelligibly, in obtaining a valid and meaningful response, and in recording the response accurately and completely"(Powney andWatts, 1987, p.179).

## DATA ANALYSIS OF THE INTERVIEWS

In interviewing these nine interviewees, it was decided not to use computer software for qualitative data analysis for the following reasons:

i. The amount of data is not enormous, since it depended on specific and structured agenda.

ii. The themes covered by the data were largely pre-determined by the literature review and the questionnaire analysis,

iii. The researcher could handle the data in a more logical way since she had a good overall view of the research questions and the underlying theory.

This procedure clearly embodied the danger of bias in the procedure of data analysis, which was seriously considered by the researcher. The researcher was aware of the limitations of the interview method, due to the danger of being biased that exists in the interpretation of the results. Therefore, the structured questionnaire that followed the preliminary data, and the semi-structured nature of the interview, together with the review of the literature and the support by it, formed a methodological plan, which was not easy to lead to biased conclusions. There is a triangulation of methods and data here, as we explained before, which enhances the validity and reliability of the results. Conscious effort and use of certain methodological procedures to limit the bias as much as possible was performed.

The data analysis procedure for the interviews was based on the pre arranged agenda as shown above. This pre - set framework formed the basis for qualitative analysis; the themes

which emerged from the data formed the questions themselves. The precise procedure followed in analysing the interviews was as follows:

- Transcription from the tapes and the researcher's notes
- A check of the transcriptions against the tapes
- Double reading the transcriptions in order to identify the «themes» - the main categories of the data
- Identification of the 'themes'
- Identification of any new 'themes'
- Identification of the sub categories that form each theme
- 'Concept mapping' every issue coming out of the transcriptions in order to identify relations between the categories and sub categories

## TRANSCRIPTION

> *''Given that a transcription cannot represent everything featured in the original spoken language, it follows that any transcription is an interpretation by the transcriber of what is being said. What is written down is inevitably selective''*
>
> (Powney and Watts, 1987, p.143)

Using the taped- interviews and the researcher's notes, the effort was to transcribe not only the literal statements but also any possible non - verbal communication.

The analysis of the interviews that followed was undertaken, in order to «reduce data» and bring them to a 'manageable' form. The analysis is largely dependent on the following:

- Purpose of the research - Research questions
- Purpose of the interview within the research
- The interview approach that was followed

- The reporting procedure

In Appendix II a sample interview transcript is presented with the rest of the analysis of the specific case. After this stage all the transcripts were sent back to the interviewees (each interviewee got his own interview) in order to have their comments on them. Full participation of the teachers in this research enhanced the reliability of the data (Cohen and Manion, 1989, Miles and Huberman, 1994).

**Identification of themes**

The transcripts were carefully read in order to identify the themes or major categories emerging from the teachers' views. Since the interviews were semi structured, the themes were mainly categorised according to pre- planned interview question. However, the themes were sometimes identified in the teachers' answers to different questions in the schedule. In addition, new themes emerged that the researcher had not identified prior to the data gathering.

**Identification of 'categories' within the 'themes'**

Each theme that was identified contained different categories or issues according to the way in which each respondent interpreted each theme. In the following pages in this chapter, each case-interview is presented in the form of a matrix, which shows both the themes and the main categories within each one. It is important to note that in each case, the themes are the major categories that emerged from the literature and the prior analysis of the research. However, the categories vary from case to case.

**Data display**

In order to have a clear idea of the data reduction, different matrices, one for each case-interview, were prepared. Miles and Huberman (1994), refer to building the display format

by saying that "it can provide a good thumbnail sketch of the change process for use in the final report"(p.93). In order to get the matrices ready, a lot of condensation and standardisation has gone through the actual original data until they got into that highly structured format. As shown in Appendix II a sample matrix for one interview case is presented.

## 6.3 THE RESEARCHER'S ROLE IN THIS THESIS

At this stage it will be useful to discuss my own role as researcher in the conduct of this study.

As researcher, I acted as an external investigator, a surveyor, an interviewer and an observer who examines the programme under study, in order to determine the teacher's role in it. In no case I acted as an evaluator, since the aim of the research is not to evaluate the ICCPC programme but to promote its successful implementation through a study of the teacher's role in it. Although the element of evaluation exists in every research study, it is not the purpose of this research to directly evaluate the rationale and the implementation of the ICCPC.

Moreover, it is was not my purpose to act as a facilitator to the programme and the interested groups, since that would engage me in the programme in a way that was not intended. I chose to act primarily as an 'outsider investigator' of the ICCPC programme. This way, I hoped to accomplish a high degree of objectivity while also remaining neutral by being free of shared interests. At the same time, I could be seen as an 'insider investigator' since I am employed by the Ministry of Education and Culture in Cyprus, being a former teacher and now an in - service teacher trainer. This was not as much of a problem as it appeared to be, since, by being an insider, I established a 'rapport' with the

people researched and could gain information easily both from policy makers and the teachers themselves.

Thus, throughout the present study, my role as researcher involved a combination of roles. An interaction between methods, data sets and roles took place in order to accomplish valid data and maximum representation of the reality to enable practical implications for successful involvement of teachers in educational innovations. Below are some brief comments about my role at each stage of the study.

***I. Document analysis***

At this stage of the study, I studied several documents, books and articles written in Cyprus, published in several papers of the Ministry of Education and Culture that referred to the specific innovation. As a member of the Ministry, it was relatively easy to gain access to those papers, as it is the same for all teachers who wish to undertake a study of this kind, once they have asked permission to do so.

***II. Literature Review***

At this stage I chose to use all the available sources in order to gain and present a substantial amount of relevant literature. This, was done mainly in the early stages of the study but also went on throughout the process; it enabled me to acquire a general view of the topic under investigation, as well as to suggest specific ideas about a methodological procedure appropriate for use in this study. Books, articles and electronic references (Internet, BEI and ERIC) were also used for the above purposes.

### *III. Preparation of the instruments*

At this stage, I used the background information gained by the literature review together with the data from the pilot interviews to provide me with the necessary information about the topic, so that I could construct a questionnaire and an interview agenda. For both instruments, I chose to act as an external investigator trying to gain answers for the fulfilment of the research aims. Analytical document analysis and the piloting of both instruments limited the weaknesses of the construction.

### *IV. Data gathering*

Here, I acted as an external investigator, seeking data from the respondents. At the survey stage, it was easy to keep as objective a role as possible, since the whole procedure was based on the mailed return of the questionnaires. However, during the interviews, both the group focus interviews and the in - depth interviews, I, like every interviewer, could not be completely neutral, since I was actively participating, prompting and asking questions. The use of a semi-structured interview enabled me to minimise the threat of subjective influence and bias. Moreover, in depth investigation of the literature on the methodology of interviewing as a research method, increased my awareness of the interview process. Careful presentation, a sensitive way of approaching the participants, and methodical and structured attention to the pre- organised agenda, added to the successful gathering of rich data.

### *V. Presentation of the results*

At the stage of the presentation of the results, I chose to use either computer software (for the quantitative part of the research) or a specific coding scheme (for the qualitative part of the study), in order to investigate the research questions through empirical data. My role

was restricted to the role of the presenter of the results. Limited comments concerning the results accompany the tables and figures, without in-depth interpretation. I have attempted to consistently present the results in terms of their relevance to the research questions, as posed in chapters one and six.

## CONCLUSION OF THE CHAPTER

This sixth chapter of the thesis presented the rationale for the methodological decisions of the study. The aims and the objectives of the research were reminded to the reader and each methodological step taken, in order to provide the data as objectively as possible, was exposed. The methodology described here ensured for the data gathering needed to investigate the teachers' responses to the specific example of innovation. The research findings are given in Chapter seven.

# CHAPTER SEVEN

# PRESENTATION OF THE QUESTIONNAIRE RESULTS

## STRUCTURE OF THE CHAPTER

This chapter presents the results of the pilot research and the questionnaire in an attempt to get an overall view of the teachers' opinions about the several aspects of the ICCPC innovation, as identified in the literature review and incorporated in the methodology of this thesis.

## 7.1 RESULTS OF THE PILOT GROUP INTERVIEWS

To remind the reader, the pilot interviews were undertaken with two focus groups. One consisted of four administrators and the other of six teachers participating in the innovation.

The researcher set out to conduct the pilot group interviews in a friendly climate, insisting on her role as an external investigator. The useful data gathered were categorised and thereafter formed the basis for the questionnaire. Table 6 shows the main findings of the two group interviews and the paragraphs below discuss the findings in relation to the administrators and the teachers. Clear differences between the two groups were identified.

**Table 7**

**Results of the focus group interviews**

| ISSUES | ADMINISTRATORS | TEACHERS |
|---|---|---|
| **RATIONALE OF THE INNOVATION** | - Not clear<br>- They confuse the rationale | - Not clear<br>-'Cascade model' unofficially used<br>- Misunderstanding of the philosophy |
| **ATTITUDES TOWARDS THE ICCPC** | - Negative at first, by the Inspectors<br>- Teachers have accepted the innovation<br>- Heads have accepted the innovation | - Inspectors do not know much about it<br>- Teachers are worried about both the philosophy and the implementation of the innovation<br>- Heads are negative<br>- Negative attitude and fear by the other teachers |
| **IDENTIFIED PROBLEMS** | - Lack of software<br>- Misunderstanding, at the beginning, of the rationale, by the teachers<br>- Different backgrounds of the teachers<br>- School and classroom organisation are not discussed yet | - Lack of time<br>- Lack of software<br>- Practical - Technical support<br>- Not effective INSET |
| **DECISION MAKING** | - The committee plus the administrators took the key decisions<br>- Responsible for everything<br>- Feedback is given to them by informal meetings with the teachers | - They question the administrators' role<br>- Very limited participation of the teacher in decision making<br>- They question the administrators' knowledge and ability to run the programme |
| **FUTURE OF THE IMPLEMENATION OF THE INNOVATION** | - Easy to overcome the problems<br>- Optimistic that the teachers will be positive. | - A lot of problems in the implementation procedure<br>- They state that, despite the problems, they will try hard to bring about success. |

## A. The administrators' views

The administrators were generally more satisfied and optimistic about the ICCPC innovation than the teachers themselves. The administrators' views were the opposite of that of the teachers' in most of the issues discussed.

More specifically, it seemed that the administrators do not have a clear idea of the rationale of the innovation and believed that the implementation is successful. They admitted that the first stages of the implementation were hard for them and for all, but they believed that this is a natural stage which had passed and now things are better. They found a positive attitude by the teachers towards the programme and believe that the main problems faced during the implementation are the lack of software, the different backgrounds of the teachers, and issues to do with school and classroom organisation.

As far as the administrators' role is concerned, they seemed to see their own role as administrators as the most important in the programme. They stated that they were 'responsible for everything'. This is clearly an issue likely to cause problems in communication and collegiality within the programme. The only source for feedback about the implementation of the innovation seemed to be the official one, through the meetings with teachers.

Finally, the administrators seemed to be optimistic for the future of this innovation, since they believe that all the problems will be overcome and the teachers will get more involved in the procedure.

**B. The teachers' views**

It becomes clear that the rationale of the innovation was not known to the teachers. Teachers seemed to see more problems and practical barriers in the programme than the administrators. More specifically, they referred to the issue of time as the most important problem they faced, plus the lack of software and the lack of support on a practical and technical basis.

In addition teachers admitted their dissatisfaction about their own role in the programme. However, they appear to believe in the innovation, since, despite the problems they identified, they indicated that they planned to work harder in order to bring about successful change.

An important finding already in these preliminary interviews was that both personal and organisational factors have been brought up concerning the teacher's role in the innovation. Moreover, it is clear that the attitude, the ideas and the opinions of the two groups were often different. It was also clear that a lot more could be said by the teachers, mainly on the personal issues that seemed to exist concerning their involvement in the innovation; whereas the opposite feeling was gained from the administrators' interview. It seemed that they were not willing to express their feelings feelings or their concerns about the innovation. Overall,, the researcher obtained a highly pessimistic message from the teachers and an optimistic message from the administrators, concerning the implementation of the ICCPC and the teachers' role in it. This gave the researcher useful information about the ICCPC programme. Since the group interviews revealed certain 'problematic' or at least 'possibly problematic' issues, they provided data on which to base the survey questionnaires which were to go to all participating teachers. This data derived

from the focus interviews allowed the researcher to anticipate some of the issues likely to be of concern to them.

## 7.2. QUESTIONNAIRE RESULTS

In the following pages an attempt is made to present the results of this survey. Tables and diagrams are used in order to make communication easier. Completed questionnaires were received from 44 out of the 60 teachers who are the users of the computers in their schools and thus effectively the change agents. These included both classroom users and school co-ordinators. Firstly, the personal characteristics of the sample are presented in order to enable the reader to understand the respondents better. Thereafter, their opinions on the various questions and groups of questions, are given in a structured way under heading which reflects the analysis in chapter three, where issues to do with teachers' responses to innovation were discussed under two broad headings the 'organisational' and the 'personal'.

### 7.2.1 DEMOGRAPHIC CHARACTERISTICS OF THE TEACHERS

- **GENDER**

  From the 44 teachers who responded to the research study, 26 (59.1%) were men and 17 (38.6%) were women. This is quite interesting, considering the fact that in Cyprus, the teacher population consists of 75% of women and only 25% of men (National Statistics, 1996). This may imply that male teachers were more attracted to a technological innovation than females and is an issue that needs further investigation.

- **YEARS OF SERVICE**

Table 8 presents the teachers' years of service in primary education which directly reflects their age, since all teachers in Cyprus are appointed immediately to posts in public schools, after they finish their studies.

**Table 8**
**The sample's years of service**

| YEARS OF SERVICE | f* | % |
|---|---|---|
| 1 - 5 | 13 | 29,5 |
| 6 - 10 | 13 | 29,5 |
| 11 -20 | 9 | 18,2 |
| 21+ | 7 | 15,8 |

**f= frequency of respondents*

It is important to see that about 60% of the teachers who are involved in the ICCPC are young teachers with less than 11 years of service and who are probably less than 33 years old. Only 34% of them have more than 10 years of service overall, and only a small percentage of 15% has more than 21 years of service. This is important considering the fact that the ICCPC programme is a newly introduced programme in Cyprus and is highly related to technology. It could be said that young teachers were more attracted to this particular innovation than older ones.

- **LEVEL OF EDUCATION**

Most of the respondents have graduated from the Pedagogical Academy of Cyprus (PAC) which gave them a three year education as primary teachers, though providing

them with a diploma and not a degree. It is important to note that the PAC does not exist now, since the newly established University of Cyprus took over teacher training in 1991. Table 9 gives detailed information on the teachers' level of education.

**Table 9**

**The sample's level of education**

| LEVEL OF EDUCATION | f | % |
|---|---|---|
| PAC Graduate | 30 | 68.2 |
| BEd Holder (University abroad) | 9 | 20.5 |
| BEd holder (Cyprus University) | 2 | 4.5 |
| MEd, MSc Holder | 1 | 2.3 |

It is worth noting that 27% of the respondents have a first or second degree in education. If we consider the fact that in Cyprus only 15% of the teacher population has a BEd or a postgraduate degree(National Statistics, 1996), there is an underlying assumption that the teachers involved in the innovation under study have above average qualifications.

- **OTHER QUALIFICATIONS - INSET**

It was found in the literature that the previous knowledge of teachers is associated with the nature of their involvement in an innovation. Therefore, the questionnaire asked for information on the teachers' prior experience with computers as it was provided to them by the INSET concerning the ICCPC (question III4). Three INSET courses were provided to the teachers through the Pedagogical Institute of Cyprus: 'Personal Skills' was a seminar focused on the personal computing skills of the teachers; 'Application of the ICCPC' focused on the software available and the teachers' familiarity with it.

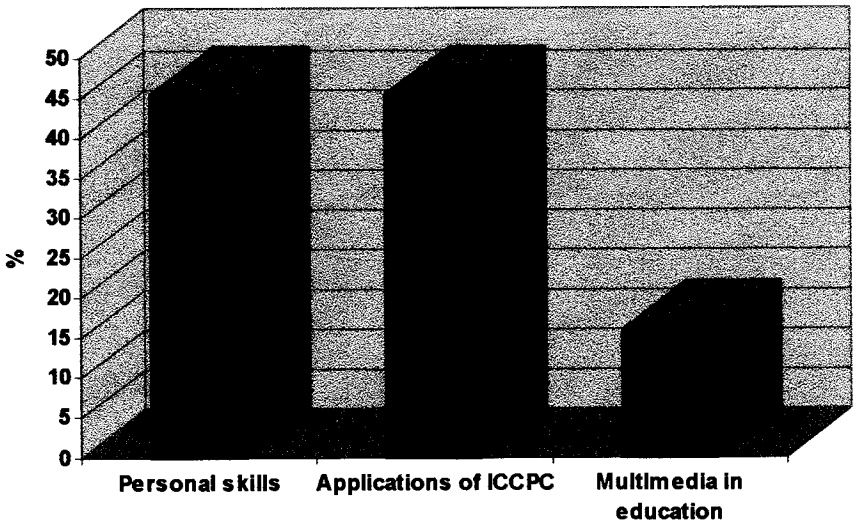


*Diagram 7: The INSET attendance of the sample*

The diagram above shows that a high percentage of the teachers involved in the innovation attended two of the three courses offered to them as part of the INSET offered by the Pedagogical Institute of Cyprus. If we note the fact that all INSET courses offered to primary teachers are on a voluntary basis and always take place in the afternoons, after school time, the teachers' participation suggests a good level of motivation among the respondents, towards the ICCPC.

Teachers were asked with a separate question in the questionnaire what courses they had attended in the private sector. It is remarkable that 42,9% of them have actually attended courses in the private sector (colleges etc.) relevant to the ICCPC programme.

Moreover, they were asked about their personal use of the computers during their own time (question III6). Diagram 8 presents their involvement on a five point scale.

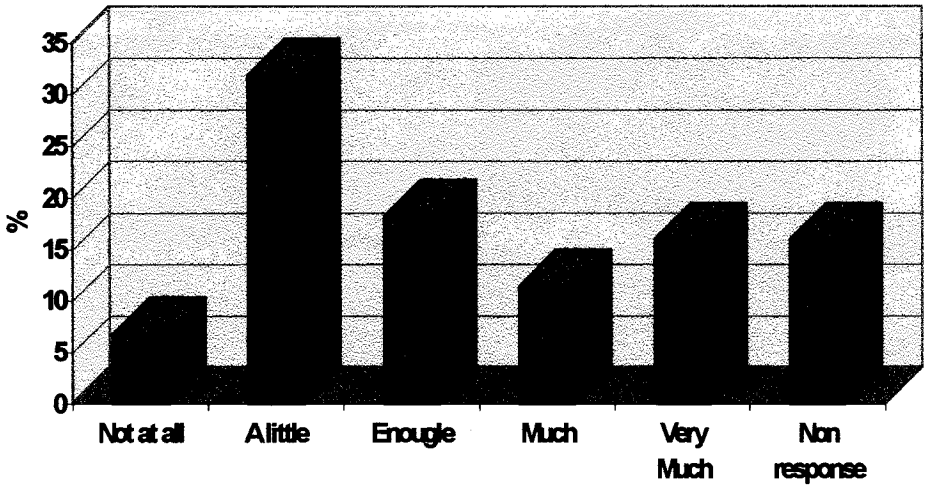


*Diagram 8: Personal involvement of the teachers with the computer*

It is clear that these teachers do not get highly involved with computers during their own time; this is a fact that needs to be further investigated. Diagram 8 reveals that most of these teachers spend little of their own time on the computers. It worth noting though, that quite a high percentage of them (15,9%) chose not to answer to this question. It should be noted that at the time of this data collection a high percentage of teachers did not have a computer at home. They only had access to the computer at the school, and therefore could only use it during their free time.

As argued in previous chapters, the questionnaire was divided into various sections (ie. groups of questions), based on the review of the literature. In the following pages results the teachers' opinions on those aspects of the innovation which are associated with their own role are presented.

## 7.2.2 ORGANISATIONAL LEVEL

In the following pages, the teachers' opinion on several issues of the organisational level of the teachers' involvement in ICCPC will be presented. The issues, which derived from the theoretical frame of this thesis in previous chapters, considered under the headings: school organisation, classroom organisation, school head, district co-ordinator, Inspector, collegiality, INSET, materials - support and the rationale of the innovation. The teachers' opinions are illustrated with the use of tables or diagrams, as appropriate. In the tables, the use of frequencies (f) and percentages (%) describes the teachers' answers. The use of means $\bar{x}$ and standard deviations (SD) is there in order to present the overall opinion of the teachers at the five point scale given to them (Oppenheim, 1992). In the cases of diagrams, only the mean was used. All the statements are under the Likert - type scale from one to five. For statistical purposes, it was decided that a statement or a group of statements has a negative overall view if the mean is below 2,5; at the same time, a positive view will be given on a category or statement with a mean over 3,5.

- **SCHOOL ORGANISATION**

The first questions (Part I) of the questionnaire referred to the organisational level of the teachers' involvement in the ICCPC, as described in Methodology. Most of the teachers stated that they have more than four computers in their schools. More specifically, 30 teachers have four to six computers in their schools but 40% of the whole sample do not have any computers in their own classroom . The other 60% of them have 2 to 6 computers in their own classroom. Considering the fact that an average class in Cyprus, has 25 to 30 children in it, that means that in each class there are at least 5 children for each computer. This has certain implications for the computer integration philosophy.

31% of the respondents state that they have a separate room for computers in their schools. Taken with the evidence in the previous page, this shows that some of those teachers may not have either computers in their own classrooms nor a computer room , but they have access to computers in other classrooms and they use them. This is partly explained by the fact that in every school there is one teacher who acts as the school co-ordinator for the ICCPC. That means that a teacher, if he or she is the co-ordinator, might teach in more than one class.

Most of the respondents (93.2%) reported that there is a designated teacher responsible for computer use in their own school. Within this sample of 44 teachers 19 (43,18%) were in fact school co-ordinators and 25 (56,82%) were not ,i.e. they were classroom teachers who had volunteered to participate in the project but had not been appointed as school co-ordinators.

More than half of the respondents (56.8%) answered that there is no responsible person at all for the technical problems that arise while working with the computers in the school.

Table 10 shows the grades in the schools that use computers and therefore where the innovation takes place.

**Table 10**

**Grades in which teachers use the computer**

| GRADE - CLASS | USE OF COMPUTER % |
|---|---|
| A (6 -7 years old) | 22,7 |
| B (7 - 8 years old) | 31,8 |
| C (8 - 9 years old) | 47,7 |
| D (9 - 10 years old) | 52,3 |
| E (10 - 11 years old) | 65,9 |
| F (11 - 12 years old) | 72,7 |

It becomes obvious that computers are mainly used in the upper grades of the primary school. However, it is remarkable that there is at least limited use of the computer in the lower grades, even in the first grade. It should be remembered that the rationale and aim of the innovation is to have computer use across the curriculum and in every class (see chapter 5)

- **CLASSROOM ORGANISATION**

Table 11 shows the teachers' commentary on the frequency of computer use in the classroom (questions I b1, b2 of the questionnaire).

**Table 11**

**Frequency of computer use in the school**

| FREQUENCY OF COMPUTER USE | f | % |
|---|---|---|
| EVERY DAY | 4 | 9.1 |
| EVERY WEEK | 15 | 38.6 |
| A FEW DAYS A WEEK | 19 | 43.2 |
| NON RESPONSE | 4 | 9.1 |

It becomes obvious that the teachers use the computer in their classrooms for a few days a week, or even only once a week. Teachers were asked in how many lessons they use the computers; most of them (88,1%) said that they use them in some lessons and only 5% of them stated that they use them in all lessons.

In this first presentation of the results it becomes obvious that a certain situation is emerging as far as the actual implementation of the innovation in schools is concerned. More specifically, one realises that mostly male and young teachers are involved in this innovation, and that they use computers in specific lessons, roughly three times a week. Also that there is a considerable variability in the number and the use of computers, and in the way they are located in the school building.

In this first part of the presentation of the results of the survey it becomes obvious that a certain situation is emerging as far as the actual use of the innovation in school is concerned. More specifically, one realises that mostly young and well qualified teachers are involved in this innovation. They seem to have relatively small numbers of computers in their schools and they generally use the computers three times a week or

more in specific lessons, mostly in the upper grades. Below, there is the presentation of the opinion of the teachers on the several aspects of the innovation, how they face it and how they are being helped and supported throughout their involvement in the ICCPC innovation.

- **SCHOOL HEAD**

The teachers were asked about their school head's role in the implementation of the ICCPC programme. Table 12 presents their response.

**Table 12**
**Teacher's views about the school head's role**

| STATEMENTS THE SCHOL HEAD: | $\bar{x}$ * | SD | n |
|---|---|---|---|
| c1. Is informed about the work you do with the computers | 2,93 | 1,15 | 44 |
| c2. Gets informed about the developments of the ICCPC | 2,69 | 0,91 | 42 |
| c3. Organises staff meetings about the ICCPC | 2,52 | 1,17 | 42 |
| c4. Allows you to work with the computers during school time | 4,11 | 0,73 | 42 |
| c5. Allows the discussion and exchange of experience between the staff | 4,27 | 0,73 | 42 |
| c6. Supports you throughout your effort with the computers | 3,84 | 1,01 | 42 |
| c7. Believes that the computers will help students | 3,65 | 1,02 | 41 |
| c8. Believes that the computers will help teachers at work | 3,56 | 0,78 | 40 |
| c9. Believes that the computers will upgrade the Cyprus educational system | 3,39 | 0,83 | 40 |
| c10. Discusses the developments of ICCPC with you | 2,74 | 1,24 | 41 |

** *Scale 1:Strongly Disagree, 2:Disagree, 3:Not sure, 4: Agree, 5: Strongly Agree*

It becomes obvious that the teachers believe that their school head at school allows them to work with the computers and also to exchange experience with their colleagues to a

high degree. Therefore, a climate which supports the promotion of the innovation seems to exist within the school unit. However, they have a slightly less positive opinion for the overall support the head offers to them throughout the programme. Teachers appear less convinced that their head teacher has an in depth understanding or appreciation of the programme (see for example questions 7, 8 and 9 in the table above) . One can say that, according to the teachers, the principal has a relatively low appreciation of the philosophy of the innovative programme. Moreover, teachers state that the principal is not so well informed about the situation and does not discuss it with them. It is worth noting that the teachers view their heads as unable to help them practically, but as supportive enough as to encourage them in their efforts within the ICCPC programme.

In addition to the previous results about the school head, factor analysis was performed in order to find any implied underlying subgroups of teachers' opinions. Table 13 reveals the resulting three factors that were found to exist within the teachers views.

**Table13**

**Factors concerning the school head's role**

| FACTORS | $\bar{x}$ | SD | Reliability (alpha) |
|---|---|---|---|
| General Support (c1,c4,c6) | 3,60 | 0,81 | 0,71 |
| Rationale of the innovation (c10,c5,c7,c8,c9) | 3,50 | 0,73 | 0,86 |
| Personal interest about the innovation (c2,c3) | 2,54 | 0,85 | 0,51 |

It is implied by table14 that the teachers differentiated the head's interest toward the innovation into three factors: his or her general support to the teacher, his or her understanding of the innovation's rationale, aims and objectives, and his or her personal

interest about the innovation programme itself. More specifically, the teachers' opinion about their school head's role in the innovation is rather disappointing. Although they seem to find rather good general support by their school not heads, teachers believe that they are actually interested about the programme and the innovation implementation. Moreover, they seem to be quite unsure about the principal's understanding of the philosophy of the innovation, its aims and objectives, and whether he or she really believes that computers will actually help students, teachers and the system.

- **DISTRICT COORDINATOR**

Teachers were asked about the district co-ordinator and his frequency of visits in their schools. The results are shown in diagram 9.

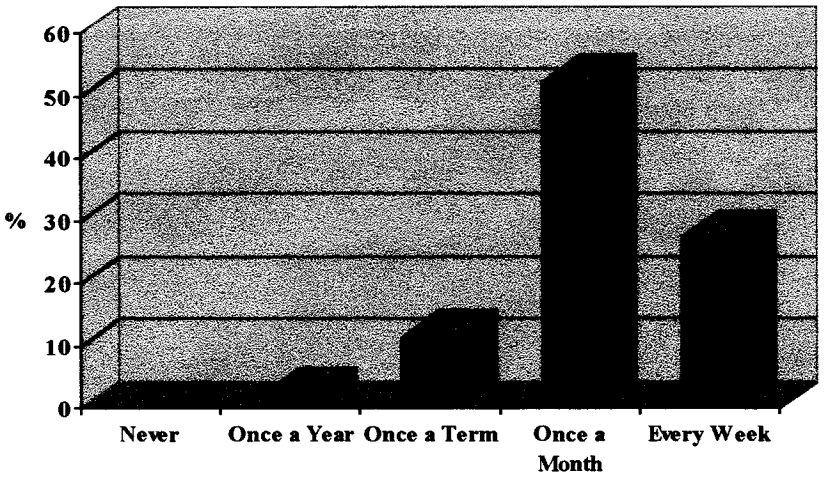


*Diagram 9: Frequency of the district co-ordinator's visits at the school*

Diagram 9 shows that the district co-ordinator visits the schools quite often. More than half of the respondents (52,3%) stated that the co-ordinator visits them every month and a high percentage of 27,3% state that he visits them every week. Nobody stated never, and only 5 teachers (11,9%) noted that he visits them once a year. This fact implies that

district co-ordinators visit each school fairly frequently. The teachers were asked their opinion about the general support the district co-ordinator offered them throughout the implementation. Diagram 10 shows their opinion on each aspect of the co-ordinator's support.

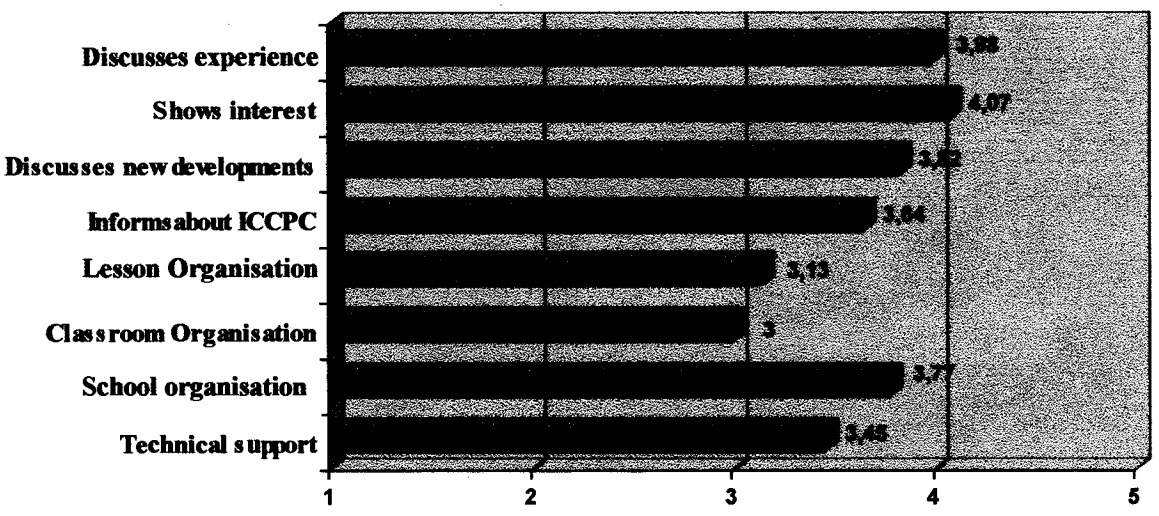


*Diagram 10: Teachers' views about the co-ordinator's support*

These responses suggest that the teachers have, overall, a positive opinion about the co-ordinator's support for them in the ICCPC programme. In most of the statements the mean scores are over 3,50. More specifically, teachers believe that the district co-ordinator is ready to discuss new developments in the innovation with them and that he shows interest in the problems they face. He also discusses with them their own experiences within the programme, implying that he or she is actively promoting the innovation.

In addition, the respondents believe that the co-ordinator keeps them informed about the developments of the ICCPC programme and offers them quite good help on the technical problems they face. He or she also helps them with the organisational arrangements within their school. However, they are less sure about the help they

receive from the co-ordinator on practical issues, in particular the classroom and lesson planning within the programme. It is worth noting that in all the statements that have practical implications, the teachers' opinion is more negative than it is with regard to other statements that have to do with the philosophy of the innovation. This is confirmed by factor analysis. This relates to the statements about the co-ordinator's role, and it reveals two factors underlying the teachers' opinions. As shown in Table 14 these, actually confirm the results above.

**Table14**

**Factors concerning the district co-ordinator's role**

| FACTORS | $\bar{x}$ | SD | Reliability alpha |
|---|---|---|---|
| Practical help (d1, d2, d3) | 3,44 | 1,05 | 0,86 |
| Promotion of the innovation (d4, d5, d6, d7,d8) | 3,72 | 0,91 | 0,93 |

Table 14 implies that the district co-ordinator is relatively good at promoting the innovation, informing the teachers about its developments and discussing it with them. But it seems that teachers would need more help on the technicalities of the innovation.

- **SCHOOL INSPECTOR**

The data analysis suggests that the teachers have a rather disappointing view concerning the support they receive from the school Inspector. Table 15 reveals the results.

**Table 15**

**Teachers' views about the school Inspector**

| STATEMENTS<br>**The School Inspector:** | $\bar{x}$ * | **SD** |
|---|---|---|
| e1. is informed about the developments of the ICCPC | 3,25 | 1,10 |
| e2.shows interest about the work with the computers in the classroom | 2,72 | 1,24 |
| e3. Gets informed about your experience with the programme | 2,58 | 1,28 |
| e4. Discusses the developments of the ICCPC with you | 2,46 | 1,26 |
| e5. Supports you throughout your effort with computers | 2,44 | 1,31 |

* *Scale 1:Strongly Disagree, 2:Disagree, 3:Not sure, 4: Agree, 5: Strongly Agree*

It is very interesting to note that in no case did the teachers state clear agreement with the positive statements given. In almost all the cases the responses to the statements are neutral or negative. More specifically, the teachers say that the Inspector does not discuss ICCPC developments with them (e4), they feel that he or she does not get informed about the innovation in practice as it is experienced by the teachers (c3); and he or she does not support them throughout the programme (e5). Moreover, the teachers are not sure whether the Inspector is interested in the project or even whether he or she is informed about the overall developments in the programme. It is important to note that Inspection in Cyprus takes place only two or three times a year for each teacher and is in the form of appraisal. In addition, most Inspectors are general Inspectors, responsible for all subjects (e.g. Mathematics, language etc).

It was concluded that these results would need to be investigated further through the interviews since the school Inspector in the Cyprus educational system is an important person and a key policy maker.

- **COLLEGIALITY**

Teachers were asked about their experience of collegial working i.e. co-operation with colleagues. Table 16 presents their detailed opinion on each of the statements.

**Table 16**

**Teachers' views about the collegiality within the ICCPC**

| STATEMENTS | $\bar{x}$ * | SD | n |
|---|---|---|---|
| f1. You share experiences about the computers with your colleagues | 3,47 | 1,28 | 42 |
| f2. You help other colleagues when facing technical problems | 3,72 | 1,01 | 39 |
| f3. You receive help from others | 3,04 | 1,43 | 41 |
| f4. You participate in school staff meetings about the ICCPC | 3,66 | 1,29 | 39 |
| f5. You participate in relevant seminars | 4,04 | 1,02 | 41 |

* *Scale 1:Strongly Disagree, 2:Disagree, 3:Not sure, 4: Agree, 5: Strongly Agree*

As shown in the above table, a high degree of collegiality seems to exist at the school level among the staff. More specifically, teachers participate in seminars and meetings about the innovation , sharing experiences with their colleagues. They state that they help others a lot but they receive help from them to a lower degree. factor analysis showed that there are two factors related to the co-operation among

teachers; one of them is relevant to the contact with other teachers and the other is relevant to the active collaboration among the teachers (sharing with others etc.). Diagram 11 represents the teachers' opinion on that.

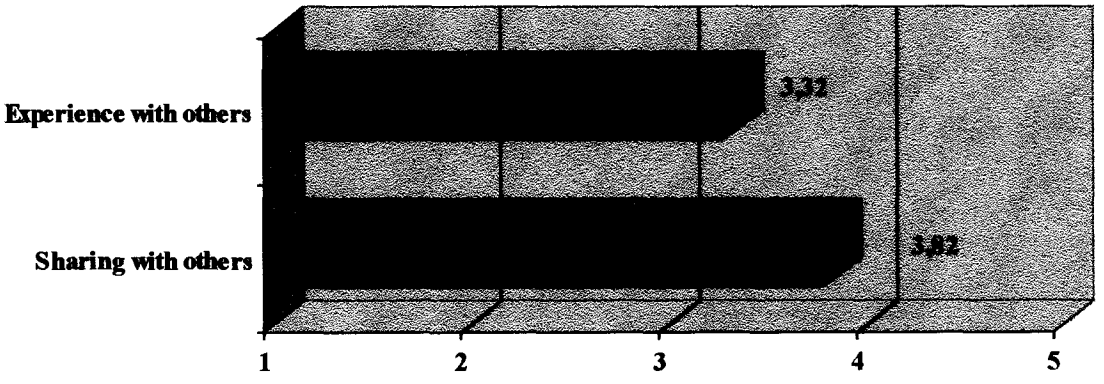


*Diagram 11: Factors concerning collegiality*

It is implied by the diagram above that teachers have a quite extensive contact with other programme participants as well as sharing with others their experiences about the innovation. An issue of teacher collaboration lies here and needs to be further examined. The teachers seem to discuss issues with others, and participate in seminars and sessions.

- **INSET**

Table 17 presents the teachers' opinion about the INSET provided to them by the Ministry of Education and Culture in Cyprus.

**Table 17**
**Teachers' views about the INSET**

| HOW USEFUL WAS THE TRAINING WITH THE FOLLOWING: | $\bar{x}$ * | SD | n |
|---|---|---|---|
| g1. Technical problems | 1,92 | 0,99 | 36 |
| g2.School organisation | 3,00 | 1,04 | 36 |
| g3.Classroom organisation | 2,97 | 1,00 | 36 |
| g4. Rationale (theory) | 3,18 | 1,01 | 36 |
| g5. Rationale 2 (practice) | 3,10 | 1,13 | 36 |
| g6. Software awareness | 3,02 | 1,17 | 36 |
| g7. Software evaluation | 2,76 | 1,02 | 36 |

* *Scale 1:Not at all, , 5: Very much*

It is clear that the teachers have either a negative or an overall neutral view about the INSET that was offered to them. They express a strong opinion that the INSET did not help them on the technical issues of the innovation and the technical problems that they face while using the computers in the classroom. They state that the INSET did not help them on software issues either: knowing and evaluating software for classroom use. Their responses are more satisfactory where school and classroom organisation is concerned. They say that the INSET helped them on those issues relatively better. This applies to the rationale of the innovation. However, in all the cases, the mean does not go beyond 3,10, implying that the situation with the INSET is quite disappointing. Clearly, as a key provider of information about the innovation and as a main way of transmitting the philosophy of the innovation to the teachers, the INSET programme

seems to be unsuccessful and needs further investigation by both the administrators and the INSET trainers.

It is worth mentioning that factor analysis on the responses of the teachers on the INSET revealed that all the statements consisted of only one factor. This implies high correlation between the statements that form this category.

- **MATERIALS - PRACTICAL SUPPORT**

Teachers' responses concerning their needs in relation to the practical issues of the innovation, are shown in Table18.

**Table 18**

**Teachers' views about the materials**

| **HOW HELPFUL WOULD BE:** | $\bar{x}$ * | **SD** | **n** |
|---|---|---|---|
| h1. Written material on the philosophy | 3,41 | 0,96 | 42 |
| h2. Lesson plans | 4,20 | 1,01 | 41 |
| h3. School based seminars | 4,36 | 0,84 | 42 |
| h4. INSET on the philosophy | 3,65 | 1,06 | 41 |
| h5. INSET on the technical problems | 3,91 | 1,03 | 40 |
| h6. INSET on school and classroom organisation | 4,21 | 0,85 | 42 |

* *Scale 1:Strongly Disagree, 2:Disagree, 3:Not sure, 4: Agree, 5: Strongly Agree*

Table 18 above reveals that the teachers need practical help to support them in the implementation of the innovation. They state that they need lesson plans and school based INSET mainly on classroom and school organisation. They also state that they

need INSET help with the technical problems they face and also the innovation philosophy. There is also quite strong support for the idea of material on the programme philosophy.

In order to enhance the reliability of the above data, teachers' responses on the needs they express for practical support were analysed by factor analysis and the results are shown at table 19.

**Table 19**

**Factors concerning the materials and the support they need**

| FACTORS | $\bar{x}$ | SD | Reliability alpha |
|---|---|---|---|
| 1. Help with the philosophy of the innovation (h1,h4) | 3,51 | 0,89 | 0,73 |
| 2. INSET training about the practicalities (h2,h3,h5,h6) | 4,22 | 0,73 | 0,80 |

It becomes clear that, in quite a high degree, teachers need more practical help and training on several aspects concerning the practicalities of the innovation; school based seminars, school and classroom organisation, etc. Moreover, there was some support for the idea that they need help with the innovation philosophy through training and written material.

**RATIONALE OF THE INNOVATION**

Teachers were asked about issues concerning the rationale of the innovation, its aims and objectives. Table 20 presents their views.

**Table 20**

**Teachers' views about the rationale of the ICCPC**

| STATEMENTS | $\bar{x}$ * | SD | n |
|---|---|---|---|
| i1. The computer will help the students | 4,38 | 0,79 | 42 |
| i2. The computer will help the teacher at work | 3,90 | 0,82 | 42 |
| i3. The computer can change teaching for the better | 4,02 | 0,78 | 42 |
| i4. The computer will upgrade the Cyprus educational system | 4,02 | 0,92 | 42 |
| i5. The computer will help Cyprus to enter Europe | 4,07 | 0,78 | 42 |

* *Scale 1:Strongly Disagree, 2:Disagree, 3:Not sure, 4: Agree, 5: Strongly Agree*

Table 22 shows that the teachers have a high perception of the ICCPC programme since they seem to understand the philosophy underlying it. They believe in the computer as valuable tool in educational development. Moreover, they believe that the innovation itself will promote the whole educational system.

At this point, it is interesting to attempt a comparison between the existing situation on the INSET provided to the teachers involved in the innovation and their needs as they state it themselves. Diagram 12 presents this comparison.

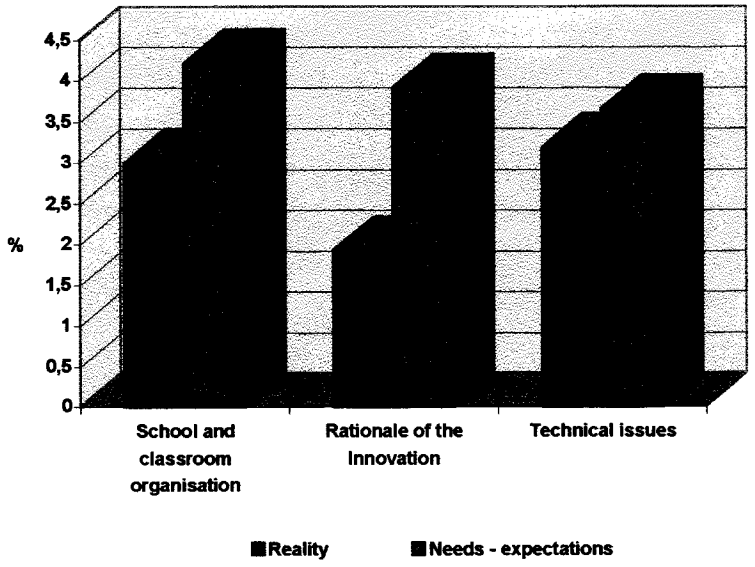


*Diagram 12 :Comparison between the reality and the expectations concerning the teachers' needs*

It is obvious that the greatest gap exists between the school and classroom organisation issues provided to them and also around issues to do with the rationale of the innovation.

Table 21 presents the general opinion of the sample on the several areas of the questionnaire on the organisational level, consistent to the original theoretical orientation of this thesis and the previous results (Tables 10 - 20).

**Table 21**
**Teachers' views about the organisational level of their involvement in the ICCPC**

| CATEGORIES OF STATEMENTS | $\bar{x}$ * | SD | n |
|---|---|---|---|
| | **ORGANISATIONAL LEVEL** | | |
| **C. SCHOOL HEAD** | 3,35 | 0,64 | 39 |
| **D. DISTRICT COORDINATOR** | 3,48 | 0,94 | 42 |
| **E. INSPECTOR** | 2,71 | 1,11 | 38 |
| **F. COLLEGIALITY** | 3,64 | 0,86 | 37 |
| **G. INSET** | 2,86 | 0,86 | 36 |
| **H. MATERIALS - SUPPORT** | 3,99 | 0,63 | 40 |
| **I. RATIONALE** | 4,08 | 0,66 | 42 |

* *Scale* *1: lower degree, not at all*
*5: higher degree, Very much*

The above table indicates that teachers are not very satisfied by the support they receive from their Inspector and the INSET offered to them. They seem fairly satisfied with the support they receive by the school head and more satisfied with the district co-ordinator. They seem to experience collegiality to a high degree and state that they are relatively familiar with the rationale of the innovation.

This was an attempt to investigate the general opinions of the teachers on several aspects that affect the implementation of the innovation and certainly provided the reader with a first overall idea about the teachers' opinion on the organisational issues that were found to be related to the teacher's role in an innovative setting. What emerges

from these responses is a general picture of teachers who are concerned about the practicalities of the innovation implementation and the support they receive through the INSET and the key people in this innovation (Inspectors, heads and co-ordinators. In the following pages, an attempt is made to present the teachers' views on the personal issues concerning their role in an innovation: their feelings, concerns, expectations.

### 7.2.3. PERSONAL LEVEL

The teachers were asked to state their opinion about their own personal involvement in the innovation. Four groups of statements form the personal level of the innovation : Concerns, Expectations, Beliefs about the their own role in the innovation and General satisfaction - attitude.

- **BELIEFS**

Diagram 13 presents the views about the 'Beliefs' category (questions III a1, a2, a3, a4).

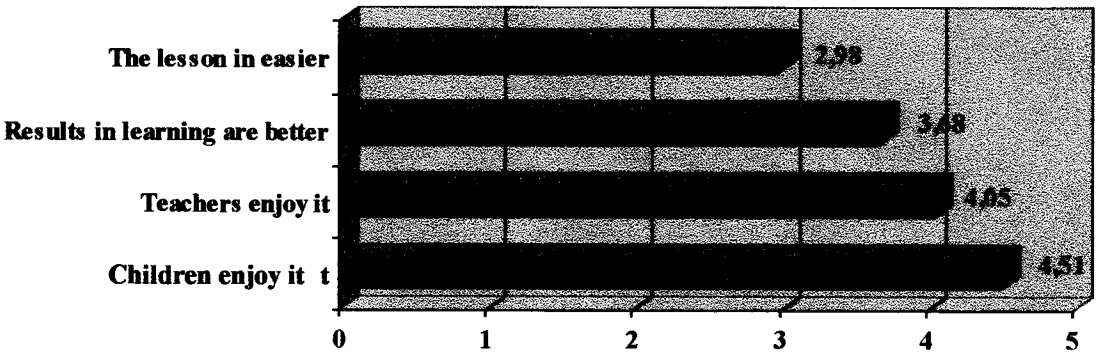


*Diagram 13: Teachers' beliefs about the innovation*

The figure above shows that teachers are quite certain about the benefits of using computers in the classroom and they seem to enjoy the innovation, together with the children. They are not sure whether the lesson becomes easier but this is expected and

allowed for in the ICCPC rationale; the lesson is not necessarily supposed to be easier while using computers. On the contrary, teachers' preparatory work and effort in the classroom becomes actually more difficult, time consuming and complex.

- **EXPECTATIONS**

Diagram 14 reveals the teachers' personal expectations of their participation in the programme (questions III b1, b2, b3, b4).

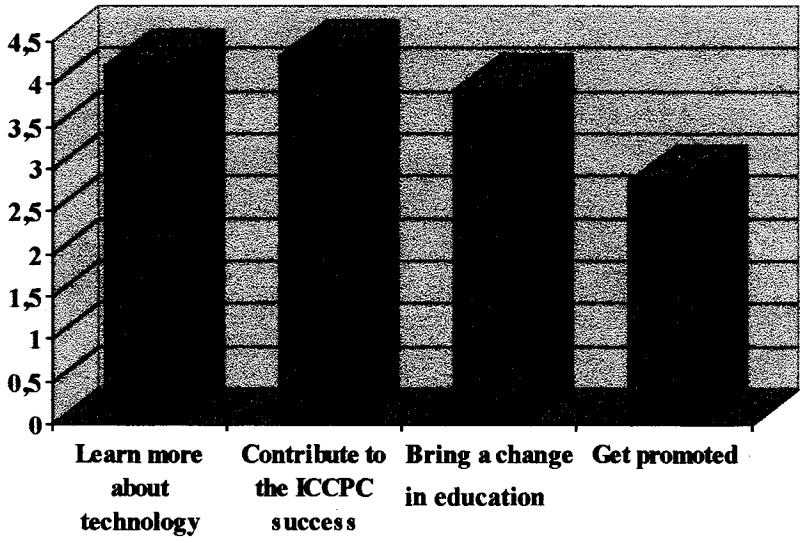


*Diagram 14: Teachers' expectations*

It is obvious from the figure above that the teachers in the sample have quite high expectations. More specifically, teachers seem to expect to contribute to the success of the innovation and to learn more about technology which is very interesting for this present research. As far as change is concerned they believe that they act as change agents to a high degree and that in itself may promote change. They do not believe that their involvement in the programme will offer them an easy route to promotion and this reflects career patterns as they exist in Cyprus at the present time.

It is noteworthy that they freely state their expectations through the questionnaire and the message is clear; they expect to earn intrinsic than extrinsic rewards through their involvement in the programme.

- **TEACHER'S ROLE IN THE ICCPC - BELIEFS**

The teachers were also asked to state their opinion about their own role in the innovation. Table 22 presents their opinions.

**Table 22**
**Teachers' views about their own role in the innovation**

| **STATEMENTS YOU VIEW YOURSELF AS:** | $\bar{x}$ * | **SD** | **n** |
|---|---|---|---|
| • BETTER TEACHER (IIc1) | 3,15 | 0,99 | 41 |
| • MODERN TEACHER (IIc2) | 3,59 | 0,84 | 41 |
| • INNOVATOR (IIc3) | 3,66 | 0,76 | 41 |
| • FUTURE CO-ORDINATOR (IIc4) | 2,59 | 0,89 | 41 |
| • COMPUTER SPECIALIST (IIc5) | 2,98 | 1,11 | 41 |
| • INSET TRAINER (IIc6) | 3,49 | 0,87 | 41 |
| • ED. CHANGE AGENT(IIc7) | 3,24 | 1,07 | 41 |
| • SOCIAL CHANGE AGENT (IIc8) | 3,76 | 0,62 | 41 |

** Scale 1: lower degree, not at all*
*5: higher degree, Very much*

It is worth noting that the sample of teachers are quite conservative in their statements about their role in the innovation since the mean is not above 3,76 in any of the statements. They do not see themselves as gaining rewards in the innovation, i.e. getting promoted to a co-ordinator or a computer specialist. They seem to view themselves as change agents, innovators and modern teachers rather than co-ordinators or specialist and better teachers; about the latter they are not sure.

- **GENERAL SATISFACTION**

Teachers were asked to state their general satisfaction about the key aspects of the innovation they are engaged in. Table 23 presents their opinions about these matters.

**Table23**

**Teachers' views about their general satisfaction**

| STATEMENTS OF GENERAL SATISFACTION | $\bar{x}$ * | SD | n |
|---|---|---|---|
| 1. ICCPC IMPLEMENTATION (IId1) | 3,37 | 1,11 | 41 |
| 2. SUPPORT THROUHGOUT THE PROGRAMME (IId2) | 3,22 | 1,06 | 41 |
| 3. TEACHERS' CONTRIBUTION IN THE PROGRAMME (IId3) | 3,46 | 1,00 | 41 |
| 4. STUDENT OUTCOMES (IId4) | 3,70 | 0,82 | 40 |
| 5. RATIONALE OF THE ICCPC (IId5) | 3,38 | 0,95 | 40 |

* *Scale 1: lower degree, not at all*
*5: higher degree, Very much*

The table above implies that the teachers are not expressing unequivocal opinions about their general satisfaction with the programme. They note that they are satisfied with the student outcomes and this is confirmed by prior results concerning their support for the rationale of the innovation. However, they are not sure about their own contribution to the programme although they stated above that they wanted to contribute to the success of the ICCPC. This is an issue that needs further and deep investigation. In addition, teachers seem not very happy about the rationale of the innovation ,its implementation in practice and the general support they receive during the programme. Although, as implied before, they have high expectations of the programme they are not happy with its practicalities.

Factor analysis was undertaken for the personal level of the teachers' role in the innovation. It revealed four underlying factors within the three categories of 'motivation', 'expectations' and 'beliefs'. It was decided to do this in order to have more valid out coming factors since the association between these statements is very high ( Kline, 1994). Table 24 presents the factors.

**Table 24**

**Factors concerning the personal involvement of the teachers in the ICCPC**

| FACTORS (PART II) | $\bar{x}$ | SD | Reliability alpha |
|---|---|---|---|
| 1. Teacher's expectations (b3,c7, c8) | 3,72 | 0,78 | 0,76 |
| 2. Success of the Innovation (a2,a3, b2) | 4,30 | 0,55 | 0,63 |
| 3. Teachers' role (c2,c3,c4,c5,c6) | 2,54 | 0,85 | 0,81 |
| 4. Teachers' motivation (b1, b4, c1) | 3,22 | 0,64 | 0,67 |

Table 24 reveals that teachers do indeed seem very interested in gaining experience of successful innovative practice in the ICCPC programme. They see themselves as bringing about some kind of change and innovation in Cyprus Education. However, they do not seem to expect to become something other than teacher practitioners. This is an interesting point for later investigation.

The table below presents the overall results of the personal level of the teacher's involvement in the innovative setting.

**Table 25**

**Teachers' views about their personal feelings**

| CATEGORIES OF STATEMENTS | $\bar{x}$ * | SD | n |
|---|---|---|---|
| | **PERSONAL LEVEL** | | |
| **A. BELIEFS** | 3,80 | 0,48 | 41 |
| **B. EXPECTATIONS** | 3,84 | 0,60 | 41 |
| **C. MOTIVATION** | 3,30 | 0,60 | 41 |
| **D. GENERAL SATISFACTION** | 3,41 | 0,76 | 40 |

* *Scale 1: lower degree, not at all*
*5: higher degree, Very much*

The table presenting the personal aspects of the teachers' involvement in the ICCPC consists of generally higher means which is an interesting point. The external rewards and motivation reasons for entering the innovation seem to exist to a relatively high degree. In fact the mean scores of the personal level of teachers' involvement in the innovation are higher than the most aspects of the organisational level as appear in Table 21(all are above 3). Teachers seem to have high expectations from their involvement in the programme. Generally, they stated to be fairly satisfied with their own involvement in ICCPC.

### 7.2.4 CORRELATION BETWEEN THE DIFFERENT CATEGORIES

In an attempt to examine the relation between the teachers' opinion on the several categories of the questionnaire, a correlation test was performed. Table 26 presents the categories that were found to be associated and gives the (Pearson r) correlation

coefficient for the couples of categories that are associated to a statistically significant level.

**Table 26**

**Correlation between the teachers' categories of opinions**

| CATEGORIES | INSET r* | SCHOOL HEAD r | COLLEGIALITY r |
|---|---|---|---|
| **COLLEGIALITY** | 0,41 | - | - |
| **DISTRICT CO-ORDINATOR** | - | 0,36 | - |
| **EXPECTATIONS** | - | - | 0,37 |
| **GENERAL SATISFACTION** | 0,53 | - | - |

** r= correlation coefficients. In all cases r is statistically significant at the p <0,05 level*

The table above indicates that people who experienced INSET positively tend to experience positively the collegiality and seem to have high expectations of their involvement in the programme and positive feelings about their general satisfaction with the ICCPC. Besides, teachers who have high expectations of their involvement in the programme seem to experience positively the collegiality. Lastly, teachers who have positive opinion about their school head, seem to have similar opinion about their co-ordinator.

The above results show that teachers who have a positive experience with their involvement in the INSET and high expectations of themselves in it, seem to have a positive experience with their colleagues and the INSET offered to them.

## 7.3. OPEN ENDED QUESTION

The questionnaire concluded with an open ended question asking teachers for their opinion about the ICCPC programme and their involvement in it.

A relatively high percentage of teachers chose to respond to this open invitation (45%) and most of their statements expressed their concerns about the implementation of the ICCPC as they had experienced it. A large number of statements had to do with the problem of software that the teachers face. More specifically, they expressed their fears about the lack of software and suggested the formation of a special group responsible for software production and evaluation. In addition, a great number of them referred to the INSET and argued that it had not met their needs; they went on to make suggestions about more practical INSET.

Another group of teachers expressed their concerns about the structure of the innovation: *"this effort needs good organisation if it is going to be a successful one. I cannot see good planning and policy here...so far"*. Other teachers express their concerns about the lack of support they receive: " *If this innovation is going to be a successful one we (the teachers) need more support....I feel alone in this effort"*.

This part of the survey turned out to be very interesting since it gave teachers the chance to express themselves in a free and anonymous way. The whole issue of the teachers' personal opinions seems to be interesting and very relevant to the present thesis; therefore, the interviews that follow, are important.

## 7.4. ASSOCIATION WITH THE TEACHERS' DEMOGRAPHIC CHARACTERISTICS :DIFFERENCES BY GENDER, YEARS OF SERVICE, PRIOR EXPERIENCE AND LEVEL OF EDUCATION

Statistical analysis was performed in order to investigate any differences between the groups of statements in the questionnaire and the teachers' personal characteristics. It was found that gender did not differentiate the teachers' views in a significant way and this strengthens the general results that were presented above. It implies that both men and women have similar attitudes towards the innovation and expressed similar opinions about their own involvement in the ICCPC. However, one question in the questionnaire seemed to differentiate the teachers' views to a significant degree. The data was examined to see whether the teachers' responsibility in the innovation affects their general satisfaction with the programme. Diagram 15 reveals the result.

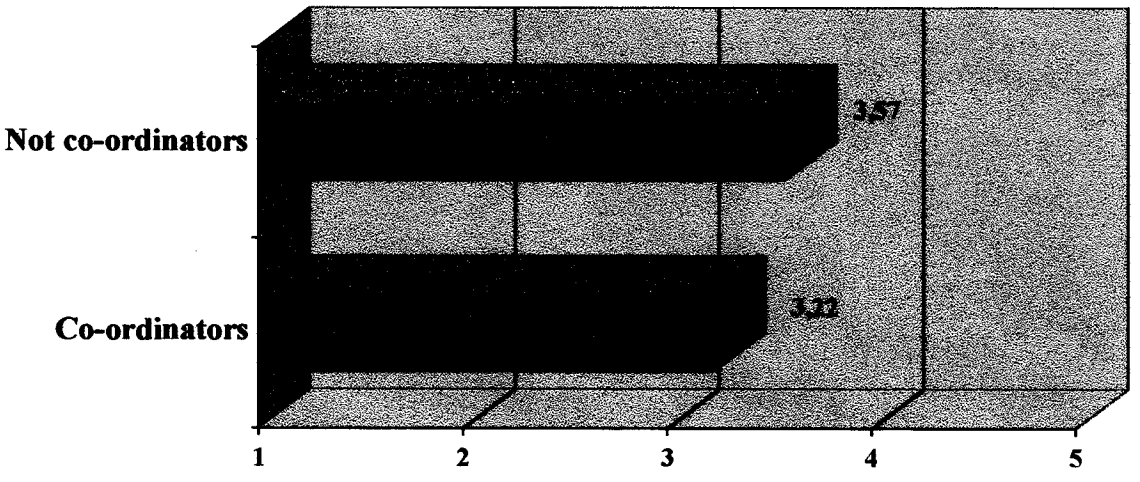


*Diagram 15: Association between teachers' responsibility and general satisfaction*

Diagram 15 shows that the teachers who are more involved in the innovation (ie as school co-ordinators) are less satisfied with its practice than others. This may be because

their experience with the programme is the reason which makes them more demanding. This finding needs further investigation together with other personal factors that seem to be highly associated with the teachers' role in the innovation.

## 7.5 QUESTIONNAIRE RELIABILITY

The reliability of the questionnaire was statistically checked with the use of the computer software SPSS which was the main instrument for the data analysis. A reliability test was performed to two categories of questions; the questions which formed the organisational level (Parts C,D, E, F, G, H, I of the questionnaire) and the others which formed the personal level of the teachers' involvement in the ICCPC (Parts J and K of the questionnaire). All the questions in each group were under the same scale, a fact that is implied by the literature as appropriate when a reliability test is performed. The results showed a very high reliability within the teachers' responses, since in the organisational level, reliability alpha was a=0,83* and in the personal level it was a=0,92*.

## CONCLUSION OF THE CHAPTER

The presentation of the questionnaire results has revealed several interesting areas that need further investigation. Generally, teachers are not very happy with the innovation as it is implemented and do not get much support from others apart from the district co-ordinator. However, they show great interest in the success of the innovation, they have high expectations of it and they view themselves as innovators.

** reliability alpha over a=0,7 is considered to be very high (Oppenheim, 1992)*

These responses gave the researcher the opportunity and the hints to go on and examine deeply any other associations that exist in the questionnaire data (e.g. what do the young teachers state in relation to the older ones? Are they more happy?). Moreover, the results provide the researcher with a lot of ideas about the in depth interviews that will follow.

# CHAPTER EIGHT

# INTERVIEW RESULTS

## STRUCTURE OF THE CHAPTER

This chapter contains the results of the in-depth interviews that followed the questionnaire. This will enable full description and in depth-analysis of the teacher's involvement and attitudes towards the innovation.

## 8.1 PROCEDURE OF THE PRESENATION OF THE RESULTS

The analysis of the interview results revealed a lot of interesting issues that emerged from the original transcripts and were then transferred to data matrices for each individual case. It will be consistent with the general structure of the data analysis, to refer to each theme separately at first. The presentation of the results is based on a cross - case analysis since this enables the researcher to answer the general research questions in a more appropriate way. It was considered to be wise to refer to all nine interviews when investigating the results, and also bring in specific examples from independent cases either by commenting on them or presenting the exact wording of the teachers. Whenever exact wording is used, the specific case from which it was taken and the page in the transcript are given. In some cases it was appropriate to refer to the same passage more than once, using the same extract from the interviews, in order to present a specific point. This happened in cases which were relevant to more than one themes.

## 8.2 THE RESULTS OF THE INTERVIEWS

All the respondents expressed their feelings and opinions in a friendly atmosphere, trying to make explicit their own views. All nine teachers answered all the questions posed to them. On many occasions, as will be shown below, they answered the questions at length and provided their opinions about possible solutions. At the end of the discussions, and after specific prompting by the researcher, they all expressed their views about the content of the interview. They all seemed to be satisfied with the questions, and found that the content was suitable for them and did not cause any kind of offence; some of them expressed satisfaction that their views had been sought so that they might be included in the present research. An example is presented here:

> *''I really enjoyed our conversation and I am glad that you ask teachers about those issues since I believe it is they (the teachers) who will make the difference'' (case 4, p.13)**

All the interviewees are highly involved in the ICCPC programme, since they entered it from its initiation (three to four years ago). Most of them had prior involvement with computers on a personal level, either as part of their studies or just as users. More specifically, seven out of nine cases (cases 1,2,3,6,7,8,9) were deeply involved with the computers even before the initiation of the ICCPC. All the nine teachers made it clear that they agree with the policy of the ICCPC in Cyprus Primary Education, but overall they seem to be less than satisfied with its implementation, as will be demonstrated later on.

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**All the exact words of the teachers will be presented in italics. In cases where an explanation is given in brackets, this is the researcher's comment.*

Among them, only one teacher (case 3) expressed satisfaction about his work with computers in the school. This finding is considered to be significant since it has a great impact on several other findings, as will be demonstrated later.

Generally, the teachers' dissatisfaction focuses on the organisational level of the innovation and they refer to specific reasons that make them feel this way. In addition, most of them go beyond the expected answers and offer solutions and suggestions to the problems referred to. On the other hand, on the personal level, a lot of interesting issues emerge. Nearly all the teachers have invested a lot of personal effort in promoting the successful implementation of the innovation on their own, giving a lot of their time to the programme. It was also obvious that in this effort they feel isolated.

One of them says:

> *''..that's the way I feel...I would like more help...not leave everything to the teacher alone...''(case 2, p.12)*

The results of the interviews give a clear message, namely that all the teachers of the sample need and demand better organisation in the ICCPC, and more open acknowledgement and recognition of what they do. They all believe in the value of computers as a means for teaching and learning. However, most of them made it clear that they do not agree with the policy of the ICCPC in the Cyprus Primary Education. They seem not to trust the system and do not believe that the administrators are fully backing the innovation.

Some of the teachers (3 out of 9) expressed very mature ideas and seem to be highly concerned about the future of the ICCPC. Nearly all of them find that there is no 'policy', no common aims and objectives, and no serious effort from the administrators towards

revising their tactics. All of them believe in the teacher's power to change things and to accomplish aims and objectives within the innovation. They all believe that it is the teacher who will make the innovation work, though most of them argue that it should not be the job of teachers to promote the innovation all by themselves. They believe that the policy has been totally left to them; but they believe it is not for the teacher to decide what and how to do things throughout the ICCPC, since this will not actually promote the intended innovation.

Generally, the nine teachers seem to have entered the innovation having disinterested motives and being keen to promote change; at the same time they seem to have high expectations of themselves. By this, is meant that there is real interest in the promotion of the innovation and real motives to offer good service to the educational system.

In the following pages, an attempt is made to present the results of the interviews for each theme, as suggested by the review of the literature in chapter three.

### 8.2.1. ORGANISATIONAL LEVEL

- **Rationale of the innovation**

When referring to the rationale of the innovation, as described in chapter three, we mainly refer to the aims and objectives of the innovation. It is important to begin by saying that all the teachers interviewed believe in the ICCPC as an innovation that will help the system if it is appropriately implemented, although some of them are more sceptical than others.

> *"It is really a means that can contribute to learning...technology is a new means that has potential which the traditional book cannot offer." (case 8, p.1)*

and

*''I see it (the ICCPC) as essential.'' (case 3, p.1)*

or

*''I believed and I still believe that the computer can help a lot in education if it is used in a different way than it is used today''(case 2, p.1)*

and

*''It depends on how they (the computers) are going to be used...we are at a very early stage'' (case 8, p.5)*

The teachers were asked whether they feel that they know and understand or are familiar with the rationale of the innovation. Five teachers (cases 1,2,5,8,9) stated that they do not; they claim that it was never communicated to them or made explicit. The rest of the interviewees (cases 3,4,6,7) referred to the innovation's aims and objectives as something that they are familiar with, though, they do not completely agree with it. It is worth noting that most of those for whom the rationale is not clear are well qualified teachers. They refer to non-clear guidelines and believe that the teachers were left to set their own aims and objectives, according to their own interests and the organisational facilities in their own schools.

One of the teachers, case 9, stated that the rationale of the innovation was explained to her at the beginning of the implementation vaguely and orally; but nothing more was said to support this communication throughout the implementation.

*'' It was clear then...but after that...without any support , any evaluation...I do not know what to do...'' (case 9, p.3)*

In addition, all the teachers talked about communication problems concerning what is expected of them, between the administrators and themselves. Nearly all of them admit that each teacher involved in the ICCPC does whatever she wants.

> *''They leave the teacher alone to judge how to use it (the computer) whenever and however she wants and likes to...'' (case 2, p.7). or*
>
> *''...So ...here we are...at the third year and I don't know what to do...I mean, one could do whatever one likes...'' (case 9, p.3)*
>
> and
>
> *'' I am not sure if I am doing the right thing or if I am wasting my time..'' (case 5, p.4)*
>
> and
>
> *''The objectives of the programme have not been clearly known to the teachers so that each school could do the same things as the others in order to achieve the same results...so each teacher does whatever she wants'' (case 8, p.2)*

It is therefore obvious that the aims and objectives of the innovation, the rationale as it is called throughout this study, are not clear and explicit for all the teachers involved in the ICCPC programme. This embodies a lot of other complicated problems since each teacher understands the programme and her own role in it differently.

Furthermore, referring to the aims and objectives of the ICCPC, it became obvious from the interviews that some of the teachers do not agree with the broad, rather vague guidelines given to them early on. Cases 2,5,6,7 believe that computers cannot be used as a tool in the classroom before the students have been taught some computer skills; computer

skills must therefore be taught initially as a separate lesson. This issue could change the practice of the innovation since the teachers involved would probably experience the innovation in a different way than it is experienced now.

Talking about the rationale of the innovation, it is important to note that some of the teachers are not sure whether the ICCPC programme as presently operated promotes student learning. Although, they all agree that the students enjoy working with computers, some of them (cases 3,4,5,6) cannot say that they also learn from it as well. For example:

> *''They ( the children) like working on the computers. However, I cannot yet express any view about whether they are helped..''(case 3, p.2)*
>
> and
>
> *''...do we have such material in order to help the children learn the syllabus and cover all the objectives?'' (case 4, p6)*

Other teachers, more educated about I.T. integration in education, agree that the children can learn through the ICCPC. For example, from case 9, we have a demonstration of an example of Geography lessons, where children using the computers were learning better than the others.

A lot of teachers expressed their concerns about the rationale of the innovation and referred to the amount of attention given by the school head and the Inspector to the programme. All of them expressed their fears because the administrators do not put enough emphasis on the programme since they do not understand its philosophy.

> *'' I did not have much time because the emphasis of the Inspector was on language issues and not on computers. So it was impossible to teach them'' (case 9, p.2).*
>
> and
>
> *''...unfortunately there are people who know little about computers and they are members of committees that are important for decision making...and they do a very bad job.'' (case 2, p.3)*

Therefore, one could say that the rationale issue deals with the understanding of the philosophy by the teachers, by the administrators, and the shared understanding about the aims and objectives of the innovation that should exist between them and does not. A clear message given by the teachers is that they 'tailored' the innovation according to their own understanding and needs. This tailoring might well lead to a distortion of the rationale of the innovation.

- **SCHOOL HEAD**

The school head's role in the innovation setting is of great importance, as research reveals. According to the teachers' views the head's role in the ICCPC is very limited and negative. Only in one case (case 8) is the head of the school well aware of the ICCPC programme and very supportive. In all other cases the head either supports the innovation passively, by not getting involved at all and letting the teacher do whatever she wants ( cases 1,2,3,4,5,6,,9) or is completely negative as in case 7. In this case, the head is not promoting the innovation at all, since he is very hostile to it. This has a great impact on the teacher's effort towards promoting the innovation.

*''In previous years I had tremendous freedom, I did what I wanted... I mean I had the initiative and he ( the previous head) told me 'go ahead, you know better'...Now things are different. I am held back. The head teacher is very negative...'' (case 7, p.5)*

There are some cases (cases 2, and 6) where the head without knowing anything about the innovation, uses it for «showing off», as the teachers admit.

*''He could give me some of his own time...he has a lot of free time...Though, when we do projects (within the ICCPC) he rushes to file them so he can show them to the Inspector''(case 2, p. 8)*

and

*''Once he (the head) tried to explain to the Inspector how things work in the school with the ICCPC...but he stopped...because he was not accurate; he told him other things than what we do in our school.'' (case 6, p. 7)*

It is worth noting that all the teachers admit that they receive no real, no practical help from the head of their schools. Nearly all of them refer to their own personal effort in all issues concerning the implementation of the ICCPC in their own school.

*''In words, he helps...he is positive. But in practice...he never touches the computers...he is also afraid of them'' (case 2, p...)*

and

*''The head knows nothing about computers. She knows I use them... and that's all'' (case 5, p...)*

Another issue emerging here is that since the head teachers are not aware of the philosophy of the innovation or even what is going on with the ICCPC, they leave it completely to the teachers to do whatever they want, since they are better informed about the programme:

> *''he, himself ( the head) does not have any knowledge: he does not know much, so he completely trusts me...whatever I ask, I have it'' (case 3, p.5)*
>
> and
>
> *''If by support we mean that he 'pays' for the material I need, then yes. He doesn't even know what I do in my classroom. I would like him to be more informed about the ICCPC'' (case 6, p.7)*

Some of the teachers are seriously concerned about the head teachers' involvement in the ICCPC. For example in cases 7 and 6 we find comments like the ones below:

> *''I would never allow any head, deputy or teacher who is not interested in computers to go and work in any of the experimental schools.'' (case7, p.2)*
>
> and
>
> *''The Ministry should at least inform the principals of all the experimental schools about the project ...and then it could move on to the rest of the heads...'' (case 6, p.7)*

- **SCHOOL INSPECTOR**

The view about the Inspectors which is emerging from the interviews, is also very negative. Seven out of nine teachers see their Inspectors as having a negative and non supportive role in the ICCPC. In one case (case 7) the Inspector is supportive since he

happens to be the Inspector responsible for the promotion of the ICCPC in Cyprus. Another (case 9) also referred to the Inspector as positive towards the innovation but having no time to devote to it. His priorities are different, so no practical help is actually provided to the teacher. Seven teachers state that the Inspector has no knowledge about the ICCPC and is also indifferent to it. For this reason none of them receives any practical help or support.

> *''He (the Inspector) never asked me anything (about the computers)...It would be nice if he could support me'' (case 5,p.5)*
>
> and
>
> *' They ( the Inspectors) do not bother at all. Not even ask what happens...He never asks me anything about the computers'' (case 4, p.8)*

It is obvious that in all but one case the role of the School Inspector is negative and passive towards the innovation. Teachers see that, and this might be something that prevents them from promoting the ICCPC as much they would like. Due to the existing system of teacher appraisal in Cyprus, whereby each teacher is graded annually, the School Inspector acts as an evaluator of the teacher. Therefore, the comments of the teachers above are even more important since they imply that little credit or even feedback is given for involvement in a project to which the Inspectors attribute little importance.

- **DISTRICT CO-ORDINATOR**

There is a confusion concerning the role of the district co-ordinator among the interviewees. Some of the teachers ( 5 out of 9), believe that they receive no real support form the district co-ordinator. They say that he only acts as a technician without providing any real co-ordination of the programme or support to the teachers. Only 4 of them believe

that they are helped by the district co-ordinator but again, the same teachers admit that this help is very limited since they really need something more. Sometimes, it was obvious that the teachers do not trust the district co-ordinators and they do not see them as effective promoters of the implementation of the ICCPC programme. This goes beyond the questionnaire findings about teachers' perceptions of the co-ordinator.

> *''We are not particularly helped by him since we are qualified and we have the basic knowledge...technical problems should not bother the district co-ordinator'' (case 8, p.10).*
>
> and
>
> *''...more work...more time is needed for him to spend with us. Control should be there...'' (case 9, p.5)*
>
> and
>
> *''I would have specialists as co-ordinators'' (case 4,p.13)*
>
> and
>
> *''...what can she (the district co-ordinator) do? She cannot decide..'' (case 2, p.8).*
>
> or even more 'hostile' comments:
>
> *''The co-ordinator, in order to do his job...should know more things than I do...and this is not the case here. My problems cannot be solved by the co-ordinator'' (case 6, p.11)*

It becomes obvious that the district co-ordinator's role is not clear to the teachers. Most of them are not helped and when they are, the help is not what they ask for.

*''She (the district co-ordinator) gave me some ideas; she comes 3 to 4 times a year...but, I get the feeling that they fly on the clouds...they think that everything is nice, ideal, that the computers are properly used everywhere...'' (case 1, p12)*

and

*''I have a visit from her every 3 months, but I do not think she can really help me'' (case 5, p3)*

Another issue that emerges is that the visits of the district co-ordinator to the schools are not frequent enough. And even more important, there seems to be no real communication between the district co-ordinators and the classroom teachers themselves.

- **COLLEGIALITY**

Under this heading of collegiality, I refer both to co-operation between the teachers in a given school (i.e. the school co-ordinator plus other teachers participating in the programme), and also to co-operation between all the interested parties with the ICCPC as a whole.

All the interviewees have been trying hard to get other teachers involved in the ICCPC, since as it appears from the interviews that this was unofficially asked of them by the administrators. Some of the interviewees are very concerned about how to find the time, and the way to do this, since no extra time has been allocated for this purpose.

*''We should involve other teachers as well and there is some kind of interest on the part of other staff'' (case 3, p3)*

and

*'' I wanted to have an INSET course in my school.. I began with that in the first year...but there was no time. ...And when we have all the teachers interested in the ICCPC , willing to learn...that should be well organised. Finally, they don't know about computers. So I need time for the training of the teachers'' (case 9, p. 3-4)*

and

*'' ...but I tried on my own. I brought other teachers into my classroom to use the computers as well...and I train them myself'' (case 6, p7)*

However, most of the teachers (cases 2, 4, 5, 6, 7) find difficulties in their effort to involve other teachers in their schools in the ICCPC, since they show no interest.

*'' We spent time in staff meetings to show them the software...nothing'' (case 2, p.7)*

and

*''I try to challenge them... They played a little bit but then, nothing...'' (case 7, p.7)*

and

*''They feel bored...I try to convince them...like marketing...I put a board in the school, put work from the Internet to motivate them...nothing. I put pictures from the Internet so it was colourful...teachers saw them...(they said) 'how nice' but that's it. I even put things sent to others from my classroom. A few children from other classrooms showed interest...but nothing much. I hope things will change'' (case 2, p.9)*

All the interviewees referred to the meetings they had had with all the other school co-ordinators, something that has now stopped. They were all positive about those meetings since they gave them the opportunity to discuss their problems, their experiences, and exchange ideas on the ICCPC implementation.

> *''I really enjoyed the two meetings we had, the co-ordinators together. If this was regular...it would be great'' (case 9, p.7)*
>
> and
>
> *''It is important to share ideas...talking to each other'' (case 4, p.13)*
>
> and
>
> *''The meetings we used to have , all the co-ordinators together, those were helpful'' (case 5, p.3)*
>
> and
>
> *''Frequent contact should exist, with all who are involved in the innovation...'' (c3, p10)*

Nearly all the teachers express their perception that they are increasingly left alone in their efforts, since they identify a decline in the administrators' interest towards the innovation. So we have comments like the following ones:

> *''If something is going to be done, it should be done by all the interested people in the innovation'' (case 8, p.13)*
>
> and
>
> *''I do not believe in isolated, personal efforts. It should be a shared effort'' (case 9, p.8)*

It is worth noting that the issue of collegiality is considered to be important by these teachers in both its meanings. They need co-operation not only with the administrators but with the rest of the staff as well. Mostly, they seem to want co-operation with other teachers in the same position as they are, i.e. with other co-ordinators.

- **INSET**

A lot of interesting comments emerged concerning the INSET offered by the Pedagogical Institute and the teacher's views about it. Most of the teachers appear to think that the INSET offered is too general, not practical enough and not directly connected to the software available in the ICCPC programme. It is worth noting that nearly all the teachers referred to the INSET as one of their priority needs; they argued that they need constant INSET on practical issues concerning the innovation. They also believe that over time, INSET should be provided to the administrators, and also to all the other teachers who are working with computers in the schools.

> *''We miss the practical side of the INSET. How to use things in the classroom...'' (case 9, p.6)*
>
> and
>
> *''I believe INSET is very necessary mainly in this issue of computers...its not like other lessons...If I get trained and see in practice lessons...then why not feel better and do it?'' (case 4, p.7)*
>
> or
>
> *''I do not feel ready to use them ( the computers) appropriately . I attended all the seminars...but I still feel insecure.'' (case 4, p.2)*

or

*" I would prefer a seminar that aimed to show us a programme, let us work on it, suggest ways to use it; and when we listen to a lot of things, we will use it and see the results. This is something I haven't seen so far." (case 2, p.7)*

Three of the teachers (cases 6, 7, and 1) were quite negative towards the INSET offered on the ICCPC. They found it not suitable for their needs. So, we get remarks like this:

*"I am not going to apply for any more seminars by the PI. I do not expect that they will help me on anything. Unless I see it is something different, it is well organised, within different borders, ...with specific people participating...not everybody...specific time...not afternoons. I don't mind if it takes months, but it needs to be serious, ...we need to sit down and get down to something." (case 7, p.6)*

It is obvious that teachers need more specific guidelines about what they should be doing in the classroom within the ICCPC. They also need constant and upgraded training since their problems become different and more complicated as their experience in the programme grows.

An interesting topic emerging from what the teachers suggest about the INSET, is the role of the teacher as software producer. Nearly all of them (8 out of 9 ) mentioned that, if the teachers were allowed and trained to produce software, one of the biggest problems in the ICCPC would be solved. They seem to agree that INSET on this topic is essential.

*" I think that teachers can act as software producers. That could be one solution..." (case 9, p.6)*

Another interesting issue emerging from the interviews concerning the INSET, has to do with the reasons for attending INSET seminars on ICCPC.

*" Some teachers use the ICCPC INSET to get posted to the school they like and then, they do not use the computers" (case 2, p.7)*

and

*"Some of them ( other teachers) might even have shown interest at first because it was something new...and because they thought that if they get involved they will be allowed to stay at the same school" (case 9, p.6).*

Of course, none of the teachers referred to the above reason as a personal motivation for entering the innovation, but most of them, suggest that it is a fact that concerns other teachers. In one case, the teacher explores the reasons for attending the INSET seminars on the ICCPC as follows:

*"The reason for attending the PI seminars was to move out of the routine. I am not lying...It is something different...It is a way out. ....seminars help me do something different...for 15 days and then back to the routine." (case 2, p.13)*

- **SCHOOL AND CLASSROOM ORGANISATION**

Nearly all the teachers supported the view that this innovation needs better organisation and a better implementation plan. More specifically, they talked about 'strategy' or 'policy'

which they say are missing from the innovative effort. Some of them suggest that a special time should be set aside in the curriculum for a separate lesson on computer use.

> *"It needs more time, it needs separate and regular time in the school's timetable" (case 3,p2) or*
>
> *"If they (the pupils) started from the second grade with a lesson on the computers once a week, they would learn the basic skills. So when they come to the fifth or sixth grade they will know these things and they will be able to work with the computers across the curriculum." (case 6, p.3)*

The interviewees mention the software problem as a major one concerning the organisation of their lessons. Moreover, they mention the large numbers of pupils per class as a problem preventing easy and comfortable access to the computers.

All of them argue that they need support and guidance on issues of lesson and classroom organisation, and they thought these were missing from the INSET. This was a finding that completely matches with previous findings from the questionnaire. They also admit that they are not well supported in the school on the issues of the organisation and management of the innovation.

> *"On lesson organisation we always need help" (case 3,p.7)*
>
> and
>
> *" they did not even tell me at what grades should I teach. Is it the same in all the school? Is it only in my classroom? All the teachers should know!" (case 9, p.4-5)*

Again, one sees a high involvement of the teacher at the school level. She is the one who actually decides what to do and when and how to do it. One example of the above is the following:

> *''I made a schedule in the school programme so that other teachers can come and use the computers in my classroom...''. (case 6,p6)*

As described above, the interview data concerning organisational factors makes a number of explicit points and suggestions, concerning the teachers' role in the ICCPC programme. Teachers have been asked about the significance of their involvement in the innovation. It is remarkable to note that their responses have a high degree of correlation between them. A general finding is that almost all the teachers interviewed have a lot of concerns about their involvement in the ICCPC. Some of them express openly their fears and beliefs, providing the researcher with certain, serious recommendations concerning the successful implementation of the ICCPC. The teachers' voice is being expressed here through their own words.

## 8.2.2. PERSONAL LEVEL

It is important to state that some issues covered before, through the organisational level of the innovation, are also used in the personal level as well, when they are related to both of them. Again, each theme of the personal level will be presented separately, using extracts from the teachers' views.

- **BELIEFS**

By the theme beliefs, the researcher is referring to the level of general satisfaction the interviewees experience about their involvement in the programme. They were asked to

comment on their satisfaction with the programme, answering to specific questions during the interview. It is important to repeat that nearly all the teachers are not satisfied with the implementation of the ICCPC and they state that both in a direct and indirect way, as it will be demonstrated below. They differentiate however between their satisfaction with the implementation of the programme and the more general satisfaction they gain from their personal involvement with computers. Furthermore, they differentiate their specific dissatisfaction from the overall satisfaction they feel about the initiation of the ICCPC in Cyprus.

To the interviewer's question "Are you satisfied by the ICCPC implementation?" or " Do you enjoy your work with the ICCPC?", eight out of nine teacher give approximately the following answer:

> *''No. I am not. Not at all'' (case 9, p.3)*
>
> and
>
> *''Not as much as I would like to'' (case 2,p.1)*
>
> and
>
> *''No, I don't enjoy it (working with the computers at school)'' (case1, p.2).* And the same person elsewhere,
>
> *''Yes, I like working with the computers on my own'' (case 1, p.2)*

Frequently comments like the following emerge:

> *'' I am satisfied that it is integrated into our schools, yes. But with its implementation... no''. (case 6,p.3)*

The personal satisfaction of the teachers is highly related to their personal background characteristics. It is important to add that, as already stated in this chapter, 6 out of 9

teachers were highly involved in computer use before the initiation of the ICCPC, using them for personal reasons, either for their studies or for some other purpose. Most important is the fact that those same six teachers were planning to study or have actually studied, something related to computers (cases 8,9,6,7,1,2).

> *'' Before I became a teacher, I wanted to study something about the computers. I even had a place in Arizona University. ..but then...''* and elsewhere he continues
>
> *'' But I became a teacher for the secure occupation, not to be unemployed and things like that... I got used to it...since I combined the two of them. As soon* as this *innovation came here, I was among the first ones who joined it'' (case 6, p.1)*

The remaining three teachers, who had not been considering further study related to computers, were nevertheless all using computers prior to the initiation of the ICCPC programme. This could be a good reason for the huge effort they have made to promote the innovation.

A lot of the interviewees expressed their dissatisfaction and disappointment about the system and the administrators in general. Talking vaguely and generally, they refer to them as follows:

> *'' Since we usually follow other countries, this is the main reason why they (the administrators) put computers in our schools. So nobody would say that in Cyprus primary education they do not use the computers. They just did it to show that they are innovators...'' (case 1, p.5)*

and others say

> *'' we generally have a bureaucracy and efficiency problem in Cyprus. The priorities of the people who lead are different anyway...perhaps there is nobody who is really interested in the ICCPC''* (case 8, p.9)

Most of the teachers are not only dissatisfied with the system; one could say that they are angry with it, and do not believe in it.

> *''To expect something means that they know what they want from me, which is something that they don't. They haven't even imagined what this innovation could offer and they haven't even planned anything...so how do they know what they expect from me? (case 2, p.10)*

Generally, teachers are not satisfied with their involvement in the programme due to the problems they face within it. However, they are certain that the main reason for this dissatisfaction is the lack of policy and planning that exists at the upper level of education concerning the ICCPC.

Teachers' personal beliefs seem to be the driving force for all their effort in the implementation of ICCPC They depend on their own personal beliefs and attitude towards

the programme since no common guidelines seem to exist. As we have already seen, teachers' beliefs about the innovation proved to be strongly associated with their role in the innovation.

Within the theme of beliefs the researcher includes the teacher's attitude towards the innovation, towards the value of computers in education, and towards the implementation of the ICCPC. Personal beliefs related to those, are also included.

Firstly, it is of high importance to state that all the teachers interviewed believe in the ICCPC as an innovation that will, eventually, help the Cyprus educational system. However, they express their serious concerns as to whether this implementation as it is happening so far, will promote this change. All of them believe in the value of computers in education, though they seem to view this value differently, mainly according to their level of qualifications. For example, in case7, the teacher believes that computers help people expand their intelligence, promote high level skills, and so forth. In addition, in case 2, we find remarks like this:

> *'' The different approaches to teaching, the way of teaching from the teacher's desk...or the group work... the computers can give other dimensions to that ,teaching can expand''. (case 2, p.1)*

In case 8 we get a similar view:

> *'' It is really a means that can facilitate learning...technology is a new mean which has potential that the traditional book cannot offer'' (case 8, p1)*

Another teacher views the computer as simply a tool which has great potential in the classroom.

> *''yes...the computer is an extremely important thing, if you have the right software...then it is an important motivator and focuses their (the students') attention ... under the right circumstances...'' (c4, p.2)*

Teachers' believe that the computer and the ICCPC in general can promote change. Most of them are quite optimistic concerning the future of this innovation, despite the dissatisfaction they currently experience.

> *''yes, I want to believe that the slow progress will not act against the innovation. ..the interests will not cover everything...underestimating the innovation. They (the administrators) will have to change things even if they don't want to ...'' (case 2, p.9).*

or

> *''I can always see some improvement as time passes'' (case 5, p.6)*
>
> and
>
> *''I know that in education, things move very slowly...fifty years from now we will never give the computers up...for sure the computers will be more widespread all the time as time passes...it is something that time and society demand and so the use of them will always grow'' (case 4, p.9-10).*

From the above words, one can realise that although they are not happy with the present situation they strongly believe in the future, that things will be changed. One of the

teachers seems to be very optimistic and expresses very positive views about the future of the innovation. He seems to believe in it a lot.

> *"I view its (the ICCPC's) future positively...the change might be slow but it will come" (case 3, p.8)*

It is also interesting to add that some teachers view change positively not only at the macro level of the innovations' future but at the micro level of the innovation's present implementation.

> *" I expect dramatic changes to happen in the implementation so that it will work properly" (case 6, p13).*
>
> and
>
> *" I believe that a lot of problems will be solved" (case 5,p.6)*

- **CONCERNS**

All the teachers-interviewees involved in the ICCPC programme experience certain personal concerns and anxieties regarding their involvement in the ICCPC. Some experience high levels of concern, others lower, according to their personal characteristics and the situation in their schools. It was generally obvious that almost all the teachers who are well educated in computer related studies, (particularly cases 8 and 9), express serious concerns about the future of the innovation. Other teachers who have great involvement in the ICCPC as well, but no so much related qualifications (cases 2, 6, 7) express concerns about the future of the innovation referring mainly to organisational matters. Furthermore, teachers with less involvement in the programme like cases 1,4,5, express concerns about very specific issues in the organisational arrangements. This reflects the CABM model as described in previous chapters, which supports the idea that a high level of involvement in

an innovation brings with it a high level of concern about it; teachers who have limited involvement (compared to the others), are concerned about «minor» issues that directly affect their own role in the ICCPC; whereas, other teachers with sufficient background in the innovation, seem to experience concerns not necessarily related to themselves, but more generally concerning the future and the impact of the innovation in question.

For example, in cases 1,4,5 we get comments like this:

> *''I feel stress because of the syllabus I have to cover'' (case 4,p.5)*

or

> *'' I am not sure if I am doing the right thing...or if I am wasting my time...if what I do is OK.'' (case 5,p.4)*
>
> and
>
> *''(I expect) support and help'' (case 5, p.6)*

On other occasions, we find comments about the teachers' concerns like these:

> *''I am afraid that the pace of change is very slow...some people that can and know how to help are prevented by the top, by the system, so they cannot help''.(case 2, p.3)*
>
> and
>
> *''(Yes, I worry). Sometimes, I have the impression that the computers will be like the big Russian television sets that we used to find in the schools, in a dusty corner...'' (case 2, p.9)*
>
> and

*''Then, you begin to feel «cracked» due to the problems and mainly you don't find any response by the system...by the administrators...'' (case 7, p.3)*

and

*''Either you spend money to have the right approach to implementation ...or at the end...teachers will say ' I am bored...this leads nowhere...computers cannot be used in education ...they are not effective. We are reaching that point ...and it is a pity.'' (case 8, p.9)*

or other comments, more serious ones, showing that those teachers are really concerned about the ICCPC.

*''If we continue this way, the only thing that will happen is that those teachers who can use the computers in this limited number of schools will do so; otherwise they (the computers) will be locked away in a room'' (case 9, p.7)*

or

*''Will I still have the courage and the strength to go on with the computers?'' (case 9, p.9).*

It is obvious that teachers experience stress and anxiety when involved in the ICCPC mainly due to the lack of support and the poor implementation of the programme, as they, themselves argue.

- **EXPECTATIONS**

Under the theme expectations the researcher included categories such as personal expectations by the teachers themselves, personal expectations regarding their involvement in the programme, and expectations regarding their own role in the programme, and so forth.

It was clear that whereas some of the interviewees expect a slow improvement in the implementation of the innovation. (cases 2,3,4,5), most of the other teachers (cases 1, 6, 7, 8, 9) think that dramatic changes would need to happen in order to avoid the unsuccessful implementation or failure of the programme.

> *''things must change...this is something different'' (case 2,p.9)*
>
> and
>
> *''we need systematic work from the beginning'' (case 9, p.4)*
>
> and
>
> *''the whole system should be rearranged, restructured, that is a fact everybody realises.'' (case 8, p.9)*

Referring to the teachers' expectations it is important to note that the teachers talk about their expectations regarding the system, and the policy that should be there and is not; they also mention collegiality and express the view that this is insufficiently developed:

> *''frequent contacts should exist with all who are involved in the innovation...'' (case 3, p10)*

Most important perhaps are the personal expectations that the teachers have concerning their own involvement in the ICCPC. Due to the sensitive nature of this issue, the researcher needed to pose it in several different ways in each case, drawing and building upon previous comments from each interviewee. All the teachers firstly and directly answered that they expect no external rewards out of their involvement in the programme.

> *''I do not think I will earn something out of it...It is obvious I do not expect to gain anything...'' (case 8, p.12)*
>
> or
>
> *''It satisfies me as a person ...and I get satisfied seeing others gaining from me...I know that other teachers might expect some kind of reward.,...but not me'' (case 3, p.9)*

As the interviews progressed, however, it became obvious that in most of the cases, (cases 1, 4, 5, 6, 7, 8), although they love computers, they believe in their value in education and initially stated that they do not expect any reward, they often made remarks suggesting that they had thoughts about gaining other duties such as being district co-ordinators, software producers, and administrators. For 6 out of the 9 teachers, it became clear ( in some cases more clear than in others) that the teachers expect to act as something beyond the role of school co-ordinators in the innovation. They believe that they are qualified enough, or have the experience and expertise to be something else. They believe and expect that the administrators will recognise and respect their efforts within the innovation. In cases 6, 7, and 8 this was quite obvious.

*''My qualifications could help me...yes. I could help at the programming of this innovation, in it's all phases, anywhere basically'' (case 8, p.12)*

and

*''But...I could help the programme...all of us who have the knowledge could act as co-ordinators...or trainers...or software producers'' (case 6, p.13)*

and

*''we...the pioneers...may be given the official duties of local or district co-ordinators with duties concerning the practical organisation of the computer use. And mainly the training of other teachers.'' (case 7, p.9).*

In other cases, (2, 4 and 5) the teachers' expectations are associated to their desire for further qualifications and studies on the issue of computers in education.

*''I would like to get more educated about computer programming" (case 2, p.10),*

and

*''If the government could afford it, they should send teachers abroad to study computer use in the classroom...since we don't know much about it'' (case 4, p.15)*

In one case, the interviewee was highly disappointed and her expectations are reflected in these words:

*"If I realise that there is no future in this innovation...then I will move to something else..." (case 8, p.13)*

Generally, all the teachers expect change to happen, not so much in the educational system as a whole, but in relation to the implementation of this innovation, towards a better, more structured and policy-driven approach. Furthermore, they expect to gain some measure of reward or recognition for their involvement in the ICCPC by moving on to other roles or by gaining more administrative duties in the programme.

## 8.3 FURTHER ISSUES ON THE TEACHER'S ROLE IN THE ICCPC

Examining the results of the interviews, the researcher came up with some new themes that were not well defined or defined at all prior to the research. In some cases, issues emerge which do not 'fit' into the pre-determined themes or categories but are extremely important in order to answer the research questions concerning the teachers' role in the innovation.

It was particularly notable that many of the teachers asserted very strongly the significance of their own role in the innovation. Few doubts were expressed about their ability to fulfil a demanding role. The interviews, therefore, have encouraged a much greater emphasis in the overall findings on the teachers and their centrality in the innovation process.

*" If the teachers are not enthused and supported...then we have a problem" (case 8, p.14)*

and

> *''I think that I as the teacher, the teacher himself...is the most important factor in this effort. Whatever they, the Inspectors, do it is me who will actually put it into practice. If I am not good, the programme will not be good either, even if they bring 100 computers to the school...'' (case 4, p11).*

The above findings enhance the previous results since it is a fact that the interviewees have insisted that their role in the ICCPC is important and therefore they focus their comments on upon it.

Furthermore, the issue of 'policy' is mentioned by nearly all the teachers. It acquires the meaning of 'planned implementation' or 'philosophy put into practice' and it is an issue that had not previously been mentioned explicitly in this study.

In addition, the interviews drew attention to some specific problems experienced by the teachers. Among these, time seems to be one of the biggest.

> *''the most important problem is time...even more than the software''.*
>
> And
>
> *''I am very pushed by the time to cover the certain syllabus'' (case 3, p.15)*

Together with time, the syllabus was raised as a serious problem and it is an issue not referred to before. Teachers believe that they are heavily pressured to cover the overall curriculum requirements. This leaves them little time or energy to attend to the demands of the ICCPC. The ICCPC is an example of an imposed innovation for which no time is allowed to the teachers participating in it for diffusion.

## CONCLUSION OF THE CHAPTER

The interview results revealed that the teachers involved in the specific example of innovation, the ICCPC programme, are not satisfied with the overall implementation of the programme; they are satisfied with their own involvement in it and appear to put a lot of effort and personal cost in it. A lot of other interesting issues emerge from the interview results and need further investigation. In the following pages an attempt is made to combine the qualitative (interview) and the quantitative (questionnaire) results of this research study. The combination will enable the researcher to give specific answers to the research questions based on all the results.

# CHAPTER NINE

# DISCUSSION OF THE RESULTS

## STRUCTURE OF THE CHAPTER

The general aim of this chapter is to give answers to the pre stated research questions of this study. It combines the results of the qualitative as well as the quantitative work undergone in this research study, in an attempt to present an overall discussion about the teacher's involvement in and stances towards the example of educational innovation that was examined. This chapter is divided into two parts, each one answering to one of the two main research questions: part one presents the description of the teacher's involvement in the innovation setting; part two presents the teacher's profile when confronted with an educational innovation

## 9.1. PART ONE

**RESEARCH FINDINGS: Teachers' views concerning their involvement in educational innovation.**

As the literature review suggests and the empirical data supports, the teacher's role in the innovative settings should be enhanced in a dynamic and practical way, to enable successful implementation and assimilation of change in education. If the education of the twenty first century is to be an effective and efficient one, promoting successful and active teaching and learning, then certain practices which involve the teacher in all the phases of the innovative procedures should be followed.

A lot of previous studies in the fields of educational reform, change and innovation, reveal that the teacher is the most important factor to promote change (see chapter three). However, a large number of them conclude that teachers seem to remain the outsiders of these procedures. They usually, that they remain the passive recipients of innovation efforts that are usually disseminated to them from the top. Therefore, it is suggested that innovation efforts in education are rarely successful due to the 'missing voices' of the teachers involved in them.

Cyprus education, under the light of the recent evaluation by UNESCO (1997), is an educational system which is likely to experience an increasing number of innovation programmes in order to overcome its weaknesses. The present research study concentrates on the teacher's involvement in the educational innovation with specific reference to the case of ICCPC, as a current example of innovation.

The description of the outcomes concerning the teacher's role in ICCPC, could be of importance to policy makers, curriculum planners, teacher trainers and teachers undergoing similar innovations. They could also be useful enabling people, and especially curriculum developers, to anticipate problems and negative situations within similar settings. In the following pages, each one of the general aims of the study as set out in chapters one and six will be reviewed.

- ***RQ1: What are the views of the teachers, at both the organisational and the personal level, when confronted with an educational innovation, i.e. the ICCPC programme?***

  In order to present the conclusions of this study it is important to give an overall idea of what has been found. What is the teacher's involvement in ICCPC? How is she

involved in both the organisational and the personal level of this innovation? It is useful for the researcher, the reader and all the interested parties, and especially the curriculum planners, to be aware of the reality. It is a common observation that there is often a gap between the way in which curriculum innovation is planned and the way in which it is implemented. A lot of research outcomes reveal that planned, top down and imposed change efforts have rarely been successful due to the lack of awareness of the administrators and of the teachers' real feelings about the innovation (see chapter three). It is also a fact that administrators often plan change away from the teaching practice ( Mann, 1997, Fullan and Hargreaves, 1992). Theoretical planning and practical implementation do not usually match in the fields of educational innovation and change. Getting informed about the results of this research, support and appropriate planning can be achieved; in addition, problematic areas will be revealed and positive attitudes will be enlightened. This will hopefully promote successful innovative planning and implementation.

Most of the teachers involved in the ICCPC programme are young people with relatively high qualifications (see tables 7 to 9). A high proportion of them are men, although men are only a 25% of the Cyprus teacher population (National Statistics, 1996). This implies that the ICCPC attracted a largely homogenous group of teachers. It was very interesting to investigate these people's reaction to the ICCPC as an innovation setting, examining their role in the different aspects of the innovation.

The use of triangulation in data gathering enabled the researcher to get an overall idea of how teachers have experienced the ICCPC. More specifically, the methodological procedures supported the initial argument that the teacher's role

differentiates between the organisational and the personal level. At the organisational level, the teacher acts mainly as a critic of the innovation, accepting what is offered to her in a demanding way. In most cases, at the organisational level, teachers are neither supported, nor satisfied and act primarily on their own. This largely matches the existing literature in the field (Rudduck, 1991, Fullan, 1992, Hargreaves, 1995). In contrast, at the personal level, in their efforts to describe their attitude, feelings and beliefs, a picture emerges of a group of teachers who accept the innovation for a variety of motives and reasons. At this personal level, the teacher seems to be a change agent for several reasons, associated to personal demographic characteristics, expectations and motives.

Reviewing the literature has been proved to be a ground for analysing and understanding the fieldwork data. It has been the basis for developing the two instruments for data gathering. Moreover, it has also provided the basis in the interpretation and understanding of the findings. Conversely, the teachers' comments enrich the understanding derived from the literature on the teachers' involvement and role in an educational innovation setting and in IT innovation in particular.

In the following pages an attempt is made to present the results of the research, concerning all the aspects of teacher's involvement in the educational innovation case of ICCPC. The organisational and personal level of the teacher's involvement in the innovation will be presented referring to the groups of aspects according to their impact on the innovation setting. Therefore, the findings of this thesis will be discussed under the following headings: the **innovation - wide interactions** (Decision making, , Collegiality, INSET) , the **'key persons' in the innovation**

(School head, school Inspector, district co-ordinator), the **structure of the innovation** (rationale, personal involvement, school and classroom organisation and time) and **personal motivations**.

### 9.1.1. THE INNOVATION - WIDE INTERACTIONS WITHIN THE INNOVATION SETTING

The teachers' views concerning their own involvement in the innovation setting provide interesting conclusions about the various interactions taking place in the ICCPC.

- **DECISION MAKING**

The literature review implied that the early involvement of the teacher in decision making procedures concerning the innovation ensures successful practices (see chapter three). In the case of the ICCPC innovation, teachers are mainly passive practitioners of the innovation who actually put into practice what is provided to them (in this case limited curriculum guidance plus some equipment). However, a contradiction found here, is that, although they are passive recipients of change as far as the rationale and the policy making in the innovation is concerned; at the classroom level, (the actual and the real practice), the teacher seems to be free to implement the innovation as she likes. This is implied by the findings which revealed that there are no teachers in the committees responsible for curriculum development in general, and within the ICCPC in particular (CDS, 1996).

Due to the lack of explicit policy and practical support to the teachers, it seems that teachers feel alone in this effort. This reveals a high degree of personal meaning within this innovative setting. Teachers have their own understanding of the innovation, its rationale and content, which is not necessarily the same as the official one, as set out in the policy documents. The questionnaire results revealed that the

teachers were not satisfied with the information they had about the ICCPC (Table 20) and later on, through the interviews, they argued that the rationale of the innovation, as well as other decisions concerning the ICCPC are not communicated to them (pages 176 -180). This leads to the obvious conclusion that the innovation that is implemented might not be the one planned. Of course, the literature suggests that innovations rarely happen exactly as planned, but the situation here might be even dangerous, since each teacher may give a different meaning to the innovation. Administrators need to know that, but should also plan for a small degree of diversity, since the personal factor is inevitably there, and sometimes the innovation gets richer because of it; however, the existing lack of communication might bring the innovation to an unsuccessful implementation.

The only teachers who participate in decision making are the district co-ordinators who co-operate with the responsible Committee of IT in primary schools. Their duties are very different from those of the classroom teacher; and their role is to offer guidance and practical help to the teachers and to ensure good practice. Classroom teachers involved in ICCPC and school co-ordinators do not seem to participate in any level of decision making outside the school. Their views about the innovation are not used for the planning of the innovation, the training provided or any other phase of the innovation implementation.

In order to enable the teachers to participate in decision making procedures, representatives of the classroom teachers should be present at all levels of decision making. They could be part of INSET organisation and practice (demonstration lessons etc.) and they could certainly act as collaborators with the Curriculum Development staff, offering their useful experience to them. Teachers should act as

practical advisors to the district co-ordinator and PI people, offering their perspective as practitioners for the planning and implementation of the innovation. This would give the teachers the chance to express their views, their fears, and their experience to other interested parts. Moreover, participation in the decision making will give them the self esteem and the professional status they need on the one hand, and the sense of security on the other hand, since they will be familiar with the decisions taken and the practices promoted. In the last chapter of this thesis specific implications for success, concerning the decision making, will be given.

The participation in decision making procedures is viewed as important not only at the higher level of the decision making but also at the school level since participation in decision making, promotes positive attitude by them and makes them act as real change agents.

The School Based Management (SBM) should be promoted in the Cyprus education system since it is a procedure through which each school can have its own aims and objectives based on its originality and specific culture (Robertson et al., 1995, Nias et al, 1992). In the movement towards the democratisation of education it is essential to allow school exercise their own micro - policy, within the macro policy of the system. Due to the highly centralised system of Cyprus education (see chapter five), it is difficult to directly move to the SBM. A lot of effort and time are needed. However, the implications given in the last chapter might well lead to a progressive change and democratisation.

It was obvious from this study that teachers want to participate in decision making outside the school. A high proportion of them believe that they can offer a lot as

teacher trainers or as district co-ordinators. This gap between teachers' expectations and reality seems to cause problems in the ongoing implementation of the innovation. Ways should be found in order to keep those teachers actively involved. However, the literature suggests that decision makers do not usually collaborate with practitioners, or at least, they seem reluctant to do so. This seems to be a major obstacle to the successful implementation of innovative programmes and needs to be overcome. This study adds further support to the existing literature on this topic. The data here indicates that the gap between decision makers and teachers within the ICCPC largely exists for the following reasons:

*a.* ***Time*** **:** The lack of time, mostly on the part of the administrators, which does not permit them to be in frequent contact with the teachers and other parties involved in the innovation (see pages 190 -192)

*b.* ***Underestimation:*** As found in the pilot study, the feeling on the part of the administrators that the teachers are not the experts and cannot help with design, organisation and decision making within the innovation, is a possible reason for failure. It encourages the teachers to feel uncomfortable within the setting and does not promote the 'ownership' of the innovation.

*c.* ***Threats:*** Sometimes, especially in a highly structured system, the administrators and decision makers feel threatened by their employees. In the case of the ICCPC, the teacher acts as the expert in the practical way; she is the one who puts theory into practice and seems to manage the whole innovation. This may cause feelings of threat to the superiors who do not have the qualifications or the expertise to operationalise the programme.

Openness by the administrators and also a willingness on the part of the teachers to participate actively, will promote positive attitude and finally change .

- **COLLEGIALITY**

An experience of collegiality proved to be the most important factor for successful involvement of the teacher in this innovation. This is confirmed by results in previous studies in which collegiality has been called 'the ingredient of successful change' (Hargreaves, 1995).

It seems that in the specific case of the ICCPC, the ongoing implementation of the programme, largely depended on co-operation between teachers, school co-ordinators district co-ordinators, school heads and Inspectors. Collegiality was found to exist to a high degree at the school level (see Table 16 and pages 154 - 155 and 185 -188), mainly as a result of the lack of official policy on the practical implementation of the programme.

Nias et al (1992), argue that the 'culture of collaboration' that may exist in the individual school arises from and embodies a set of what may broadly be described as moral beliefs about the value of the relationships between individuals and groups.

In the present thesis, teachers themselves view collegiality to be very important for them. They seem to have found discussions among them, sharing their experiences, ideas and problems to be extremely useful. Moreover, they found the formal meetings among them, as school co-ordinators, very helpful for their involvement in the programme. Among the things they ask for, is more meetings to happen, and more chances to discuss issues with other colleagues. Their participation in seminars and INSET is evident of their will to exchange ideas and learn from others. This finding is also supported by the literature in the field (Hargreaves 1992, Nias et al 1992, Fullan, 1992) which argues that this form of collegiality (meetings) promotes

common vision of the innovation and shared motivation.

One could argue that in this example of innovation collegiality was profound; teachers seem to have a common view of their role in the programme, even if they sometimes misunderstand or do not know the way to implement it. The fact that they all see that it is essential for the innovation to be integrated in the school and that they all support its rationale, promotes a common vision of the innovation in their minds. It seems that teachers' experience in the innovative setting moves away from the individual level to a more collaborative one. This mobilises the staff further, new common visions emerge and there is a greater chance to obtain common experience as a basis for further development. It is remarkable that although they are not satisfied with the implementation of the innovation, the teachers are satisfied with their co-operation with other teachers and specifically, they demand for more meetings among them. This is supported by the literature: "Much depended on regular everyday conversations which enabled staff to establish and reaffirm shared meanings in relation to their personal and professional attitudes, values and beliefs" (Nias et al, 1992, p 94).

However, there is less collegiality at the higher levels of the ICCPC administration. Different bodies and levels of the innovation seem to function independently from one another. The Curriculum Development Service (CDS) prepares the curriculum and is responsible for guiding the implementation of the project; the Pedagogical Institute (PI) prepares the INSET for the teachers and the Inspectors evaluate the teachers. All these bodies should be co-operating closely. However, the teachers pointed out that the lack of co-operation between these various interests causes real problems to them because it brings confusion and frustration.

Collegiality could also been seen in terms of the co-operation among the teachers within the innovation, and the other teachers in their schools. Throughout this study, it was easy to realise that there is no official policy spelt out to the teachers within the ICCPC concerning their responsibilities towards the rest of the staff. However, the teachers felt that they should promote the innovation to the other teachers in their own ways and in their own time. This notion of collegiality and the feeling of the 'cascade' model is illustrated in the data (Hendley and Juraschek, 1992). The school co-ordinators described in the interviews their own efforts to bring the rest of the teachers into the innovation, some of them to a higher degree than others (for example cases 2 and 6). Some teachers have been disappointed by the negative attitude of other teachers towards the innovation. The problem seems to be the lack of motivation for the teachers to participate in innovative settings. If the school co-ordinator was offered extra time to work on this local short INSET with colleagues, and if her efforts were acknowledged by others (school head, Inspector, parents), diffusion would be more likely. In order to keep those teachers trying for the promotion of the innovation, motives should be given to them (not necessarily financial as it will be explained below).

The new model that is being suggested later on in the last part of this chapter, puts the teacher in the role of active respondent and participant in the innovation, and not the passive recipient as she has been to date.

- **INSET**

The importance of INSET has been shown in chapter three. Teachers seem to believe in INSET as a means to promote the innovation. They see the INSET provided as useful, but nevertheless, they require a different approach than the existing one. They appear to differentiate the INSET into theoretical and practical and it is obvious that they demand a greater emphasis on the practical training (pages 155 -157 and 188 - 190).

Literature supports the findings of this study since it highlights the need for continuing, practical staff development within the innovation (Fullan, 1992, Hargreaves and Fullan, 1992, Edwards and Kelly, 1992, Cox et al, 1988). Moreover, it suggests that an effective staff development system should facilitate continuing support for teachers and ongoing utilisation of the knowledge and skills required to implement and maintain innovative programmes.

Teachers in the ICCPC are asking for detailed and practical seminars directly relevant to teaching practice. They ask for practical guidelines on how to integrate the computer as a tool into the different subject areas of the curriculum. Some of them, seem to have come to the programme already familiar with computers and the different software programmes offered to them. As a result, the INSET should be scaled into different levels according to the teachers' existing level of expertise and knowledge. Some classroom teachers might need detailed training in the basic computer skills; others however, might be at a higher level and might be better served by guidance on matters concerning classroom organisation, Internet facilities, and so on.

Teachers seem very sensitive on issues of explicitness; they ask from the curriculum planners to be explicit and consistent and also be in full co-operation with the trainers on issues of ICCPC implementation. They believe that if the right INSET is given to them, then they will be able to cope with most of the problems they face.

The outcomes of this study reveal the need for INSET training on issues related to the rationale of the innovation as well as with its practical side. It was found that a lot of the teachers are not familiar with the aims and objectives of the innovation and some of them realise this lack of clarity. The team responsible for the policy making, should prepare specific guidelines, about the philosophy of the innovation and its practice. Teachers are asking for a holistic approach in the INSET programme.

The numerous applications by teachers to participate in the PI seminars and the fact that a lot of teachers go to the private sector for training for computer use in school, reveal that the teachers are not 'lazy'; they are in fact demanding for appropriate information and education. In the last chapter of this thesis a suggestive model for INSET within the ICCPC is given.

### 9.1.2. 'KEY PERSONS' IN THE INNOVATION SETTING

The teachers' views about their involvement in the programme revealed that three persons-roles are important in this particular innovation: the school head, the Inspector and the district co-ordinator.

- **THE SCHOOL HEAD**

This study revealed that the school head's role is crucial within an innovation. Nias et al (1992) in their work with primary teachers concluded that, "Head teachers were the significant figures; all the other leaders were dependent upon them" (p.122). The teachers' reaction towards their school heads' role in the ICCPC was generally either negative or neutral. In only one case in the interviews did one teacher express very positive feelings about the involvement of her school head. Teachers seem to view their head teachers as persons who are not able to offer them real help at least on the organisational level of their involvement in the innovation (see pages 148 -150 and 180 - 182). The main reason for that seems to be the head's lack of knowledge, information and experience concerning Information Technology. However, some of the teachers admit that their school heads, although they cannot help with or advise them on the practicalities of the innovation, nevertheless they try to promote change on the personal level, offering them emotional support and understanding. However, others express very negative feelings towards their school heads and they imply that due to the heads' lack of information, the implementation across the whole school suffers.

The role of the head teacher of the school proved to be very important in the innovative setting. This agrees with the existing literature; "if the head is dictatorial and traditional, all our attempts to change will be doomed to failure" (Salisbury and Conner, 1994, p.146). The findings of this research are important regarding the involvement of the head teacher as the manager of the school in the innovation. It seems that either the status of the head teacher is not high in the teachers' eyes, or has collapsed as far as this innovation is concerned, since he is unable to act as a real school administrator. In other words, either these teachers in any case held a rather

low opinion of their heads, or alternatively, their experience of his reaction to ICCPC was disappointing, since he did not appear to be able or willing to provide the necessary support.

Teachers have no feedback either from their school heads or their Inspectors about what they do in the classroom. This is true at both the school level and at the general level of the Cyprus education system. The reason for this seems to be largely the lack of communication among themselves and other people in the innovation. This may be aggravated by the fact that the overall policy intentions behind the innovation are not clearly developed or understood.

A further implication is that a priority for the ICCPC administration should be the INSET for the head teachers, even before the INSET for the teachers. "They (the head teachers) need to be able to persuade others to share that sense of mission. This involves securing the commitment of other staff (...) to the beliefs and values that the individual head believes to be the most important for his/her school" (Nias, 1992, p.179). Short INSET courses should be regularly provided to the heads in order firstly, to keep them briefly informed about the recent developments in Information Technology in Education and secondly, to keep them briefed about the rationale, and the developments within the ICCPC (Fullan, 1992). This does not mean that they need to be trained as computer users. The issue here is to have them as positive supporters of the innovation, by keeping them adequately informed. It is important for teachers in any innovative setting to have their school heads on their side, in order to promote a positive climate for change. Teachers' enthusiasm and willingness to use computers in school largely depends on the school climate. It would be sad and disastrous to loose the teachers' commitment to change due to the head teachers' lack

of information about the programme.

- **SCHOOL INSPECTORS**

Due to the existing teacher appraisal scheme under which the Inspectorate works, the teachers' voice has rarely been heard. As described in chapter five of this thesis, all teachers are regularly inspected and appraised at least three times a year by one Inspector; and the school is also inspected regularly. The Inspector appraises the teacher in any subject of the curriculum at any time either at a pre-arranged or an unannounced visit into the classroom. Therefore, the teacher has to present a lesson to the Inspector in order to let him evaluate her job. In the ICCPC programme, this pressure and lack of communication between teacher and Inspector was emphasised by the teachers in all the chances they were given throughout this research to express their opinion.

The teachers feel that their work with computers is not being appreciated by the Inspectors, and is not even given a chance to be evaluated by them (pages 152 - 154 and 182 - 183). They feel disappointed and believe that their involvement in the innovation has no meaning and acquires no merit in the eyes of the evaluators. One of the reasons for this appears to be the lack of personal contact and the lack of communication between the teacher and the Inspector which could provide the teacher with the opportunity to show her work and even to explain it.

The notion of trust between the administrators and the teachers has been emphasised by a number of authors: "The establishment of trust is central to the restructuring of education" (Hargreaves, 1994, p.61).

Moreover, as the UNESCO report in 1997 emphasised, the lack of training of the Inspectorate causes several problems. In the case of this innovation, it is important for the teacher to have an Inspector who is informed about recent developments in the ICCPC and about IT in education in general, if she is to expect any support from him. In fact, the ICCPC teachers did not demand that their Inspectors should be highly involved in educational technology; only that they be interested in their involvement in the innovation and give them a chance to demonstrate their work in this area. In this way they would feel that their effort is truly appreciated by the administrators. This has large implications for the personal level of the teacher's involvement in ICCPC and will be discussed in detail later. In conclusion, one could argue that a positive attitude from the Inspector within the innovative setting, could promote and maintain positive attitudes on the part of the teachers.

Inspectors might be helped to provide this valuable support by regular short INSET courses. Academics and other administrators could co-ordinate this training which should be focused primarily on general issues concerning the value of the computers in education, recent developments in the use of IT in education and, of course, specific information about the developments of the ICCPC.

- **DISTRICT COORDINATOR**

The results of this study reveal that the position of the district co-ordinator is very important and the teachers have great expectations from him. The majority of teachers seem to appreciate the work of the district co-ordinator. However, they appear to view him as someone not able to make decisions or promote real change at the macro level. Most of the teachers, stated general satisfaction with the district co-ordinator as a provider of support to them. However, when referring to him in detail

(in the interviews), it was clear that they view him as a person not being able to really promote change, giving them help and support and act as a real change agent. They admit though, that at the micro level of the school the district co-ordinator gives practical help to them. Teachers seem to view his position as a mediator between them and the Ministry. This might appear to be a positive outcome, though it does not necessarily reflect the reality, since the teachers may behave normally and present their problems, real feelings and ideas to him, whereas they would not do the same before other administrators. As a consequence, the district co-ordinator's role in the ongoing and formative evaluation of the ICCPC is vital. He could be the basic source of information while on the other hand, he could be a basic recipient of the teachers' problems, fears and views.

The general view was that the district co-ordinator should be an experienced, respectable teacher accepted by the majority of the school teachers as a competent and well qualified member of their profession. It was obvious in the results of this study that the district co-ordinator needs a lot of extra time to be able to help the school teachers and the school co-ordinators.

Due to the positive feelings of the teachers about the co-ordinator, this study suggests that there should be an increase in the number of district co-ordinators so as to enable more qualified people to be deeply and responsibly involved in the ICCPC; this would help schools in a more effective and efficient way than now. The present situation reveals that the district co-ordinator cannot offer real qualitative guidance to the teachers due to the limited time available. By increasing the number of district co-ordinators, this problem will be eliminated. Moreover, this sharing of responsibility will promote collegiality and professionalism.

### 9.1.3 THE STRUCTURE OF THE INNOVATIVE SETTING

This section will deal with the rationale of the ICCPC; the varied personal involvement with computers among the teachers; school and classroom organisation; and matters related to time.

- **THE RATIONALE OF THE INNOVATION**

  The literature reviewed in chapter three suggests that the clear defined objectives of the innovation communicable early on to the teachers involved, proved to be of extreme importance when successful innovation is concerned. An important result of this study is that the teachers believe that the ICCPC is a worthwhile innovation in Cyprus education and accept its value as a programme that will help education. All of them agree that this innovation should be widely adopted by teachers since it promotes the educational system and helps students to learn better (see pages 158 - 159 and 176 - 180). However, when they expand on what they actually do in their own classroom, one could realise a variation of meanings given to the rationale of the innovation. This matches similar findings from other countries which have introduced the computer in their educational systems. These findings revealed that teachers are not clear about the rationale and the philosophy behind the innovation and therefore, act in a different way than it is expected of them (Pelgrum and Plomp, 1993, Blummerlhuis and Plomp, 1993).

  In the ICCPC not all of the teachers were certain about what they do and why. They admit that they have never been informed about the aims and objectives of the

programme in an official, explicit way. As a result, some of them had difficulties in realising whether what they do in the classroom matches the intended rationale. Literature suggests that the rationale should be explicitly communicated to the teachers involved in an innovation, early on (Rudduck, 1991, Vandenberghe, 1984, Fullan, 1993). In the example of the ICCPC this explicitly and communication appear to be missing. This leads to the conclusion that the teachers mostly use their own competency and knowledge to practice the innovation, without being directed by the officially stated rationale. This is largely due to the limited curriculum materials and guidelines that they have so far received about the ICCPC. A great danger of 'false clarity' as far as the understanding of the innovation and its rationale exists here, as mentioned above, since the teacher is actually left alone to implement what he understands as the innovative programme.

A direct conclusion deriving from the teachers' data was that, if the guidelines were more concrete and related directly to the classroom practice, teachers would feel more confident in using the computers according to the intended curriculum. The co operation between all the interested parties towards a common rationale would provide the teachers with the desirable confidence.

Another result of the research is the positive attitude of the teachers, concerning the value of the innovation for the promotion of learning. Teachers seem to be convinced that the computers help the students. They are in the position to see the outcomes of their prior involvement with the computers. Children are enthusiastic about the computers. This, is a basic reason which shapes the teacher's positive attitude towards the rationale of the innovation.

Other research on similar topics undertaken in Cyprus, reveal that teachers support the ICCPC as an innovation and believe in its value (Michaelidou, 1996, 1997). It is obvious, that the sample of the teachers in the ICCPC, supports the philosophy of the ICCPC. This prime and basic positive situation should be taken into account by the administrators in order to try to support and maintain it. It is possible that this positive attitude towards the theory of the innovation could easily be transformed into a general positive involvement of the teacher in innovation itself, if certain practicalities change, as will be demonstrated below.

- **PERSONAL INVOLVEMENT WITH THE COMPUTER**

The results of the research study reveal that the teachers in this innovation do not have an equal degree of personal involvement with the computer. A large proportion of them do not have access to a computer away from the school (diagram 8). The main reason is the lack of a computer at home. This fact may cause several problems for the implementation and assimilation of the innovation, since limited involvement with the computer can easily lead to incompetence and lack of interest. Therefore, a recommendation of this study would be to use the extra time given to the teacher for her personal involvement and experimentation with the computer. The Internet facilities that a computer can offer to the teacher would enhance, not only her knowledge about the ICCPC, but also her knowledge about teaching and learning in general.

Some of the teachers stated that they use the computer a lot in their own time and this gives them confidence and security in the classroom. This is important since a lesson could be better planned and carried out by a competent teacher than by a less competent one. The notion of a shift in the teachers' role from instructor to co -

learner is easily adopted by the fully competent teachers since they realise that the children can offer them a lot through their own experience with computers. The non user is more likely to develop neutral or even negative attitude towards the ICCPC programme than the frequent user, since she will encounter a lot of problems during her effort to implement the innovation.

- **SCHOOL AND CLASSROOM ORGANISATION**

This research study revealed that issues concerned with the school and classroom organisation do matter for teachers involved in an innovation. This is supported by other research findings which refer to the practicality of change and stress the fact that "at the heart of change for most teachers is the issue of whether it is practical" (Hargreaves, 1995, p.12).

This thesis also argues that lack of support is the main reason for unsuccessful innovative practice. Underwood writes that "lack of resources both in terms of hardware and software and in terms of adequate training are often cited as the prime causes of this failure to advance" (1997, p.155). Others believe that "much depends not just on the individual but on the organisational context within which the individual is working" (Robinson, 1997, p.43). In the ICCPC, it was clear that organisational factors were significant to the teachers particularly where they involved personal interactions, i.e. in matters concerning INSET, collegiality, and decision making.

More specifically, in this research, it was found that all the pilot schools in this programme are equipped with computers, though some of them are not as well equipped as others. But, a teacher cannot use the computer as a tool, as it is implied

by the rationale of the innovation, if she simply does not have enough machines in the school to fulfil the aims of the programme. Moreover, the software available seems to be a large problem that causes a lot of frustration to the teachers. The software enables the teacher to make only a limited use of the computer in the classroom and usually in a different way than is intended. The original aim of using the computer as a tool for different subjects of the curriculum seems to be unfulfilled due to the lack of relevant software. If they do not have science software, for example, how can they use the computer in science, except for word processing? New software either translated in Cyprus or in Greece, is necessary in order to support the desirable school and classroom organisation. This software should also be expanded in order to cover all the grades of the primary school. It was shown in chapter seven that a low degree of computer use exists at the lower grades, whereas literature suggests that computer use is successful early on in a child's life.

Another important issue in the area of school organisation is the existence or not of a separate room for the computers in the school. Since the aim of the innovation is to use the computer as a tool in the different subjects of the curriculum (see chapter five), a separate room would not be suitable for the promotion of this aim. How can you use the computer as a tool in any lesson for any subject and to any grade if you are restricted in one computer room within the whole school? It is better to have a small number of computers spread in a large number of classes (Robinson, 1997). The demand by a small number of teachers for a separate computer room might be an indication of misunderstanding about the rationale of the innovation. Some of the teachers have emphasised their belief that the computers cannot be used as a tool in the classroom unless they are integrated first as a separate lesson of 'computer skills'. Here too, there is a misunderstanding of the ICCPC rationale. If the teachers were

clear about the aims and objectives of this programme, it would be easier for them to put it into practice; they could begin by devoting class time to help students to become confident users of the computer at a very low level. Then, real competency will come by using the computer as a tool throughout the curriculum. Thus, the role of INSET and curriculum becomes more crucial in order to make the guidelines for classroom and school organisation as explicit as possible.

It seems that the teacher has a high degree of freedom at the school level concerning the school and classroom organisation. She is responsible setting goals in her classroom, since no specific curriculum has been given to her, and she is also free to choose the teaching approach. This is not pleasant for the teachers since it causes a false interpretation of the innovation itself. Many of them, stated that they need some kind of guidance, certain curriculum guidelines and specific lesson plans in order to enable them to act in a common and systematic way. The notion of 'painful unclarity' mentioned by Fullan (1994) is undergoing in this situation, since teachers with high degree of consciousness about their involvement with the ICCPC feel uncomfortable with the rationale and the lack of support. Havelock (1969) suggested his three models of RDD, SI and PS (see chapter three). The case of ICCPC as described by the results of this study, matches the RDD since the innovation is a top down one and the guidelines are supposed to be given from the above. This study suggests that a shift towards the Social Interaction model would be more appropriate to the ICCPC case and is more relevant to the teachers' demands.

- **TIME**

Nearly all the teachers participating in this research referred to time as one of the most important barriers to change. This is not strange since it is consistent with previous research findings which have demonstrated that time is a practical problem which is faced by the teachers when confronted with innovation. It is a matter that needs to be regarded as serious by the administrators in order to limit its negative impact on the teachers.

Research supports that teachers view time as an important issue since, it is related to their decision to uptake the innovation. Doyle and Ponder (1977) as well as Fullan and Hargreaves (1992), have emphasised these practicalities when explaining the importance that teachers give on time issues.

Time should be given to the school co-ordinator to enable him to help the rest of the school staff to organise their class for computer use. In addition, the same extra time could be allocated for school based INSET by the school co-ordinator, the district co-ordinator or the Pedagogical Institute (P.I.). Some of this time should also be devoted to the personal development of the co-ordinator herself, since updated information about recent developments in the technology is crucial for her. Time should also be devoted to meetings among the school staff, discussions and exchange of ideas and experience. Other meetings within this time could be arranged for school co-ordinators only, so as to enable them to discuss their experiences, from their own perspective. Demonstration lessons could be organised as well during these meetings.

Research findings (e.g. Hargreaves, 1992) reveal that extra time given to the teachers for the promotion of the change was not always used for this purpose. However, the

above implication for productive use of the extra time could be easily checked in order to ensure qualitative use of the time for the promotion of the innovation.

Due to severe obstacles concerning the matter of the extra time, and the unofficial policy of the Ministry not to reward teachers for their involvement in innovations, it is recommended in this study that respectable amount of time should only be given to the school co-ordinators to help them make real use of their role in the school. After all, it is a fact in education that time is money; a limited amount of extra time should also be given to the classroom teacher, in order to enable her to work with the computer in her own time. Under the light of the above, a conclusion that emerges here, is that programmes and resources need to be carefully matched in order to enable flexibility in the teachers' time.

### 9.1.3. THE TEACHER'S FEELINGS ABOUT THE INNOVATION

The key role of the teacher as a change agent has so far been largely ignored. The focus of this study is the teacher and all the aspects of the innovative setting that surround her. The main argument is that the teacher could promote change and successful innovation if she were supported both at the organisational but mainly at the personal level. This orientation, enabled the division of the factors related to the teachers' involvement in the innovation into two broad categories: the organisational and the personal level (Veen, 1996). It was found in this study, that the organisational factors which are related to the implementation of the innovation worry the teachers and causes them stress and frustration. On the other hand, personal factors associated with the teachers' own involvement in the programme, with their expectations and beliefs, seem to be positive in the whole setting; teachers seem to believe in what they do, they argue though, that they are uncertain of it. Moreover, It

was shown that most of the teachers view themselves as privileged to be part of this innovation and generally they believe in their role as change agents (pages 200 - 204).

The personal level of the teacher's involvement in the ICCPC proved to be very important, outweighing the organisational one. Teachers seem to have welcomed the innovation; they voluntarily participated in it and it seems that they have really worked hard to make this programme work (at least at its present status). A lot of mature thinking was evident among the teachers concerning their involvement in the innovation and this proves the level of their commitment to it. All the teachers expressed their agreement with the decision to initiate this innovation and this is a useful and important initial positive attitude. It could be argued that teachers participating in this innovative example are mature change agents each one at a different level, depending on the level of their expertise and commitment to the innovation. It is also noteworthy that the teachers involved in this innovation seem to have similar personal characteristics which maybe explains their views about the ICCPC and their role in it.

This thesis argues that personal, esoteric factors outweigh the organisational ones and also adds that the interactions between the people involved in an educational innovation are extremely important for successful innovation. More specifically, the notion of collegiality has proved to be extremely important for success. Fullan's words (and many others have made similar comments) that the successful implementation of an innovation largely depends "on what teachers say, think and do" (1992, p.219), is totally supported and justified throughout this thesis.

Other research, as presented in chapter three, has highlighted personal factors of the teachers' involvement in an innovative setting. Stein and Wang (1988) , Guskey (1988), Nias et al (1989, 1992), and others, emphasised the personal meaning of change which

underlies the teacher's involvement in innovation and seems to guide her role in it.

Teachers in this innovation seem to have high expectations of themselves and of the programme itself. Some of them believe that they could act as district co-ordinators or teacher trainers. They see themselves as competent users of the computer, and good managers of the change. Most of them did not admit that they expect any kind of reward during their involvement in the innovation beyond an acknowledgement and appreciation of what they do. In no case did anyone imply or refer to any kind of financial reward. This is an important result since it has to do not only with the teachers' personal satisfaction with the programme, but also, with the current policy of the Ministry, which is to avoid any kind of extra remuneration for teachers of outstanding merit, or successful involvement in initiatives.

Recent research supports the above conclusions in Ainsa's work. Ainsa, (1992), examined the teacher's effectiveness in a computer innovation and concluded that rewards as promotions, merit raises, important positions and assignments are being given to the computer teachers. This, "makes it attractive to be a computer teacher" (p.12). More teachers want to participate in the computer innovation and are volunteering for computer specialised training. It seems that they can contribute to the students' education while enhancing their own 'career destiny'.

Research by Rigby (1997) argues that a key element of the networked professional development model is the possibility for teachers to gain recognition and credit for school based innovation and leadership. The question is however, how are we going to keep these teachers trying and putting their effort towards successful implementation of the innovation and moreover, how will we ensure their ongoing active involvement in the innovation? The

administrators should build up a scheme of external and internal rewards in order to keep those teachers in action. A suggestive scheme of rewards, as emerging from the previous discussion, will be presented in the last chapter of this thesis.

In concluding this discussion of teachers' views about the ICPC (RQ1), it is clear that the teachers are satisfied with the theoretical side of the innovation, as long they have access to it (rationale etc.), but they are not happy with the practical implementation of it. This is proved by other research examples in the same field as mentioned before. The costs of the practice is not low. They seem to be anxious to see the change happening and they also sound worried for the implementation of the innovation. This is accepted and should be welcomed by the administrators if they are well informed about it and ready to anticipate it. Part of this study's purpose is to help the administrators towards that route. As the teachers are more qualified and well educated than others they should be expected to be more demanding. 'Painful unclarity' suggested by Fullan (1993b) seems to exist in a high degree and has its place here as well. Due to their commitment to change, teachers are aware of the ideal situation and therefore they suffer from the poor implementation. This fact is more optimistic than pessimistic and it is good for the future of this innovation since it ensures that the majority of the teachers within this innovation have the potential of being real agent. Certain decisions by the administrators and full awareness of the situation by them, will enhance the chances of successful innovation.

One should note that the cultural perspective of Cyprus teachers is not of trivial importance. On the contrary, Cyprus case has certain particularities due to the nature of its society. It is an economically advanced country, with influences from Europe and especially Greece. At the same time, it suffers from slow changing procedures in its society, with great influences on education. Small budgets are allowed for education,

whereas large ones are devoted to the economy of the country. This causes certain problems since schools seem to be left behind the economy revolution of the island. Teachers, as part of the society and the educational system at the same time, seem to realise the differences and the problems. Their voice, as presented in this study, should be encountered for a unified effort to educational reform and change. Responses of the teachers to the innovation practice indicate that a degree of autonomy is essential for teachers to feel valued and to have enough flexibility to develop innovative and responsive approaches within their teaching, which is necessary for the development of learning. This autonomy should be developed and maintained within the stated explicit rationale of the innovation setting. Collaborative, democratic approaches related to the curriculum development encourage ownership of the change, so that effective translation of policy into practice is more likely.

Hargreaves adds that

> *"the challenge of restructuring in education and elsewhere is a challenge of abandoning or attenuating bureaucratic controls, inflexible mandates, paternalistic forms of trust and quick system fixes in order to hear, articulate and bring together the disparate voices of teachers and other educational partners ....and it is a challenge of supporting and empowering school cultures and those involved in them to develop changes themselves on a continuing basis."*
>
> (1992, p.260)

Teachers, whether in Cyprus or in any other country, need to be seen in a new , different way. Change in perception can be the beginning of empowerment and the empowerment of teachers is essential if the schools are to be improved. As long as teachers are not adequately valued, first by themselves, and then by the others, they are not apt to reform with the necessary assurance and authority to do their work as best as they can.

The Cyprus educational system should and can be more flexible and less centralised in order to allow the teachers' voice to be heard. It is essential to have teachers' representatives in higher levels of decision making and to have teachers who are well educated and adequately trained for the innovation, so that they can really act as change agents.

The description of the type of the teachers when they get involved in an innovative setting seem to be important and useful to be aware of.

## 9.2 PART TWO
## THE TEACHER'S PROFILE WHEN CONFRONTED WITH AN EDUCATIONAL INNOVATION

Reflection on the data presented in this thesis suggests that teachers confronted with an innovation fall into one of two categories: 'the enthusiastic' and the 'sceptical'. My argument will be that those responsible for innovations need to recognise this fact and plan accordingly.

***RQ 2 : Is it possible to profile the range of responses that might be anticipated among teachers confronted with an innovation?***

In order to attempt a presentation of the teachers' profile as it emerges from the results and the conclusions of this research, it is necessary to have in mind the holistic view of the teachers' role in the innovation as it was presented in the pages before (part one).

This study attempted to present the 'voice' of the teachers who are confronted with an innovation. It was very important to investigate their opinions concerning the different aspects of the innovation, and their feelings, concerns and ideas about it. In this specific case of the ICCPC, the teacher's role was described and certain implications for success

came out of this description. This enabled the researcher to try to present the typical types of teachers that seem to exist in this innovation. This, will help all the interested parties and especially the administrators and the curriculum planners to get an idea of what they should anticipate when a similar innovative effort is being promoted in similar settings.

Havelock (1969) in his early on studies, tried to differentiate the teachers confronted with an innovation, into three categories: the 'leaders', who are the real change agents, the 'innovators', the real practitioners of the change and the 'resisters', the critics of the innovation. In this present research study, it was easy to identify and present certain kinds and characters of teachers involved in this innovative setting. Firstly, one should note that all the teachers in the sample were deeply in favour of the philosophy, rationale and value of the innovation. Therefore, it can be said that there are no 'resisters' in this setting due to the fact that all the teachers were voluntarily involved in it. Moreover, it is very difficult to have homogeneous characteristics of all teachers within one category. As a result, the profile of the teachers involved in this kind of technological innovation, is formed by two main categories with great variation within each one: the group of 'enthusiastic' teachers, who seem to be content with the implementation of the innovation, and the group of 'sceptical' teachers, who seem to be critical towards the implementation of the innovation.

In the following pages the two types of teachers are described, based on the empirical data of the research study.

### 9.2.1 THE 'ENTHUSIASTIC' TEACHER

The enthusiastic teacher experiences a new wave, a reform in her teaching style and practice, and seems to enjoy the innovation basically as a new idea that is being implemented in education. It is obvious that this specific type of teacher deeply involves herself in innovation, when she is convinced about its educational value.

Moreover, the enthusiastic type of teacher accepts the innovation, as it is proposed by the administrators and the innovation is very much welcomed by her. She considers herself lucky to be involved and sees herself as a modern teacher who can act as a real change agent, if she is given the necessary support (INSET, materials etc).

This type of teacher is not necessarily qualified specifically for this type of innovation, though, one might say that she is usually a very good and effective teacher in the classroom. Thus, she will certainly use technological innovations as a teaching and learning tool in order to enhance students' knowledge, in the way she could use any other tool, once she is convinced about its educational value. The enthusiastic teacher is always very much in favour of INSET on the issues concerning the innovation, since it gives her a chance to enhance her knowledge and expertise on the subject (see cases 1, 3, 4 in chapter eight).

Throughout the interviews it was shown that the enthusiastic teacher sees herself in a privileged position compared to the rest of her colleagues, due to the fact that she is involved in the innovation. In addition, this type of teacher seems to accept the innovation as a significant educational development in which she is called to contribute for its success. Any problems during the implementation phase seem to bother the enthusiastic teacher less than others, since she is basically satisfied with the idea behind the innovation.

The enthusiastic teacher believes that time will certainly bring about change in the direction of the innovation. She is convinced that things are 'well done' so far but she would not deny that a lot of work should be done in order to promote real change. Additionally, she is not opposed to collegiality since she finds it a good opportunity to convince others about the facts of the innovation and its 'optimistic' side. She is ready to share ideas and experience with other colleagues about the practicalities of the innovation. In order to do that, she might well go on to prepare lessons using the new technology, to prepare materials and to present her results to others. The enthusiastic teacher, as implied by the research study, has a lot of ideas about how to handle the innovation and put it into practice in both the school and the classroom.

She is not at all worried by the fact that she is not involved in decision making procedures or that she is not well qualified for the innovation. She is satisfied implementing the change and trying to make it happen, according to her own criteria. These criteria seem to be strongly linked to the school level implementation of the innovation rather than the overall development of the programme.

It is obvious that the enthusiastic type of teacher is not directly worried by the barriers of the change process, since she believes that it is her own duty and responsibility to promote change and 'use' the innovation in the classroom. She views the innovation as part of her everyday work, but she ranks it high in her hierarchy of 'musts'.

This type of teacher rarely has any kind of problems with her supervisors (principals or Inspectors) since she is happy just seeing in practice that the innovation works at the level of the school. Indeed, in some cases, this may explain the motivation of the 'enthusiastic'

teacher. She intends that the image she gives to her superiors and especially the school head and the Inspector who are responsible for her assessment, is a positive one.

At the personal level, the enthusiastic teacher is happy. She feels that she is a good teacher, using up-to date technology, and that this offers a lot to her students and to herself. In a sense she is meeting her own needs through her involvement in the innovation. She seems to have linked her expectations and her involvement in the programme.

The interviews show that the 'enthusiastic' teacher is the one who has basically accepted the innovation, either for learning more about technology, or for becoming a better teacher. Therefore, one could agree that the enthusiastic teacher:

- believes in the value of the innovation
- accepts things as they are
- believes in the future success of the programme
- offers a lot in a classroom using the innovation
- promotes change at the school level
- is excited about the innovation as a new means for teaching and learning

It becomes very important to note that in all the above features of the enthusiastic teacher there exists large variation among people. This implies that there might be teachers having most of the above characteristics and others that might only have some of them. Equally important is that each one teacher might have these characteristics up to a different degree.

In this study, three of the teachers interviewed seem to belong to this category of the 'enthusiastic' teacher. Concerning their own personal stances towards the innovation, cases 1,3 and 4 could be called enthusiastic since all of them agree on the philosophy of the innovation, have limited qualifications for the innovation and are all optimistic about the

future of the innovation. In all these three cases the teacher accepted the general implementation of the innovation and they express their optimism that the ICCPC will eventually bring change. Some of them, have actually admitted that, at the school level, they have managed to bring about predictable change.

### 9.2.2 THE 'SCEPTICAL' TEACHER

The sceptical teacher, is the type of teacher who believes deeply , in the value of the innovation but is negative, or even hostile to the way in which the innovation is being implemented.

It appears from the empirical data, that this type of teacher is fully involved in the innovation, not only at a local school level, and is aware of all the possibilities of the innovation. She is capable of offering a lot to the promotion of the change, but this does not always happen.

The sceptical teacher is the teacher who is aware of what she does and acts in a very mature way. In this sense, she has high expectations both from the practicalities of the innovation and herself in it. It is a fact that this type of teacher is usually well qualified or even overqualified in issues related to the innovation. Due to his knowledge and previous experiences the sceptical teacher always demands for more support, materials, participation in decision making procedures and so forth than the scheme currently provides.

The fact that the sceptical teacher is well qualified and theoretically ready to put the innovation into practice does not necessarily mean that she is really using the innovation in such a way as to offer to the promotion of change. This is due to her negative feelings and attitude towards the innovation, as it is being implemented. The interviews in the present study revealed that many teachers feel that they could offer more than they do now on the

basis of their own expertise. The system seems to ignore them. The sceptical teacher always expects more than she sees happening and has great plans for success which she does not or cannot put into practice.

She is capable of acting as a real change agent and a promoter of change if she is given the chance. At the early implementation phase, she seems interested in the innovation as a theory and is sceptical about her colleagues, the administrators, the materials and most of the efforts done officially to promote change. She seems to believe that she can bring about change if she is supported. Some of the sceptical teachers revealed that they work independently, away from the Ministry's guidelines, convinced that they know better.

Within the sceptical teacher group, there exists the teacher who is really interested in promoting change; in fact it seems that it is this type of teacher who, once her scepticism is put aside, she really promotes change not only at a school level. Furthermore, she is basically hostile to the administrators since she believes (and perhaps it is true), that she herself could be a better administrator.

However, there is also among the sceptics the teacher who gets indifferent to the innovation, due to her negative attitude to its implementation. Such teachers only involve themselves in a minimum way in order to present their opposite views; they do not actually get themselves fully involved into the innovation.

A further group among the sceptics 'tailor' the innovation according to their beliefs and knowledge. Furthermore, their own needs and interests are crucial in this effort. In this case, a specific direction of change is promoted, as defined by the teachers themselves.

These sceptics develop new procedures for implementing the innovation: new methodology, pioneer ideas for classroom use, innovative settings within the school level and beyond that. At the micro level of the school and the present situation, this may seem to be working against the innovation itself, but at the macro level, the overall development and adoption of the innovation in the future, this initiative by the sceptics is what will eventually help the system and the people in it to accept major changes over time.

A sceptical teacher might offer a lot of help and advice to her colleagues possibly due to her internal motives of self-promotion. She wants others to get involved in the innovation. It is not clear whether this is a two way communication, or she only provides people with knowledge, since she is convinced that she is qualified enough. This implies that the sceptical teacher will not always accept INSET or new knowledge on the subject. In some of the examples within the empirical work, the impression is given through strong statements that these teachers would not take any other advice from anyone; they would rather work on their own.

At the personal level, it is important to accept that great variation exists. The motivation of the sceptical teachers and the expectations they have of themselves within the innovation, is interesting and, at the same time, difficult to describe. The expectations might be very high and they might involve internal motives of self promotion; alternatively but perhaps less frequently, pure motives to do with promoting the innovation for its own sake.

Overall, it might be argued that the typical sceptical teacher:

- is well qualified at the subject
- is personally involved in the innovation
- is not only involved at the school level but in expanded levels as well,

- promotes change in a macro-level, usually in the future.
- is opposed to the implementation strategy of the innovation
- believes in her own potential as an administrator of the innovation
- usually uses the innovation to promote her 'ego' and ideas concerning the innovation

In this research study, cases, 2,5,6,7,8 and 9 could be called 'sceptical' teachers since all of them are actually promoting the innovation and at the same time, they complain about the strategies followed within the implementation.

The argument presented here is that real change agents can only come from the sceptic group of teachers. Their knowledge and expertise can and do act as catalysts in the promotion of the innovation. They are capable of bringing change if they are given the chance, the opportunities and the support. However, both teacher types are presumably innovators in that they are all practitioners concerned to implement something new; but, many of them have the talents to be leaders but they are frustrated within a system which seems to have little respect for what they can offer.

Barber and Brighouse (1992) add that "it is especially important that we create the circumstances to get the best out of the valuable scarce resource - the good teacher - and enable that person to have a better rewarded, professional career" (p. 15).

## CONCLUSION OF THE CHAPTER

In the first part of this chapter the findings of the research were discussed with reference to the literature. In the second part, two 'ideal types' of teacher response to innovation have been set out, though with some caution as many teachers display a mixture of the behaviours described. The response of this exercise has been to suggest that many barriers

to change could be overcome by being aware of the reality and the interactions within the innovation. Decision makers together with the teachers involved in the innovation, should be aware of the existence of these results and the broad categories of teachers and be able to anticipate the problems that emerge on their way to change. Wise decisions and thoughtful implementation can take place in this sense.

Research revealed that computer innovation has failed to bring up change in education due to several reasons. The most important one is the fact that IT innovation was not faced and treated as an example of educational innovation, but was seen as purely technology. As an educational innovation, computer integration in education should be based upon the idea that the teacher is the most important factor and change agent of the promotion of the innovation. Other recent research findings agree with this conclusion (Robinson, 1997; Cox, 1997; Underwood, 1997; Fullan,1993). Instead, technology was primarily seen as a means to change education in itself. Enthusiasm and even evangelism was a quality to be admired in the early pioneers for the educational use of computers; and maybe twenty years is too short a period for an innovation to become firmly established in education (Fullan, 1991; Wild, 1991). But, if it is so, it is only true for education, since computers have been absorbed into many other spheres of life completely and have left almost no other profession untouched. The sceptics are right to doubt; a misplaced enthusiasm is no longer good enough to serve as a rationale for computer use in education. The question remains: What is it that is wrong and what can be done about it in computer education?

In the last chapter of this thesis specific implications for success in this example of innovative practice and any other similar one will be presented, as emerged from the findings.

# CHAPTER TEN

# IMPLICATIONS FOR SUCCESS

## STRUCTURE OF THE CHAPTER

This chapter is a list of specific implications for successful involvement of the teacher in the case under investigation (the ICCPC programme) and similar educational innovation settings. This last chapter attempts to answer the last research question of the thesis. The implications involve the three major categories that were discussed in chapter nine: the interactions going on within the innovation, the 'key' persons in it and the structure of the innovation.

The literature suggests and the results of this study imply that the 'imported', 'top - down' innovations fail to be implemented successfully at the grass root level in most countries, including Cyprus. The growing 'performance gap' which exists between the intended curriculum innovation and the implemented one, seems to create a conflict between teachers - practitioners and administrators. This study argues that a 'collective', 'collaborative' approach needs to be applied, in which the main focus will be a participatory and collaborative approach to curriculum development and also a deep involvement of the teacher in it. Under this argument, in the remainder of the thesis, I attempt to summarise the implications of this research for the future conduct of the ICCPC, and, by extension, future practice in curriculum development. These are mainly set out as bullet points and illustrated by diagrams as appropriate. The chapter then ends with the limitations of this thesis and certain directions for further research.

- ***RQ3: How could the teacher be more successfully involved in the implementation of the innovation?***

## 10.1 THE INTERACTIONS GOING ON IN THE INNOVATION

A lot of implications have already been given in previous pages concerning the interactions taking place in the educational innovation. It was found in this thesis that the interactions among people involved in the educational innovation are very important and placed highly in the teachers' views. Moreover, the collegiality and all the other interactions seem to be important for the promotion of change since within them, the teachers learn to co-operate, exchange experiences and ideas, and become 'competent change agents' in practice. A lot should be done in the fields of decision making, collegiality and INSET to open the system up to enable change to happen. The main conclusion is that the exchange of experience and the personal interactions are crucial and help the teacher feel comfortable in the setting and act as real change agent. The two way flow of ideas should be there in order to enable real communication. The teachers' role should be enhanced in every aspect of the interactions going on in the innovation. The focus of these implications is on the main interactions which proved to be crucial in the ICCPC setting; collegiality, decision making and INSET.

### COLLEGIALITY

- Regular meetings between the administrators and the teachers will enable both sides to gain a better understanding of the situation. Needs assessment should be a prime target of the administrators so as to anticipate negative attitudes.

- Regular meetings of the teachers themselves will promote the exchange of experience and ideas.

- Action research could be an answer to the problem of co-operation between the teachers and the administrators and also to the scientific evaluation of the innovative programme. This is a process of collaborative thinking and its adaptation is necessary for the improvement of the teaching and learning. It may also be thought of as a process through which schools can collaboratively adapt information technology to attain their important educational goals and instructional objectives. Teachers could work collaboratively on the pre stated plan, trying new practices within the innovation, discussing new developments with the administrators and among them.

- The Curriculum Development personnel, after preparing materials for the teachers, such as curriculum plans, guidelines, lesson plans and other instructions they should consult with the district co-ordinator to find out his views. The district co-ordinators should be the main source of immediate feedback to the curriculum people. In addition, they should inform the PI trainers to include their guidelines and instruction in the INSET seminars and make good use of them as well as get feedback from the teachers. There should also be an exchange of ideas about the content of the curriculum.

- The PI trainers should be in constant collaboration with the Curriculum development staff, informing them about the teachers' level of competency, but mainly about the teacher's needs. Exchange of ideas on the content of the seminars should also take place.

- In order to reinforce this collegiality among all the interested parties , this study suggests that academics from the newly established University of Cyprus should be involved in these procedures. More specifically, academics could be useful at the

decision making level, where the rationale of the innovation is elaborated and the planning of the innovation is done.

- If head teachers want to support and participate in change, they should support their staff by listening to their voices. By giving the teachers the opportunity to discuss their experience and problems, and trying to help them as much as they can, the head teachers could be change promoters too. The school head and the Inspector have been proved to be indifferent to the innovation, and therefore negative factors for success; It is implied that the head teachers need to:

1. move from the hierarchical form of management to a more participative democracy;

2. accept experimentation and allow time for debate about change;

3. open both their 'office doors' to the teachers and to let them be heard and open their 'ears' so they become active listeners, not passive ones;

4. exercise their power making syllabus more flexible, in order to enable teachers' participation in school level Decision making procedures.

5. promote School Based Management within their schools giving as much flexibility as possible both to the curriculum and the personnel.

In the following pages an attempt is made to differentiate the role of each of the interested parties in terms of the collaborative structure that teachers demand within the implementation of the innovation, by presenting a structure for teacher participation in the ICCPC programme. The diagram below illustrates the structure described hereafter.

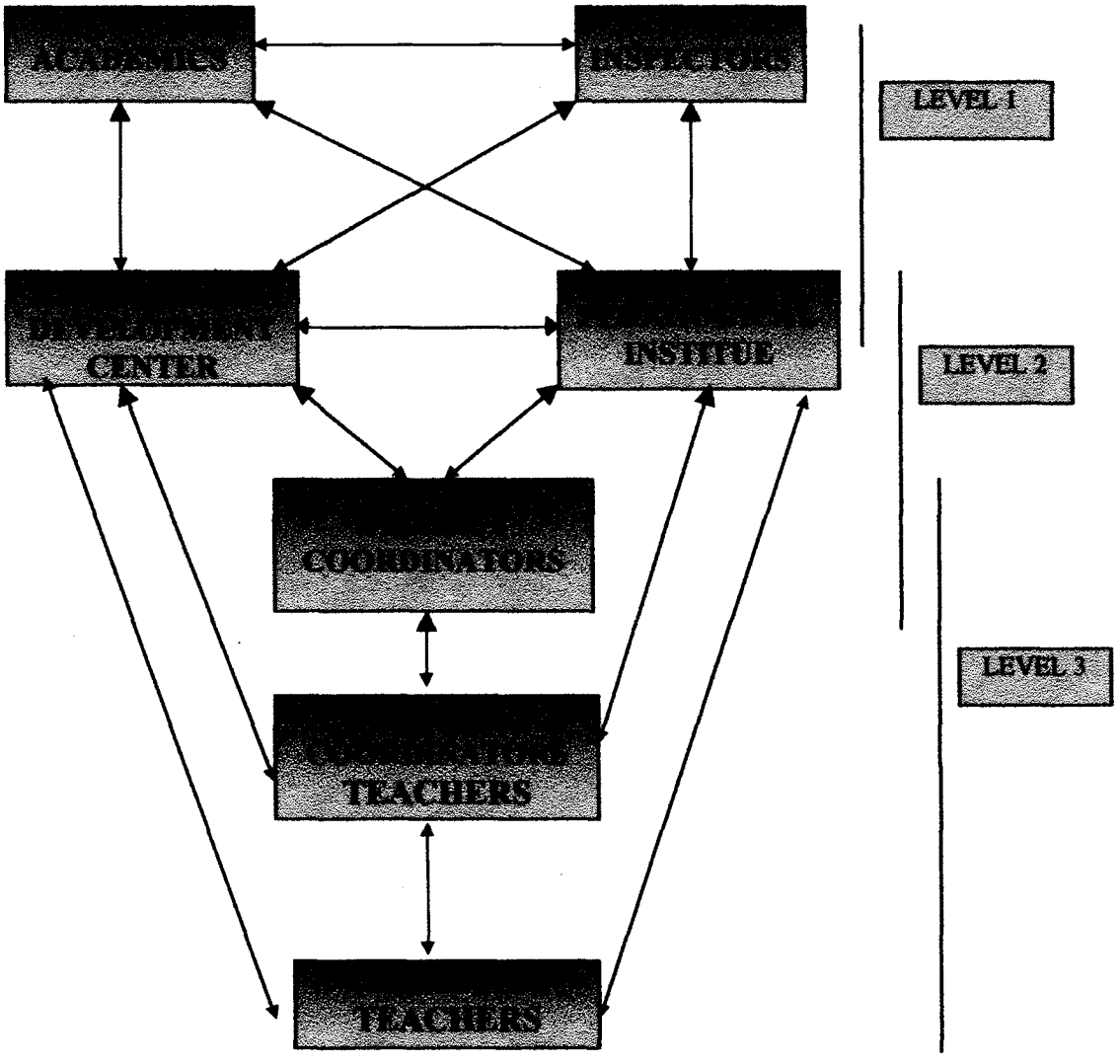


*Diagram 16. A model for collaborative working within the ICCPC*

**Level 1** ***Macro Level*** **(Academics, Inspectors, Curriculum development personnel, Pedagogical Institute staff)**

This is the team of people that ensures the **policy making** in the ICCPC. They are responsible for **quality** in the rationale and the planning of the innovation. This team consists of academics with respectable expertise in the subject, Inspectors relevant to the topic, the responsible Curriculum Development personnel and the PI trainers. All of them

have contact with the classroom teachers. The constitution of this team relies on collegiality among all the administrative parts on decision making levels . Moreover, it combines the theorists of the innovation with the planners.

Level 2 *Meso level* **( Pedagogical Institute, Curriculum Development and District Co-ordinators)**

This team is responsible for the **implementation** of the stated policy. The teachers' participation in this team is larger, as INSET trainers, Curriculum planners and Co-ordinators. This team is constantly co-operating with the school level teachers. The role of this team is to ensure appropriate policy implementation through INSET, Curriculum support and Co-ordination.

Level 3 *Micro Level* **(District Co-ordinators, School Co-ordinators and Classroom teachers)**

This team includes all the **practitioners** responsible for the stated policy and its implementation. It consists only of teachers, since they are the ones who put the innovation into practice. This team collaborates with all the others, directly with Level 2 and indirectly with Level 1. At all levels co-operation exists and the feedback is two way.

## INSET

As far as INSET is concerned, a lot of suggestions and conclusions emerged from the findings of this research.

It is important for the INSET courses to be planned by both the academics and the Ministry people (PI). It is equally important to be addressed to all the involved parties in order to promote common rationale and practice.

- The district co-ordinator's responsibilities should be to ensure the appropriate implementation of the innovation and to promote change. He should co-ordinate the practicalities of the implementation in each school under his authority and ensure appropriate use of the computers in each of those schools. INSET at the school level and locally (i.e. at all the schools in the district) is his responsibility as well.

- The Inspectors in the Pre primary and Primary Education should be informed about the content of the curriculum by the Curriculum Development staff, through their INSET courses (see above). In addition, they should be informed about the INSET courses taking place among the teachers and above all, about each school's involvement in the ICCPC.

- The school head needs to be aware of the ICCPC developments in his own school in order to offer personal if not expert support to the teacher. He should also act as a change agent at a theoretical level. He needs to be convinced about the value and the rationale of the innovation.

- Frequent INSET on the rationale and new developments in IT in education is essential. Regular short courses either in Cyprus or abroad will upgrade this group so that they can become real change promoters. Some technical skills should be provided to them so they can act as trouble shooters for the school teachers; this would extend the support they already offer.

- All the Inspectors should be regularly trained for general issues concerning innovation and specifically IT in education. Their attitude which often appeared to be neutral or even hostile, will be changed once they feel comfortable with the innovation.

Diagram 17 presents the implied structure of the INSET within the innovation.

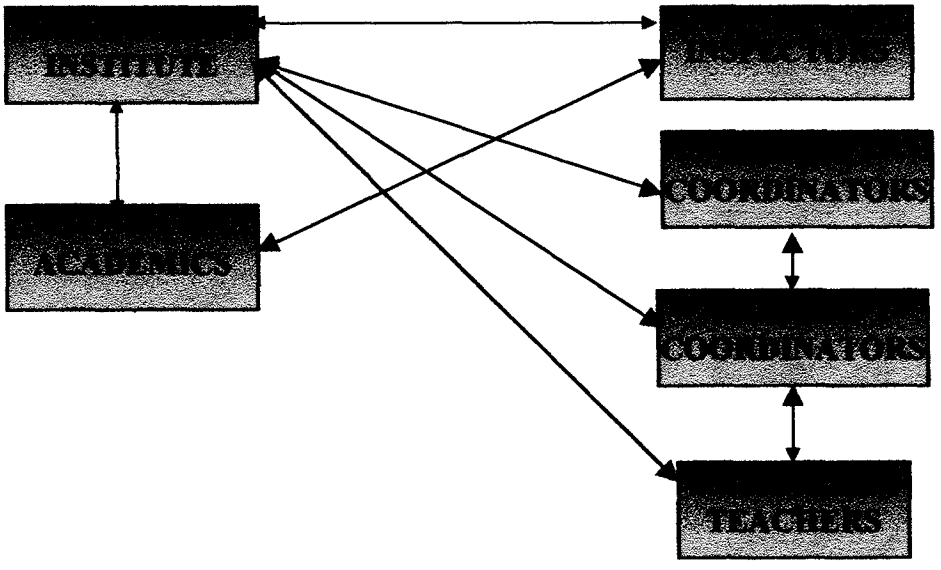


*Diagram 17: An INSET model*

## 10.2 THE 'KEY PERSONS' IN THE INNOVATIVE SETTING

The findings in this thesis carry implications for the key roles of the head teacher, the district co-ordinator and the Inspector.

Generally, the key people in this example of educational innovation have a dramatic impact upon the teachers' performance within the programme. Due to the centralised nature of the educational system in Cyprus, teachers' practice largely depends on these persons. Therefore, decentralisation, in the sense of giving more freedom to the teacher and access to responsibility within the innovation, could be the key to successful practice.

- School heads need to be less authoritarian and bureaucratic in order to enable decentralisation at the school level. More responsibility and credit to the teacher will bring a positive climate toward change.
- District co-ordinators' role is very important in the innovative setting and the teachers need it to be strengthened in order to be more practical. There should be more district co-ordinators' posts.
- The school Inspectors should be aware of the developments of the innovation in order to be able to act as 'motivators' to the teachers. Interest and understanding are all that the teachers ask from them.

## 10.3 THE STRUCTURE OF THE INNOVATION

- The role of the Committee responsible for the implementation of the innovation should be strengthened. As it is now, experts from both the PI and the Curriculum Development Service are involved in this Committee and also district co-ordinators. Teachers should be part of this committee and also academics. This committee should always be in collaboration with the other committees proposed in this study.

- The Implementation Committee is a part of the structure of the ICCPC that already exists. In addition to that, under the light of this research, is the inclusion of the teachers' representatives, and the school co-ordinators in it.

- A separate team of experts consisting of computer specialists, teachers, teacher trainers, and University academics should have the responsibility of software evaluation. In collaboration with the Curriculum Development personnel and the Pedagogical Institute (PI) staff, this team should be able to produce an outline for each software device on why, when and how it can be used in the classroom. The software evaluation committee which does not exist is essential to ensure quality in practice. Again, the co-operation between the Ministry people and academics is important.

- Free time should be given to the school co-ordinators in order to enable them promote INSET at the school level and an overall positive climate towards the successful implementation of the innovation. This will also allow them time for personal involvement with the innovation practicalities and trouble shooting practices.

- Rewards, basically on a personal level, and emotionally, should be given to all the teachers involved in the innovation, so as to promote motivation. The participation in meetings, seminars and INSET on school and broad level should be taken into account for the teacher's personal record either for promotion or for appraisal. In order to keep teachers in action, it is essential to reinforce them. A suggestive scheme of reward is given below.

***External - Organisational Rewards***

- Limited extra time for the classroom teacher for personal involvement with the innovation
- Extra time to the school co-ordinator to enable him to make use of his expertise and help others in the school or work for school organisational issues
- Enough and balanced budgets - equipment to all teachers involved
- Equal chances to INSET participation to all teachers involved
- Equal chances to decision making procedures within the school and out of it (participation in conferences, discussions, committees etc. )
- Support materials and guidelines to all teachers
- A certificate of attendance which can be used in a certain scheme of points for INSET participation.

***Internal - personal rewards***

- Emotional support and understanding:

  by the school head - interest

  by the school Inspector

  by the district co-ordinator

- Equal opportunity to present their work, on volunteer basis, to the Inspector,

conferences, other teachers and to the parents

- Opportunity to publish their work, projects, ideas
- Opportunity for the best teachers to act as school co-ordinators, district co-ordinators, or even, teacher trainers, if they are qualified.

The diagram below summarises the structure proposed here and elsewhere in this thesis, for both the administration and the implementation of the programme.

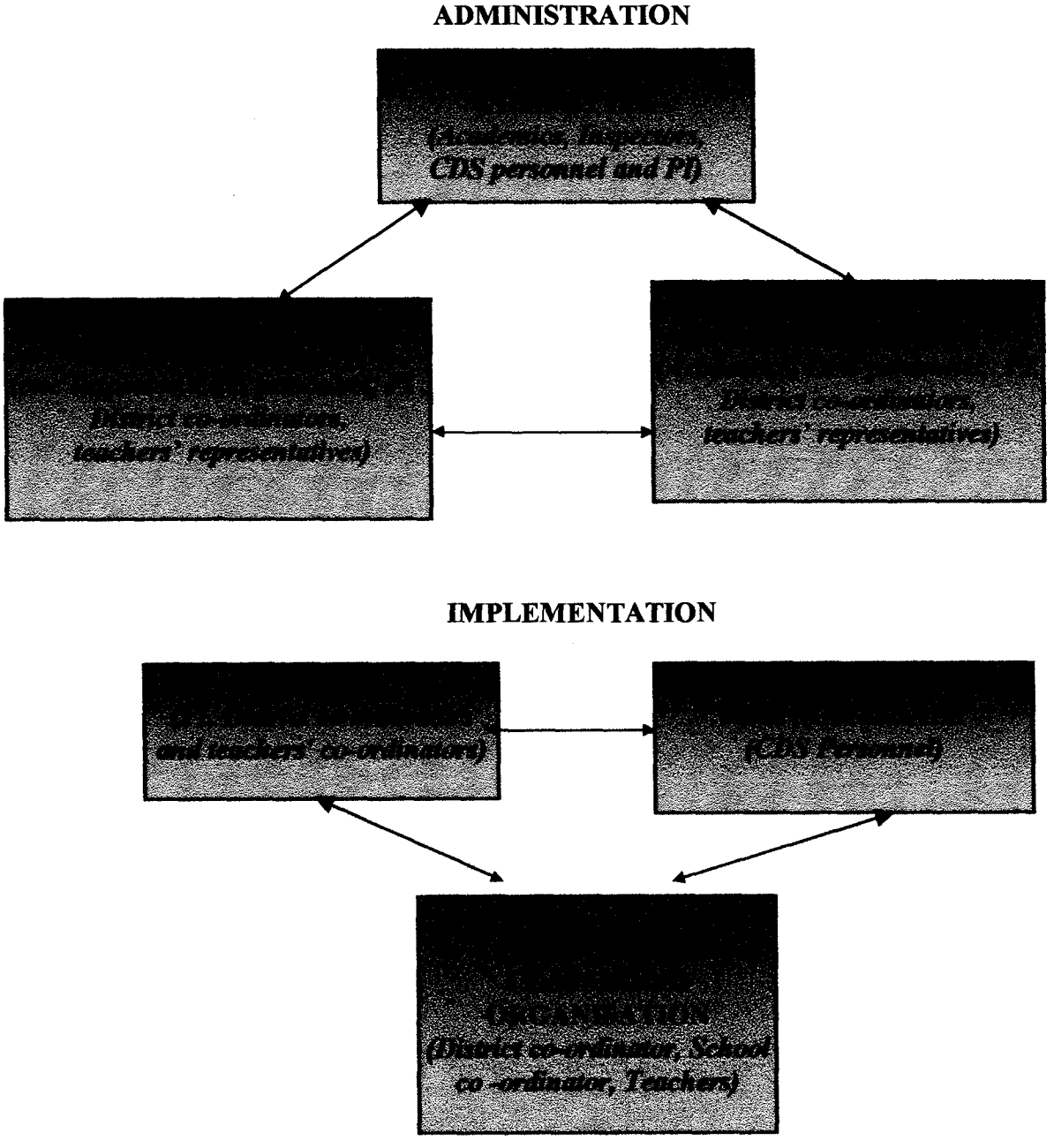


*Diagram 18: A model structure for the ICCPC*

## 10.4 THE LIMITATIONS OF THIS THESIS

After presenting the theoretical background of this thesis, its methodological plan, the results and the discussion on them, as well as the key implications emerging from it, it is useful to acknowledge certain limitations which should be in the reader's mind:

- The sample of the empirical research was small due to the small number of teachers who were involved in the ICCPC innovation. This makes generalisation somewhat insecure.

- The review of the literature was limited to certain references among lots of others in the fields of educational innovation and change; this was due to the effort to make the questions of the research as specific and narrow as possible.

- The instruments for the gathering of data in this study were constructed by the researcher herself in an attempt to limit the information needed only to the research questions. The construction of the instruments may therefore be subject to certain biases, although specific efforts were made to avoid this.

- The methods of data collection were restricted, due to practical reasons, to the questionnaire and the interview and were not widened up to other forms of direct contact with the teachers, i.e. classroom observations, diaries, etc. In any further research on curriculum development and the teachers within it, it is necessary to use other forms of data collection as well, in order to enable deep understanding of the settings.

- The researcher tried to act as an external agent seeking for information on the research questions. Although this was positive to the research since it ensured free and easy access to all the data, my involvement in the Ministry of Education and Culture as an INSET trainer, may have caused some bias or even negative feelings on the part of the teachers in this study.

- Cyprus is not a typical case of a country which is implementing an innovation in education. It is a relatively wealthy society with multiple problems in its structure which have their impact on education. The vision of the European Union which is warmly welcome in Cyprus produces extra problems nowadays due to all the effort currently being made to meet the criteria for entry into the EU. Therefore, the findings of this thesis may not easily suit any other educational setting at the stage of the implementation of an innovation.

However, despite the limitations set out above, the work undertaken here offers a unique view of curriculum development in a specific setting. As such, it will hopefully prove to be useful within its own context, and both relevant and interesting further afield as a description of the successes and failures of curriculum innovation in a given set of circumstances.

## 10.5 IMPLICATIONS FOR FURTHER RESEARCH

The present research study attempted to answer the pre stated research questions using original data and has concluded by bringing forward recommendations - implications for success. As with all such research, the results imply certain directions for further study:

- The programme and each one of its phases need to be evaluated on an ongoing basis both on an external and on an internal basis.

- Teacher's needs and all the interested parties' views should be regularly examined in order to ensure that all voices are heard in an effort to ensure successful implementation of the innovation.

- Research should be expanded on the total population of teachers in primary schools, whether they are involved in the innovation or not, in an effort to anticipate problematic situations and promote positive feelings among all the teachers.

- Research could be focused on the specific characteristics of the teacher who is capable of acting as a good change agent.

- Further research on the whole process of curriculum development and implementation could serve to make the process of reform more effective, to the benefit of students, educational professionals and the country as a whole.

## CONCLUDING COMMENTS

Main argument in this thesis is that the description of the teachers' feelings and views are crucial at the initial stages of innovative implementation, like the case of the ICCPC programme. It was supported by previous studies that teachers hold views that persist during innovations. Therefore, the investigation and awareness of the teachers' views needs to be clear in order to enable curriculum planners and administrators to avoid mistakes, anticipate barriers which became known through this study, and promote successful involvement of the teacher in the innovation. If we want change to happen in a wide range and through all levels of education, then these pioneer teachers need to be supported since they seem to be the ones who will bring change. A needs assessment and continuous contact with them will promote the anticipation of any problems. Research findings reveal that teachers are more likely to close down rather than to open up to experience, that is, their practice becomes more stable and resistant to change over time. Therefore, initial action is essential. Positive experience by these teachers who were the first to offer and who were voluntarily involved in the innovation will promote success. Negative attitude, bad experience and disappointment, which were found in this study will prevent ongoing effort and commitment of the teachers.

The empowerment of teachers as key change agents is the answer to the unsuccessful implementation of educational innovations. In this world of late modernity, multiculturalism and constant change, the teacher should be able to make her own decisions in a mature and responsible way. To let this happen, decentralisation, clearly defined policy and practical support should be promoted. The flexibility of the system in the 21st century demands both critical thinking and active involvement on the part of

teachers in the increasing range of innovations that will come.

Specifically for Cyprus, and for countries in similar situations, which struggle for their survival and try hard to be unique in the unified world of the future, this democratisation in education and the empowerment of the teachers is essential. The last words belong to one of the teachers who participated in this study:

> ***"I just want to feel free at work. I know it can make a difference, if they allow me to experiment and offer me help to do that. But, I do not know for how long I will be in the position to try and retry on my own".***

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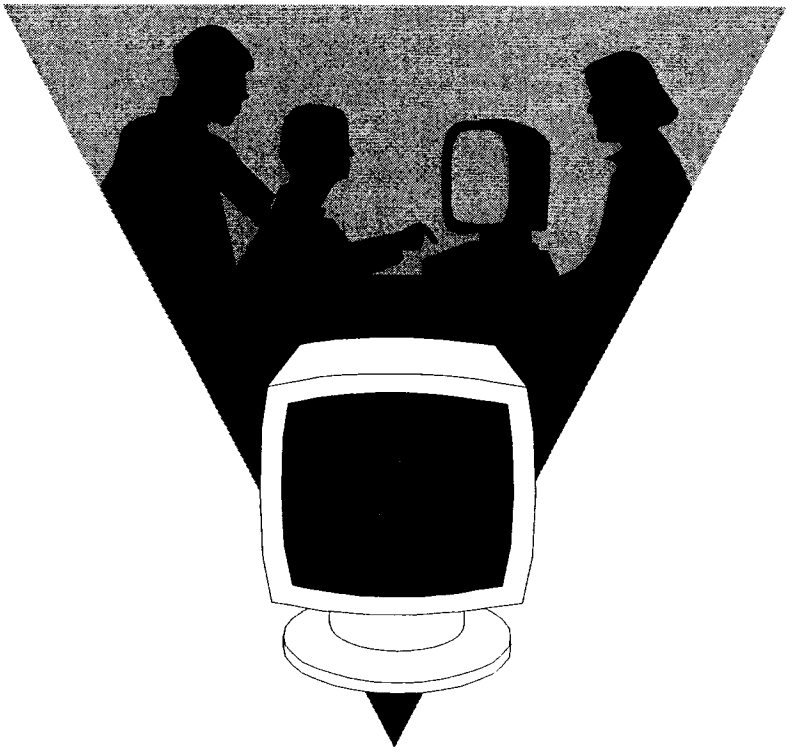
# APPENDIX I

## (Letter of transmittal and questionnaire)

**TEACHERS CONFRONTED WITH AN EDUCATIONAL INNOVATION:**
**THE CASE OF THE INTRODUCTION OF THE COMPUTERS INTO CYPRUS PRIMARY CLASSROOM (ICCPC)**



**QUESTIONNAIRE FOR THE TEACHERS INVOLVED IN THE ICCPC**

**Cyprus Pedagogical Institute**
**PO Box 12720**
**Nicosia 2252**

February 1997

**Dear Colleague,**

This questionnaire is addressed **ONLY** to teachers who participate in the "Introduction of the Computers into Cyprus Primary Classrooms" (ICCPC) programme.

If you participate in this programme, please, complete this questionnaire which aims at collecting the teachers' opinion and views concerning their own role in the ICCPC programme. Your opinion is of great importance, since you put this innovative programme into practice and you are aware of the strengths and weaknesses of its implementation.

The results of this survey will be sent to you as a report after the publication of the whole research programme which is a PhD thesis.

After you complete this questionnaire, please, send it to the Cyprus Pedagogical Institute to the address written above. If you have any questions or other comments which you would like to share with me about your involvement in the programme, please, do not hesitate to contact me.

Thank you in advance for your co-operation,

**Athena Michaelidou**
**Research and Evaluation Department**
**Pedagogical Institute of Cyprus**
**Tel: 02 -305933**
**e-mail: Athens@cyearn.pi.ac.cy**

**TEACHERS CONFRONTED WITH AN EDUCATIONAL INNOVATION: THE CASE OF THE ICCPC PROGRAMME**
**QUESTIONNAIRE**

***PART I. Please, circle the number or complete the answer which is the most appropriate for you, in the questions below.***

## *A. School Organisation*

1. How many computers are there in your school? .....

2. How many computers are there in your classroom? .....

3. Is there a computer lab in your school? Yes ☐ No ☐

4 .Is there a teacher in your school responsible for the use of the computers?

Yes ☐ No☐

5. If yes, are you the responsible teacher? Yes ☐ No☐

6. Is there a person responsible for the technical problems you face when working with the computers? Yes ☐ No☐

7. If yes, who is he (position)? .....

8. In what grades is the computer used in your school? **(please, circle)**

A' B' C' D' E' F'

9. The district co - ordinator visits your school:

Never ☐

Once a year ☐

Once a term ☐

Once a month ☐

Every week ☐ ☞

## *B. Classroom organisation*

1. In your own classroom you use the computer: **(tick the appropriate box )**

| | |
|---|---|
| every day | ☐ |
| once a week | ☐ |
| some days of the week | ☐ |

2. In your classroom you use the computer:

| | |
|---|---|
| in all lessons | ☐ |
| in specific lessons | ☐ |

☞

*Please, circle the number which is the most appropriate for you in the following statements.*
*(1=Not at all, 2=A little, 3=Enough, 4=Much and 5=Very Much).*

## *C. School head's role*

**The school head in your school:**

| | | | | | |
|---|---|---|---|---|---|
| 1. tries to be informed on what you are doing with the computer in your classroom | 1 | 2 | 3 | 4 | 5 |
| 2. is familiar with the programme | 1 | 2 | 3 | 4 | 5 |
| 3. organises staff meetings concerning only the use of the computer | 1 | 2 | 3 | 4 | 5 |
| 4. allows you time to work on the computer on your own | 1 | 2 | 3 | 4 | 5 |
| 5. allows you time to share your computer experiences with other staff members | 1 | 2 | 3 | 4 | 5 |
| 6. supports you emotionally on what you are doing with the computer | 1 | 2 | 3 | 4 | 5 |
| 7. believes that the computers help the students | 1 | 2 | 3 | 4 | 5 |
| 8. believes that the computers help the teacher | 1 | 2 | 3 | 4 | 5 |
| 9. believes that the computers upgrade Cyprus education system | 1 | 2 | 3 | 4 | 5 |
| 10. discusses with you the developments of IT in education | 1 | 2 | 3 | 4 | 5 |

☞

### *D. District Co-ordinator's role*

**The district co-ordinator:**

| | | | | | |
|---|---|---|---|---|---|
| 1. helps you with technical problems | 1 | 2 | 3 | 4 | 5 |
| 2. helps the school organisation concerning the computer use | 1 | 2 | 3 | 4 | 5 |
| 3. helps you with your classroom organisation for better computer use | 1 | 2 | 3 | 4 | 5 |
| 4. helps you with your lesson organisation | 1 | 2 | 3 | 4 | 5 |
| 5. informs you on recent developments of the ICCPC | 1 | 2 | 3 | 4 | 5 |
| 6. discusses with you the developments of the IT in education | 1 | 2 | 3 | 4 | 5 |
| 7. is interested in the problems you face with the ICCPC | 1 | 2 | 3 | 4 | 5 |
| 8. discusses with you your experience with the ICCPC | 1 | 2 | 3 | 4 | 5 |

### *E. The school Inspector:*

| | | | | | |
|---|---|---|---|---|---|
| 1. is informed about the innovation | 1 | 2 | 3 | 4 | 5 |
| 2. is interested in what you are doing with the computers in your classroom | 1 | 2 | 3 | 4 | 5 |
| 3. is interested in your experience with the computers | 1 | 2 | 3 | 4 | 5 |
| 4.discusses with you the developments of ICCPC | 1 | 2 | 3 | 4 | 5 |
| 5. offers support to you throughout your involvement with the ICCPC | 1 | 2 | 3 | 4 | 5 |

☞

## *F. Collegiality*

| | | | | | |
|---|---|---|---|---|---|
| 1. You share your experiences on the computers with other colleagues | 1 | 2 | 3 | 4 | 5 |
| 2. You help other teachers when they face problems with the computers in their class | 1 | 2 | 3 | 4 | 5 |
| 3. You are helped by other teachers when you face problems with the computers in your class | 1 | 2 | 3 | 4 | 5 |
| 4. You participate at local meetings on the computer use in the primary classroom | 1 | 2 | 3 | 4 | 5 |
| 5. You participate at seminars on the computer use in the classroom | 1 | 2 | 3 | 4 | 5 |

## *G. INSET*

**The INSET you had at the P.I. helped you:**

| | | | | | |
|---|---|---|---|---|---|
| 1. to cope with the technical problems you had using the computers | 1 | 2 | 3 | 4 | 5 |
| 2. to organise your lesson with computer use | 1 | 2 | 3 | 4 | 5 |
| 3. to organise your classroom for computer use | 1 | 2 | 3 | 4 | 5 |
| 4. to understand the rationale of the innovation (its aims and objectives) | 1 | 2 | 3 | 4 | 5 |
| 5. to understand when and how to use the computer in the classroom | 1 | 2 | 3 | 4 | 5 |
| 6. to get familiar with useful software | 1 | 2 | 3 | 4 | 5 |
| 7. to be able to evaluate software for use in your classroom | 1 | 2 | 3 | 4 | 5 |

☞

*H. Practical issues - materials*

**Would the following help you in what you are doing with the computers in your classroom?**

| | | | | | |
|---|---|---|---|---|---|
| 1. Written material on the rationale of the innovation | 1 | 2 | 3 | 4 | 5 |
| 2. Lesson plans based on the computer use | 1 | 2 | 3 | 4 | 5 |
| 3. School based seminars (e.g. sample lessons) | 1 | 2 | 3 | 4 | 5 |
| 4. INSET on the rationale of the innovation | 1 | 2 | 3 | 4 | 5 |
| 5. INSET on the technical issues of the computer use | 1 | 2 | 3 | 4 | 5 |
| 6. INSET on classroom and school organisation | 1 | 2 | 3 | 4 | 5 |

*I. Rationale of the innovation*

**Do you believe that:**

| | | | | | |
|---|---|---|---|---|---|
| 1. computers help the students? | 1 | 2 | 3 | 4 | 5 |
| 2. computers help the teacher in teaching? | 1 | 2 | 3 | 4 | 5 |
| 3. computers can improve teaching? | 1 | 2 | 3 | 4 | 5 |
| 4. computer upgrade Cyprus education? | 1 | 2 | 3 | 4 | 5 |
| 5. computers contribute to the entrance of Cyprus into the European Union? | 1 | 2 | 3 | 4 | 5 |

☞

**PART II: PERSONAL LEVEL**

*Please, circle the number which is the most appropriate for you in the following statements*

*(1=Strongly disagree, 2= Disagree, 3= Not sure, 4= Agree and 5=Strongly agree).*

**A. When working with the computer in the classroom:**

1. the lesson is easier 1 2 3 4 5
2. you enjoy the lesson 1 2 3 4 5
3. children enjoy the lesson 1 2 3 4 5
4. learning results are better 1 2 3 4 5

**B. As a teacher involved in ICCPC programme you expect:**

1. to learn more about technology 1 2 3 4 5
2. to implement successfully the ICCPC programme 1 2 3 4 5
3. to bring a change in Cyprus education 1 2 3 4 5
4. to be promoted soon 1 2 3 4 5

**C. As a teacher who is involved in the ICCPC programme you see yourself as:**

1. a good teacher 1 2 3 4 5
2. a modern teacher 1 2 3 4 5
3. a pioneer teacher 1 2 3 4 5
4. a future district co-ordinator of ICCPC 1 2 3 4 5
5. a future computer specialist 1 2 3 4 5
6. a teacher trainer for your colleagues 1 2 3 4 5
7. an educational change agent 1 2 3 4 5
8. a social change agent 1 2 3 4 5

☞

**D. Generally, you are satisfied with:**

| | | | | | |
|---|---|---|---|---|---|
| 1. the implementation of the ICCPC programme | 1 | 2 | 3 | 4 | 5 |
| 2. the support you receive in the programme | 1 | 2 | 3 | 4 | 5 |
| 3. your own contribution to the programme | 1 | 2 | 3 | 4 | 5 |
| 4. your students' results | 1 | 2 | 3 | 4 | 5 |
| 5. the rationale of the innovation | 1 | 2 | 3 | 4 | 5 |

## PART III: PERSONAL CHARACTERISTICS

1. Gender Male ☐ Female ☐

2. Years of experience: .....

3. Level of education:

   a. PAC graduate ☐

   b. BEd holder ☐

   c. Postgraduate degree holder ☐

   d. Other (specify).....

☞

**4. Have you attended the following seminars by the PI? (Please tick the ones you have):**

a. Introduction of computers in primary education - skills for use(D1702) ☐

b. Introduction of computers in primary education - applications (D 2703) ☐

c. Introduction of computers in the primary classroom - Multimedia ☐

5. Have you attended any seminars on IT in education in private sector?

Yes ☐ No ☐

6. Personal involvement with computers:

Not at all ☐

A little ☐

Enough ☐

Much ☐

Very much ☐

**M. Please, add any comments, suggestions or remarks concerning the application of the ICCPC programme and your involvement in it :**

.....
.....
.....
.....
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.....
.....
.....
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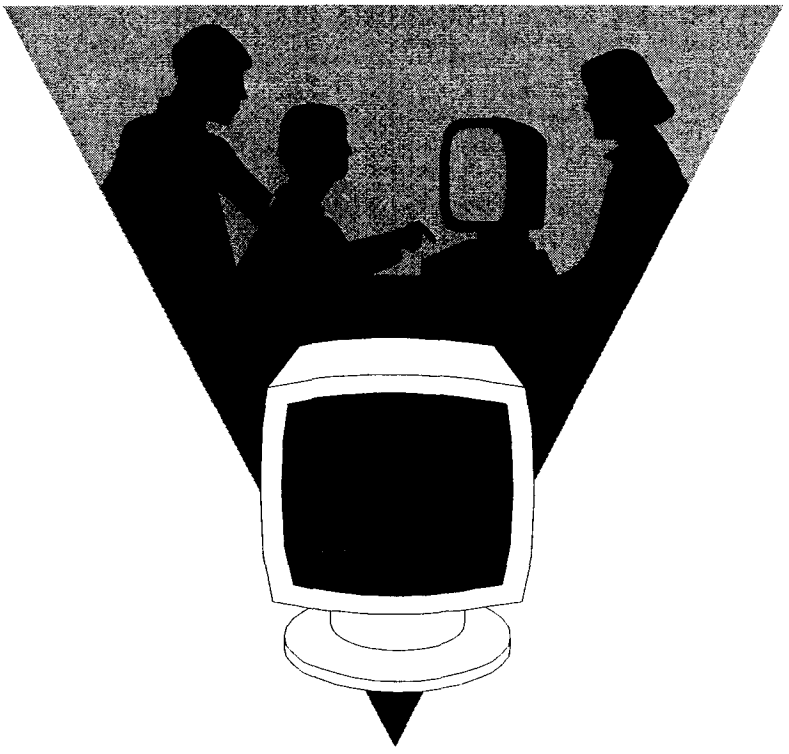
.....
.....
.....
.....
.....
.....
.....**Thank you so much for your help.**

✓

# Ο ΡΟΛΟΣ ΤΟΥ ΔΑΣΚΑΛΟΥ
# ΣΤΗΝ ΕΚΠΑΙΔΕΥΤΙΚΗ ΚΑΙΝΟΤΟΜΙΑ



## ΕΡΩΤΗΜΑΤΟΛΟΓΙΟ
## ΠΟΥ ΑΠΕΥΘΥΝΕΤΑΙ ΜΟΝΟ
## ΣΕ ΕΚΠΑΙΔΕΥΤΙΚΟΥΣ ΠΟΥ ΣΥΜΜΕΤΕΧΟΥΝ
## ΣΤΟ ΠΡΟΓΡΑΜΜΑ ΕΙΣΑΓΩΓΗΣ Η.Υ. ΣΤΗ ΔΗΜΟΤΙΚΗ

**ΥΠΟΥΡΓΕΙΟ ΠΑΙΔΕΙΑΣ ΚΑΙ ΠΟΛΙΤΙΣΜΟΥ**
**ΠΑΙΔΑΓΩΓΙΚΟ ΙΝΣΤΙΤΟΥΤΟ ΚΥΠΡΟΥ**

**ΤΟΜΕΑΣ ΕΡΕΥΝΑΣ ΚΑΙ ΑΞΙΟΛΟΓΗΣΗΣ**

Αγαπητέ/ή συνάδελφε,

Το ερωτηματολόγιο που έχεις στα χέρια σου απευθύνεται ΜΟΝΟ σε εκπαιδευτικούς που συμμετέχουν στο πρόγραμμα "Εισαγωγή Ηλεκτρονικών Υπολογιστών στη δημοτική εκπαίδευση".

Αν συμμετέχεις στο πιο πάνω πρόγραμμα, παρακαλείσαι να συμπληρώσεις το ερωτηματολόγιο που ακολουθεί, με σκοπό τη συλλογή πληροφοριών για το πρόγραμμα και συγκεκριμένα για το ρόλο του ίδιου του δασκάλου στην τεχνολογική αυτή καινοτομία. Πιστεύεται ότι η άποψή σου έχει μεγάλη σημασία αφού εσύ πρακτικά εφαρμόζεις την καινοτομία του Η.Υ. στην τάξη σου και είσαι σε θέση να γνωρίζεις τα πλεονεκτήματα και μειονεκτήματα της εφαρμογής αυτής.

Τα αποτελέσματα της παρούσας έρευνας θα σου κοινοποιηθούν πολύ σύντομα. Για τα αποτελέσματα παλαιότερης έρευνας σε παρόμοιο θέμα, σου αποστέλλεται συνημμένη η περίληψη για ενημέρωσή σου.

Αφού συμπληρώσεις το ερωτηματολόγιο, παρακαλώ, στείλε το στο Παιδαγωγικό Ινστιτούτο μέσω του συντονιστή της επαρχίας σου, ο οποίος είναι ενημερωμένος. Αν χρειάζεσαι οποιεσδήποτε πληροφορίες, μη διστάσεις να επικοινωνήσεις μαζί μου.

Ευχαριστώ πολύ για τη συνεργασία σου,

Αθηνά Μιχαηλίδου
Παιδαγωγικό Ινστιτούτο

τηλ: 305933 φαξ:480505
e-mail: Athens@cyearn.pi.ac.cy

# Ο ΡΟΛΟΣ ΤΟΥ ΔΑΣΚΑΛΟΥ ΣΤΗΝ ΤΕΧΝΟΛΟΓΙΚΗ ΚΑΙΝΟΤΟΜΙΑ

**ΜΕΡΟΣ Ι. Παρακαλώ κυκλώστε ή συμπληρώστε την απάντηση που ταιριάζει στην περίπτωσή σας στις πιο κάτω ερωτήσεις.**

## Α. Οργάνωση σχολείου

1. Πόσες συσκευές Η.Υ. υπάρχουν στο σχολείο σας;.....

2. Πόσες συσκευές Η.Υ. υπάρχουν στην αίθουσα διδασκαλίας σας;.....

3. Υπάρχει ξεχωριστή αίθουσα Η.Υ. στο σχολείο σας; Ναι ☐ Όχι ☐

4. Υπάρχει υπεύθυνος δάσκαλος για το πρόγραμμα "εισαγωγής Η.Υ. στη δημοτική" στο σχολείο σας;

   Ναι ☐ Όχι ☐

5. Αν ναι, είστε εσείς ο υπεύθυνος; Ναι ☐ Όχι ☐

6. Υπάρχει υπεύθυνος για τα τεχνικά προβλήματα που αντιμετωπίζετε στη δουλειά σας με τους Η.Υ.;

   Ναι ☐ Όχι ☐

7. Αν ναι, ποιος (ιδιότητα).....

8. Σε ποιες τάξεις χρησιμοποιούνται οι Η.Υ. στο σχολείο σας; (παρακαλώ κυκλώστε)

   Α' Β' Γ' Δ' Ε' Στ'

9. Ο συντονιστής της επαρχίας σας για το πρόγραμμα εισαγωγής Η.Υ. στη δημοτική, επισκέπτεται το σχολείο σας:

   Ποτέ ☐
   Μια φορά το χρόνο ☐
   Μια φορά το τρίμηνο ☐
   Μια φορά το μήνα ☐
   Κάθε βδομάδα ☐

☞

**B. Οργάνωση τάξης**

1. Στην τάξη σας χρησιμοποιείτε τον Η.Υ. (βάλτε √ όπου ταιριάζει)

Κάθε μέρα ☐

Κάθε βδομάδα ☐

Μερικές μέρες της βδομάδας ☐

2. Στην τάξη σας χρησιμοποιείτε τον Η.Υ. (βάλτε √ όπου ταιριάζει)

Σε όλα τα μαθήματα ☐

Σε ορισμένα μαθήματα ☐

☞

**Π. Στις πιο κάτω δηλώσεις παρακαλώ κυκλώστε τον αριθμό που ταιριάζει στην περίπτωσή σας**

## Γ. Ρόλος διευθυντή

**Ο διευθυντής του σχολείου σας:**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Ενημερώνεται για τη δουλειά που κάνετε με τους Η.Υ. στην τάξη σας | 1 | 2 | 3 | 4 | 5 |
| 2. | Ενημερώνεται για τις εξελίξεις του προγράμματος εισαγωγής των Η.Υ. στη δημοτική εκπαίδευση της Κύπρου | 1 | 2 | 3 | 4 | 5 |
| 3. | Οργανώνει συνεδριάσεις προσωπικού αφιερωμένες στην εισαγωγή Η.Υ. στη δημοτική | 1 | 2 | 3 | 4 | 5 |
| 4. | Επιτρέπει την ενασχόλησή σας με τους Η.Υ. σε χρόνο εργάσιμο | 1 | 2 | 3 | 4 | 5 |
| 5. | Επιτρέπει τη συζήτηση και ανταλλαγή εμπειριών με συναδέλφους σας για το θέμα των Η.Υ. | 1 | 2 | 3 | 4 | 5 |
| 6. | Σας προσφέρει υποστήριξη στην όλη προσπάθεια σας με τους Η.Υ. | 1 | 2 | 3 | 4 | 5 |
| 7. | Πιστεύει ότι οι Η.Υ. θα βοηθήσουν τον μαθητή | 1 | 2 | 3 | 4 | 5 |
| 8. | Πιστεύει ότι οι Η.Υ. θα βοηθήσουν το δάσκαλο στο έργο του | 1 | 2 | 3 | 4 | 5 |
| 9. | Πιστεύει ότι οι Η.Υ. θα αναβαθμίσουν την κυπριακή εκπαίδευση | 1 | 2 | 3 | 4 | 5 |
| 10. | Συζητά μαζί σας τις εξελίξεις γύρω από το θέμα των Η.Υ. | 1 | 2 | 3 | 4 | 5 |

☞

**Δ. <u>Ο συντονιστής της επαρχίας σας για τους Η.Υ.:</u>**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Βοηθά στα τεχνικά προβλήματα που αντιμετωπίζετε | 1 | 2 | 3 | 4 | 5 |
| 2. | Βοηθά στην οργάνωση του σχολείου σας για καλύτερη χρήση των Η.Υ. | 1 | 2 | 3 | 4 | 5 |
| 3. | Βοηθά στην οργάνωση της τάξης σας για καλύτερη χρήση των Η.Υ. | 1 | 2 | 3 | 4 | 5 |
| 4. | Βοηθά στην οργάνωση μαθήματος για καλύτερη χρήση των Η.Υ. | 1 | 2 | 3 | 4 | 5 |
| 5. | Σας δίνει πληροφορίες για τις εξελίξεις του προγράμματος εισαγωγής Η.Υ. στη δημοτική | 1 | 2 | 3 | 4 | 5 |
| 6. | Συζητά μαζί σας τις εξελίξεις γύρω από το θέμα της εισαγωγής των Η.Υ. στη δημοτική | 1 | 2 | 3 | 4 | 5 |
| 7. | Ενδιαφέρεται για τα προβλήματα που αντιμετωπίζετε στη δουλειά σας με τους Η.Υ. | 1 | 2 | 3 | 4 | 5 |
| 8. | Συζητά μαζί σας τις εμπειρίες σας με τους Η.Υ. | 1 | 2 | 3 | 4 | 5 |

**Ε. <u>Ο Επιθεωρητής του σχολείου σας:</u>**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Είναι ενημερωμένος για τις εξελίξεις του προγράμματος εισαγωγής Η.Υ. στη δημοτική | 1 | 2 | 3 | 4 | 5 |
| 2. | Δείχνει ενδιαφέρον για τη δουλειά με τους Η.Υ. στην τάξη σας | 1 | 2 | 3 | 4 | 5 |
| 3. | Ενημερώνεται για τις εμπειρίες σας γύρω από το θέμα | 1 | 2 | 3 | 4 | 5 |
| 4. | Συζητά μαζί σας τις εξελίξεις του προγράμματος εισαγωγής Η.Υ. στη δημοτική | 1 | 2 | 3 | 4 | 5 |
| 5. | Σας προσφέρει υποστήριξη στην όλη σας προσπάθεια με τους Η.Υ. | 1 | 2 | 3 | 4 | 5 |

☞

**Στ. <u>Συνεργασία με συναδέλφους</u>**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Μοιράζεστε τις εμπειρίες σας στους Η.Υ. με άλλους συναδέλφους σας | 1 | 2 | 3 | 4 | 5 |
| 2. | Βοηθάτε άλλους συναδέλφους σας όταν αντιμετωπίζουν προβλήματα με τους Η.Υ. στην τάξη τους | 1 | 2 | 3 | 4 | 5 |
| 3. | Βοηθείστε από άλλους συναδέλφους σας όταν εσείς αντιμετωπίζετε προβλήματα με τη χρήση Η.Υ. στη τάξη σας | 1 | 2 | 3 | 4 | 5 |
| 4. | Συμμετέχετε σε συνεδρίες προσωπικού αφιερωμένες στο θέμα των Η.Υ. | 1 | 2 | 3 | 4 | 5 |
| 5. | Συμμετέχετε σε σεμινάρια για τη χρήση των Η.Υ. στη δημοτική. | 1 | 2 | 3 | 4 | 5 |
| 6. | Ενημερώνεστε για τις εξελίξεις στο χώρο της χρήσης Η.Υ. στη δημοτική εκπαίδευση | 1 | 2 | 3 | 4 | 5 |

**<u>Ζ. Επιμόρφωση</u>**

**Η Επιμόρφωση που είχατε στο Π.Ι. σας βοήθησε στα ακόλουθα:**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Στην επίλυση των τεχνικών προβλημάτων που αντιμετωπίζετε με τους Η.Υ. στην τάξη σας | 1 | 2 | 3 | 4 | 5 |
| 2. | Στην οργάνωση μαθήματος με τη χρήση Η.Υ. | 1 | 2 | 3 | 4 | 5 |
| 3. | Στην οργάνωση της τάξης με τη χρήση Η.Υ. | 1 | 2 | 3 | 4 | 5 |
| 4. | Στην κατανόηση της φιλοσοφίας/θεωρίας που διέπει την εισαγωγή Η.Υ. στη δημοτική | 1 | 2 | 3 | 4 | 5 |
| 5. | Στην κατανόηση του πού και πότε να χρησιμοποιείτε τον Η.Υ. στην τάξη | 1 | 2 | 3 | 4 | 5 |
| 6. | Στη γνωριμία με λογισμικό | 1 | 2 | 3 | 4 | 5 |
| 7. | Στην αξιολόγηση λογισμικού για χρήση στην τάξη. | 1 | 2 | 3 | 4 | 5 |

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## Η. Βοηθητικό Υλικό

**Πόσο θα σας βοηθούσαν τα ακόλουθα στη δουλειά που κάνετε με τους Η.Υ.;**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Γραπτό υλικό που να αναλύει τη φιλοσοφία της καινοτομίας | 1 | 2 | 3 | 4 | 5 |
| 2. | Σχέδια μαθήματος βασισμένα στη χρήση του Η.Υ. | 1 | 2 | 3 | 4 | 5 |
| 3. | Σεμινάρια σε σχολική βάση (π.χ. δειγματικές διδασκαλίες) | 1 | 2 | 3 | 4 | 5 |
| 4. | Σεμινάρια επιμόρφωσης για τη φιλοσοφία της καινοτομίας | 1 | 2 | 3 | 4 | 5 |
| 5. | Σεμινάρια επιμόρφωσης για την τεχνική πλευρά της χρήσης των Η.Υ. | 1 | 2 | 3 | 4 | 5 |
| 6. | Σεμινάρια για την οργάνωση της τάξης και του σχολείου για τη χρήση των Η.Υ. | 1 | 2 | 3 | 4 | 5 |

## Θ. Σκοποί και φιλοσοφία της καινοτομίας

**Πιστεύεις ότι;**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Ο Η.Υ. θα βοηθήσει το μαθητή | 1 | 2 | 3 | 4 | 5 |
| 2. | Ο Η.Υ. θα βοηθήσει το δάσκαλο στη διδασκαλία | 1 | 2 | 3 | 4 | 5 |
| 3. | Ο Η.Υ. μπορεί να αλλάξει τον τρόπο διδασκαλίας του δασκάλου προς το καλύτερο | 1 | 2 | 3 | 4 | 5 |
| 4. | Ο Η.Υ. θα βοηθήσει στην αναβάθμιση του κυπριακού εκπαιδευτικού συστήματος | 1 | 2 | 3 | 4 | 5 |
| 5. | Ο Η.Υ. θα βοηθήσει στην ομαλή ένταξη του κυπριακού εκπαιδευτικού συστήματος στο ευρωπαϊκό | 1 | 2 | 3 | 4 | 5 |

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## II. Προσωπικό επίπεδο

**Α. Όταν δουλεύεις με Η.Υ. στην τάξη:**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Είναι ευκολότερο το μάθημα | 1 | 2 | 3 | 4 | 5 |
| 2. | Το απολαμβάνεις | 1 | 2 | 3 | 4 | 5 |
| 3. | Τα παιδιά το απολαμβάνουν | 1 | 2 | 3 | 4 | 5 |
| 4. | Τα αποτελέσματα στη μάθηση είναι καλύτερα | 1 | 2 | 3 | 4 | 5 |

**Β. Ως δάσκαλος που συμμετέχει στο πρόγραμμα εισαγωγής Η.Υ. στη δημοτική εκπαίδευση, βλέπεις τον εαυτό σου:**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Ως καλύτερο δάσκαλο | 1 | 2 | 3 | 4 | 5 |
| 2. | Ως μοντέρνο δάσκαλο | 1 | 2 | 3 | 4 | 5 |
| 3. | Ως πρωτοπόρο δάσκαλο | 1 | 2 | 3 | 4 | 5 |
| 4. | Ως μελλοντικό συντονιστή για το θέμα των Η.Υ. στη δημοτική εκπαίδευση | 1 | 2 | 3 | 4 | 5 |
| 5. | Ως ειδικό στη χρήση του Η.Υ. | 1 | 2 | 3 | 4 | 5 |
| 6. | Ως εκπαιδευτή άλλων δασκάλων για τη χρήση του Η.Υ. στη τάξη | 1 | 2 | 3 | 4 | 5 |
| 7. | Ως φορέα εκπαιδευτικής αλλαγής, καινοτομίας | 1 | 2 | 3 | 4 | 5 |
| 8. | Ως φορέα κοινωνικής αλλαγής γενικά | 1 | 2 | 3 | 4 | 5 |

**Γ. Ως δάσκαλος που συμμετέχει στο πρόγραμμα εισαγωγής Η.Υ. στη δημοτική εκπαίδευση, αναμένεις:**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Να μάθεις περισσότερα γύρω από την τεχνολογία | 1 | 2 | 3 | 4 | 5 |
| 2. | Να συμβάλεις στην επιτυχία του προγράμματος | 1 | 2 | 3 | 4 | 5 |
| 3. | Να φέρεις κάποια αλλαγή στην εκπαίδευση του τόπου μας | 1 | 2 | 3 | 4 | 5 |
| 4. | Να ανελιχθείς σύντομα στον εκπαιδευτικό χώρο | 1 | 2 | 3 | 4 | 5 |

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**Δ. Γενικά είστε ευχαριστημένος/η**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Με την εφαρμογή του προγράμματος εισαγωγής Η.Υ. στη δημοτική | 1 | 2 | 3 | 4 | 5 |
| 2. | Με τη βοήθεια/υποστήριξη που λαμβάνεις για το πρόγραμμα | 1 | 2 | 3 | 4 | 5 |
| 3. | Με τη συμβολή σου στο πρόγραμμα | 1 | 2 | 3 | 4 | 5 |
| 4. | Με τα αποτελέσματα των μαθητών μέσω της χρήση Η.Υ. | 1 | 2 | 3 | 4 | 5 |
| 5. | Με τους στόχους του προγράμματος Η.Υ. στη δημοτική. | 1 | 2 | 3 | 4 | 5 |

## ΙΙΙ. Προσωπικά στοιχεία

1. Φύλο Άντρας ☐ Γυναίκα ☐

2. Χρόνια Υπηρεσίας .....

3. Επίπεδο μόρφωσης

α) Απόφοιτος ΠΑΚ ☐

β) Απόφοιτος Πανεπιστημίου ☐

γ) Κάτοχος μεταπτυχιακού διπλώματος ☐

δ) Άλλο.....

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4. **Παρακολούθηση σεμιναρίων του Π.Ι. για τους Η.Υ. (σημειώστε με τα σεμινάρια που έχετε παρακολουθήσει)**

α) Εισαγωγή των υπολογιστών στη δημοτική εκπαίδευση - δεξιότητες χρήσης (Δ1702) ☐

β) Εισαγωγή των υπολογιστών στη δημοτική εκπαίδευση - Εφαρμογές (Δ2703 ☐

γ) Εισαγωγή των υπολογιστών στη δημοτική εκπαίδευση - Πολυμέσα ☐

5. Παρακολούθηση σεμιναρίων για χρήση του Η.Υ. αλλού (π.χ. στον ιδιωτικό τομέα)

Ναι ☐ Όχι ☐

6. Προσωπική ενασχόληση με τον Η.Υ. στις ελεύθερες σου ώρες Καθόλου ☐

Λίγο ☐

Αρκετά ☐

Πολύ ☐

Πάρα Πολύ ☐

5. **Παρακαλώ σημείωσε οποιαδήποτε σχόλια, παρατηρήσεις ή εισηγήσεις σου για το θέμα της Εισαγωγής Η.Υ. στη δημοτική εκπαίδευση.**

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. .....

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**Σε ευχαριστώ πολύ για τη βοήθειά σου.** ✓

# APPENDIX II

## (A sample translated interview and a sample data matrix)

## INTERVIEW TWO (2)

### 32, MALE, PI seminars, Private sector seminars

R- How long have you been involved in this ICCPC programme?

T- 4 years now at the same school.

R-How much do you personally involve yourself in the ICCPC?

T- Very much...I don't have time for my family...

R - Are you satisfied with this programme?

T- No.

R- Why? Why have you been involved in this programme?

T- Because I liked this adventure, the world of the computers, the potential it gave me in various aspects of my life: education, information, communication, etc.

R- As a person..

T- Yes, personally I use it a lot. And when I saw that this innovation was getting into the school, I said, that's an opportunity, since I work on the computers I deal with them, I have the knowledge and experience, why not use them to help in this ?I believed and I still believe that the computer can help a lot in education if it is used in a different way that it is used today.

R- What do you mean?

T- The way of teaching...from the teachers' desk, or the group work,... the computer can give different dimensions to teaching, it can expand... to help the students and the teacher more. I do not believe that the teacher is who knows everything...he is human...he has limited knowledge...he makes mistakes, he learns through his mistakes...you can learn through your students...especially with the computers, it is a topic that you cannot say I know it. And you always learn...either on your own.. reading studying, or from the students themselves...there was a case that I learnt something I did not know from a student. And he accidentally discovered that ...in the school...

R- Do you enjoy your work with the computers at school?

T-Not as much as I would like to.

R- Why?

T- The reason is... (hesitates) that the number of students in the classroom is very big... I feel pressure about the syllabus I have to cover ...on the other hand...you do not have something specific to do...we have left the topic like "computers in the classroom" to hang there...and they have only gave a very general frame of what we might have done with the computers and not something concrete and important. when they tell you, "here is the word processor", to do what with it? To teach the students how to write composition on that? That's not possible! OK. The student can acquire the skill to write one or two sentences, I can understand that. But not for computers...

R- Why not?

T- He needed to have a certain speed in typing to do that. To know how to type. And they say, here is a school, you are responsible to teach him other things, not to help him how to type...so it is not considered to teach that.

R- Would you see it as a separate lesson, when you could teach them how to use the computers?

T- Not exactly...anyway, the lesson should involve that kind of knowledge and skills as well. At first skills and when the student felt ready and comfortable to use the keyboard, then ...If he will write a composition at this age, he would not write it on the computer...he would write it on the paper, write and erase, play with his ideas. Other things could be there on the computer. he could ask for information, to retrieve knowledge ...we need the software to do that. Right now, we do not have them, or those we have are very limited, misused. teachers might not have the time to use them...their knowledge might be limited...

R- Are you familiar with the rationale of the innovation?

T- I believe I am but I was based on my own reading...no one ever told me anything aboutr this.

R- How do you see the rest of the teachers?

T- There are different categories of teachers...one of them is those that do not care at all. 'Don't tell me about computers'. The other one views the computer as one innovation that

has future...they see it as something new and they will earn something of it if they show interest. They have other aims by saying ' I know computers'. But they never put any effort in the ICCPC, since they say they don't need this, they know it. There is the other category which sees that the computer is something valuable, worth trying, but they know nothing about it...they are afraid of it because they don't know it...and they are afraid if any student knows more than them and they become uncomfortable...and I say 'what if he knows more? it is an opportunity for you to learn...'.and this is something you can see between those that know how to use the computers. 'Computer people' do not see you what you know to judge you...they exchange ideas...And there is this category with teachers that are interested, they try to make things happen,...or they have more knowledge...

R- In which category are you?

T- I would like to believe that I am with those who are interested...very few people are in the fourth category...even those who meet the computer and get to know them...they are afraid or they don't want to use it...

R- So do you believe that there are people with different motives getting into the innovation...

T- Yes. Since Cyprus the educational system is too small, we know each other, we believe, some of us, that if we show that we know some things then this will be counted for an early promotion, or to be transferred into another post of education...or at least they can say that they have opinion on these issues. Because, unfortunately, there are people that know little about the computers and they are members of committees that are important for the decision making ...and they do a very bad job.

R- Do you believe that the computer will help the educational system here?

T- Yes. If we continue like today, it will help in the very far future...because we move like the turtle.

R- How can we help it?

T- I am afraid that the pace of the change is very slow...some people that can and know how to help are prevented by the top, by the system, so they cannot help.

R- You are talking about teachers?

T- Yes, I believe that there are , but the variety of duties prevents them...then the Ministry is negative...and the Secondary school is negative towards the primary...I know facts that's why I tell you... I know that some efforts stop from the top of the Ministry...

R- Do you believe that the ICCPC will bring some change?

T- No.

R- Do you believe that the teachers have the opportunities to respond to this involvement, to give a feedback of what they do with the computers.

T- No. I was asked by the co-ordinators...I told them, they told others above them but that's it. I think that it stays there.

R- Why?

T- The main reason is the financial situation. The computers are in the school not as a lesson...just as a tool...

R- Do the children enjoy their work with the computers?

T- Of course...sometimes the bell rings and they do not like to go for a break..

R- Do they learn though the computers?

T- Weak students learn easier.

R- Is the teacher helped from the computers? Why? How?

T- Yes. I use them to find information for several issues. To present my work to the teachers and the staff better. And I can have better lessons through the computers. The children think of it as a game, so they learn easily, but the teacher...they don't see him like that.

R- Are you helped by the software to make the lesson as you like?

T- The software is too little. There are very few programmes. Although there is great interest from private computers for the programmes, (especially from Greece) to create educational software...there is no perfect software...I tried on my own to see software, evaluate it and show it to the CDU...I spent three months on work, money for calls etc...I went to Greece to find people...and at last...they said no that is not appropriate...OK. it is not ...first of all you have not seen it all, then, wait that a programme is totally useful, you will take its positives,...those that are positive to me might be negative to you...if you find something better, use it., find ways to make the children learn better.. So you cannot say for a programme that it is no good. ( he gives an example about LOGOMATHIA). See it...don't be negative...And when he said its no good, it was the first school that took it.

We could ask the parents to buy software, but then they say...who says that you are going to be here next year? Will the next teacher be able to use it? If there was a programme about teacher transfer that assure people that I will to another school that also has computers...to continue...I could be informed...INSET seminars should be about getting to teachers informed about new applications. Ideas about how to use each programme...because they cannot say this programme you should use it like that...each of us can and might have different ideas even better ones...

R- What is the parents' reaction in your school?

T- There is positive and negative reaction.

R- How is that?

T- There are parents that realise the value of the computer and what can it offer to the pupils, most of them see it in their work, they are educated... or they even use it in their work. Some of them have it at home...they don't want their children to play on the computer, they want them to learn through it...But there are parents who think that it is a waste of time...a game...In my school, some parents had complains about the Internet use by the children...They were afraid whether they were controlled...but that cannot be a problem since it is always in good control...no other reaction than that.

R- Are you officially connected to the Internet?

T- No. But, I decided that I will not wait Mr X and Mr Y to decide whether I would use it or not...so I informed the parents about this educational programme on the Internet...and although the ministry decided to use it forgot it...but I will not wait them to decide on something I find positive and helpful...

R- Do you study on your own...about the computers?

T- I try to.

R- Has the PI helped you on your personal competence with the computers?

T- Yes, it helped me somehow, But not to the degree I would like to. INSET on programming was good...I was interested in that...but it will not be continued. The priorities are different...I believe that if the teachers could prepare, at the PI, a software, that would not match the economic interests of many people.

R- What kind of training would you expect from the PI?

T- On programming issues, to get deeper in issues I already studied...not the surface I see now at the PI. To see the teacher involved in the programming...something not very easy. It needs special interest and special knowledge...We need specialities in there not just the teacher...like one software from a teacher here...it is not user friendly...but it was bought from the Ministry and distributed to schools. I do not use it at all.

R- What are the most important problems you face in the ICCPC?

T- Firstly, the number of children...then, the equipment...it is important to buy the right machine so it will not be out of date in a few months...the way to order the machines here leads me to the conclusion that either the people who handle this procedure are

indifferent...or there are interests -economical. (gives example) . You cannot sacrifice quality for money. You can order for future models, not the old ones...

The basic problems are that. Then, it is the problem of communication between all the interested parties on what should be done. Common policy on the ICCPC. What should be taught. Some programmes, ...where should these be integrated?...How? They leave the teacher alone to how to use it whenever she wants and likes to....

R- How would you see it work?

T- I would prefer a seminar that aimed to show us a programme, let us work on it, suggest ways of using it...and when we listen to a lot of things...we will use it and see the results. This is something I haven't seen so far.

R-How do you see school based seminar?

T- It happened in my classroom. We showed software to the staff there, they never got interested after that. The same teachers are interested in the innovation as before. They only showed interest because they would get a certificate for their participation. Meetings should happen often...at a regular time so that feedback to the teachers would exist. We spend staff meetings to show them the software...nothing. I saw old teachers thinking..."he has only 10m years of service..."how will I seat and listen to him when he has 30 years of service"? It takes from their time, it is trouble for them.. What will I earn out of it? It is not time to learn other things...

Some teachers use the ICCPC INSET to go to the school they like and then they do not use the computers.

R- How do you see the head's support?

T- In words, he helps,...he is positive.. But in practice...he never touches the computers, he is also afraid of them... We asked for extra time about the computers, to solve problems or help teachers...in other schools there was time...so we asked him. He asked the Inspector...he said no...he did nothing about that although he promised.

R- How could he act?

T- He could give this time out of his own. He has a lot of free time...Instead I lose all my free time. I have no breaks...Though, when we do projects on the computers he rushes to file them so he can show them to the inspector...

R- What about the co-ordinator?

T- Yes, but if others above her do not...what can she do? she cannot decide.. She visits us, asks how things are going...

R- What is her role in the ICCPC?

T- To help you, discuss with you...

But there is no time...

R- What about the technical problems?

T- We discussed this a lot at a meeting of co-ordinators, we asked for maintenance ...nothing. We expect each company, where they can to come for the service/...I called them for a problem I have, they never solved it...there is no support...Do I have to be a technician? Even though I try, I do not think it is my responsibility...

R- What about the Inspector?

T- Although he admits that he has no knowledge...he is positive...he shows interest...he never says no. He has no time though...

R- Do you co-operate with other teachers?

T-I ask for co-operation...but nothing. Since I am the technology teacher, I ask them to prepare work with their children, choose topics and come to use the computer (the students) to send their work on the Internet , communicate with other children...I will show them how.

Only one teacher was interested...They feel bored...I try to convince them...like marketing ...I put a board in the school , put work from the Internet, to motivate them...nothing. I put pictures from the Internet...so it was colourful...etc., teachers saw them 'how nice...' but that's it. I even send things to others from my classroom. A few children from other classrooms showed interest...but nothing much. I hope things will change.

R- Do you worry about the innovation?

T- Yes...sometimes, I have the impression that the computers will be like the big Russian TV sets that we used to find in the schools ...in a dusty corner...Then, I say, things must change...this is something different.

R- Why do you feel like that?

T- Seeing what happens...that people that should care do not. How they see us...the committees for the decision making...they might invite young people with some extra knowledge in there...we discuss and at the end they do what they want. Preconceptions,...when all those are removed I hope things will change.

R- So you feel that things will change...

T- Yes...I want to believe that the progress will not act against the innovation...the interests will not cover everything...underestimating the innovation. They will have to change things even if they don't want to...

R- Change to what? What is your vision?

T- Let the computer offer as much as it can. The computer can never replace the teacher, but...they see the machine winning so they are afraid...they do not understand...

R- How do you see yourself in the programme?

T- As a 'paraphony'.

R- Why?

T- Because I see myself as the one eyed among the blinds. And being one eyed is worse than being blind, since you realise what happens...and now I believe that I am half educated person...and this is worse.

R- You are not expected to know everything...

T- No... I am not by I do not feel I know enough...

R- What can be done?

T- I need to work on my own. That's the only solution..

I would like to get more educated on the computer programming...

R- What would that offer to you?

T- Personal satisfaction... nothing else.

R- why are you in the programme?

T- I like it.

R- How do you see yourself in ten years in the programme?

T- I don't even think about it.

R- What is expected of you in the programme?

T- To expect something means that they know what they want from me which is something that they don't. They haven't even imagined what this innovation could offer and they haven't even planned anything...how do they know what they expect from me? There is no policy...or at least there might be but I don't know it.

R- Do you understand the aims and the objectives of this innovation? the Rationale?

T- What they ask, yes...I believe I know that...but...why? I think that the message is not clear...I got the message that we use the computers to show that we are modern system...to show to the others, the world... they entered schools suddenly without any background, structure or organisation...how can this work out? Have those teachers known what they are doing? Is that clear? It is a chaos.

R- How can this involvement of yours help you as a teacher?
T- ....

R- Do you feel different from the others?
T- I haven't thought about it...perhaps it is like that...I am known. I try not to be shown anywhere.

R- Would you like to be part of the decision making procedure/
T- I do not consider myself capable of taking decisions. There are others who can...I have my knowledge on my own due to my own reading...I am not qualified unfortunately...So I do not expect anything out of it...I don't wait to have qualifications to gain something...and then there are people with knowledge and qualifications...who are not used...they are afraid of them...

R- How will this innovation succeed?
T- People who know the subject well should be at the decision making posts...

R- If you were responsible for the programme, how would you organise it?
T- It is very difficult... Firstly we should decide on what we want to do. And for what we want to do we should have our helpers ready to do it...,not let it up to the teacher to do everything... Teacher is a professional, needs training, right training...not wait for them to waste their time to learn on their own...
We are far behind the ideal...if the teacher's mentality does not change...

R- Do you think that the teacher himself can help the innovation?

T- If they let the teacher act freely, yes...I think they prevent the teacher...so he says...'what's the point in trying'?

I think that we have teachers to help but we vanish them...on purpose,...

I know a teacher that could work seriously and integrate the software into his lesson. So the learning was better...I followed him...but ...you need knowledge but this fellow had the knowledge and he did it. In my classroom, I want to use software, but parents will say...'they are not working in here, they are playing'...in the other school they covered these lessons...and the students are a lot...some of them do not work...

R- Do you need anything else in the ICCPC?

T- Yes. I want to know that there are these possibilities...that people know what there is there in the software...

R-Do you want to add something?

T- I do not know if I see everything black. Someone else might be more optimistic...but that's the way I feel...I would like more help....not leave everything to the teacher alone. I need someone to tell me...here you are this is the software...you can use it here and here...you can organise your work like this and this...I need more information about the organisation, the practicalities...to save money.

R- Do you see yourself as a modern teacher?

T-No.

R- Do you see yourself as an innovator? Change agent?

T- Yes... The reason for attending the PI seminars was this. To move out of the routine. I am not lying...It is something different...It is a way out ...But I don't consider myself as a pioneer...no. So I got into my routine...I do not show off...seminars help me do something different...for 15days and then back to the routine...

R- Is there anything else that you would like to add?

T- No. I don't think so.

R- Thanks a lot, A. You have been very helpful.

## DATA MATRIX FOR THE INTERVIEW -CASE TWO (2)

*ORGANISATIONAL LEVEL*

| RATIONALE | SCHOOL HEAD | CO- ORDINATOR | INSPECTOR | COLLEGIALITY | INSET |
|---|---|---|---|---|---|
| • Not clear aims | • Support but not actual help | • Support | • Negative impact on ICCPC | • Wants others to get involved | • Helpful enough |
| • He believes in the value of ICCPC | • No knowledge | • Not enough time to actually help | • General positive attitude | • He believes in collegiality | • More organisational and practical issues needed |
| • He finds himself confused about the rationale | • Not informed about the developments of ICCPC | • Positive general attitude | • No knowledge | • He works on his own now, trying alone | • He needs more training |
| • ICCPC is good for the weak students | • He is only using the innovation to 'show off' | • Not enough authority to make a difference | • Not informed about the developments of ICCPC | • He seeks for help from anyone | • He believes in continuing training |
| • He wants regular time in the timetable | | | | • Meetings between teachers are necessary | |
| • Not sure if there exists any rational or intended policy | | | | | |
| • Vague guidelines only by the co-ordinator | | | | | |

## DATA MATRIX FOR THE INTERVIEW -CASE TWO (2) - continued

### *PERSONAL LEVEL*

| BELIEFS | EXPECTATIONS | CONCERNS | SATISFACTION | PROBLEMS |
|---|---|---|---|---|
| • He likes working with the computers | • Expects slow improvement and change | • No organisation at all | • Not satisfied with the implementation | • Time |
| • He believes in the ICCPC value | • The system could have been better organised | • No explicit rationale and policy | • Satisfied with his personal involvement | • Lack of software |
| • He beliefs in collegiality | • Policy should be explicit | • Pessimistic views | • Disappointed by the administrators | • Number of children in class |
| • Administrators do not really care | • More chances for personal development and training | • He feels not ready due to insufficient INSET | | • School and classroom organisational problems |
| • He thinks that teachers should be given more guidance | • Well educated teachers should act as administrators | • The system is not promoting the innovation | | |
| • He believes in personal effort | | | | |

# APPENDIX III
# (Factor analysis matrices)

- - - - - - - - - - F A C T O R A N A L Y S I S - - - - - - - - - -

Analysis number 1 Listwise deletion of cases with missing values

Extraction 1 for analysis 1, Principal Components Analysis (PC)

Initial Statistics:

| Variable | Communality | * | Factor | Eigenvalue | Pct of Var | Cum Pct |
|---|---|---|---|---|---|---|
| | | * | | | | |
| C1 | 1,00000 | * | 1 | 4,86069 | 48,6 | 48,6 |
| C10 | 1,00000 | * | 2 | 1,32400 | 13,2 | 61,8 |
| C2 | 1,00000 | * | 3 | 1,11189 | 11,1 | 73,0 |
| C3 | 1,00000 | * | 4 | ,84159 | 8,4 | 81,4 |
| C4 | 1,00000 | * | 5 | ,53886 | 5,4 | 86,8 |
| C5 | 1,00000 | * | 6 | ,36581 | 3,7 | 90,4 |
| C6 | 1,00000 | * | 7 | ,34130 | 3,4 | 93,8 |
| C7 | 1,00000 | * | 8 | ,29297 | 2,9 | 96,8 |
| C8 | 1,00000 | * | 9 | ,21705 | 2,2 | 98,9 |
| C9 | 1,00000 | * | 10 | ,10584 | 1,1 | 100,0 |

PC extracted 3 factors.

VARIMAX rotation 1 for extraction 1 in analysis 1 - Kaiser Normalization.

VARIMAX converged in 5 iterations.

Rotated Factor Matrix:

| | Factor 1 | Factor 2 | Factor 3 |
|---|---|---|---|
| C1 | ,07291 | ,73342 | ,44839 |
| C10 | ,51327 | ,32023 | ,54779 |
| C2 | ,02971 | ,23550 | ,82610 |
| C3 | ,26736 | -,04502 | ,73029 |
| C4 | ,24274 | ,84534 | -,09015 |
| C5 | ,65473 | ,38190 | ,14201 |
| C6 | ,37640 | ,70618 | ,22490 |
| C7 | ,88420 | ,21684 | ,11189 |
| C8 | ,92009 | ,09241 | ,10023 |





| | Factor 1 | Factor 2 | Factor 3 |
|---|---|---|---|
| C9 | ,80264 | ,20931 | ,28071 |

Factor Transformation Matrix:

| | Factor 1 | Factor 2 | Factor 3 |
|---|---|---|---|
| Factor 1 | ,73759 | ,51900 | ,43198 |
| Factor 2 | -,65724 | ,40503 | ,63559 |
| Factor 3 | ,15490 | -,75272 | ,63985 |

- - - - - - - - - - - F A C T O R  A N A L Y S I S - - - - - - - - - - -

Analysis number 1  Listwise deletion of cases with missing values

Extraction  1 for analysis  1, Principal Components Analysis (PC)

Initial Statistics:

| Variable | Communality | * | Factor | Eigenvalue | Pct of Var | Cum Pct |
|---|---|---|---|---|---|---|
| | | * | | | | |
| D1 | 1,00000 | * | 1 | 5,37008 | 67,1 | 67,1 |
| D2 | 1,00000 | * | 2 | 1,01915 | 12,7 | 79,9 |
| D3 | 1,00000 | * | 3 | ,49412 | 6,2 | 86,0 |
| D4 | 1,00000 | * | 4 | ,35967 | 4,5 | 90,5 |
| D5 | 1,00000 | * | 5 | ,22915 | 2,9 | 93,4 |
| D6 | 1,00000 | * | 6 | ,22338 | 2,8 | 96,2 |
| D7 | 1,00000 | * | 7 | ,18796 | 2,3 | 98,5 |
| D8 | 1,00000 | * | 8 | ,11649 | 1,5 | 100,0 |

PC  extracted  2 factors.

VARIMAX  rotation  1 for extraction  1 in analysis  1 - Kaiser Normalization.

VARIMAX converged in 3 iterations.

Rotated Factor Matrix:

| | Factor 1 | Factor 2 |
|---|---|---|
| D1 | ,16609 | ,90556 |
| D2 | ,33660 | ,83093 |
| D3 | ,54456 | ,70231 |
| D4 | ,70357 | ,45228 |
| D5 | ,84606 | ,31929 |
| D6 | ,86507 | ,32030 |
| D7 | ,85017 | ,23302 |
| D8 | ,86866 | ,21940 |



- - - - - - - - - - - F A C T O R  A N A L Y S I S - - - - - - - - - - -

Factor Transformation Matrix:

| | Factor 1 | Factor 2 |
|---|---|---|
| Factor 1 | ,81003 | ,58639 |
| Factor 2 | -,58639 | ,81003 |

- - - - - - - - - - - F A C T O R  A N A L Y S I S - - - - - - - - - - -

Analysis number 1  Listwise deletion of cases with missing values

Extraction  1 for analysis  1, Principal Components Analysis (PC)

Initial Statistics:

| Variable | Communality | * | Factor | Eigenvalue | Pct of Var | Cum Pct |
|---|---|---|---|---|---|---|
| E1 | 1,00000 | * | 1 | 4,04703 | 80,9 | 80,9 |
| E2 | 1,00000 | * | 2 | ,42096 | 8,4 | 89,4 |
| E3 | 1,00000 | * | 3 | ,27086 | 5,4 | 94,8 |
| E4 | 1,00000 | * | 4 | ,16144 | 3,2 | 98,0 |
| E5 | 1,00000 | * | 5 | ,09971 | 2,0 | 100,0 |

PC  extracted  1 factors.

VARIMAX  rotation  1 for extraction  1 in analysis  1 - Kaiser Normalization.

>Warning # 11310
>Only one factor was extracted.  The solution cannot be rotated.

01 Oct 98 SPSS for MS WINDOWS Release 6.0  Page 34

- - - - - - - - - - - F A C T O R  A N A L Y S I S - - - - - - - - - - -

Analysis number 1  Listwise deletion of cases with missing values

Extraction  1 for analysis  1, Principal Components Analysis (PC)

Initial Statistics:

| Variable | Communality | * | Factor | Eigenvalue | Pct of Var | Cum Pct |
|---|---|---|---|---|---|---|
| F1 | 1,00000 | * | 1 | 2,33351 | 46,7 | 46,7 |
| F2 | 1,00000 | * | 2 | 1,25569 | 25,1 | 71,8 |
| F3 | 1,00000 | * | 3 | ,67556 | 13,5 | 85,3 |
| F4 | 1,00000 | * | 4 | ,48408 | 9,7 | 95,0 |
| F5 | 1,00000 | * | 5 | ,25116 | 5,0 | 100,0 |

PC  extracted  2 factors.

VARIMAX  rotation  1 for extraction  1 in analysis  1 - Kaiser Normalization.

VARIMAX converged in 3 iterations.

Rotated Factor Matrix:

| | Factor 1 | Factor 2 |
|---|---|---|
| F1 | ,82621 | ,06100 |
| F2 | ,34962 | ,76069 |
| F3 | ,89587 | ,12395 |
| F4 | ,45712 | ,65642 |
| F5 | -,23358 | ,83044 |

Factor Transformation Matrix:

| | Factor 1 | Factor 2 |
|---|---|---|
| Factor 1 | ,75554 | ,65510 |

01 Oct 98 SPSS for MS WINDOWS Release 6.0 Page 35

- - - - - - - - - - - - F A C T O R A N A L Y S I S - - - - - - - - - - -

| | Factor 1 | Factor 2 |
|---|---|---|
| Factor 2 | -,65510 | ,75554 |

01 Oct 98 SPSS for MS WINDOWS Release 6.0 Page 36

- - - - - - - - - - - - F A C T O R A N A L Y S I S - - - - - - - - - - -

Analysis number 1 Listwise deletion of cases with missing values

Extraction 1 for analysis 1, Principal Components Analysis (PC)

Initial Statistics:

| Variable | Communality | * | Factor | Eigenvalue | Pct of Var | Cum Pct |
|---|---|---|---|---|---|---|
| G1 | 1,00000 | * | 1 | 4,54211 | 64,9 | 64,9 |
| G2 | 1,00000 | * | 2 | ,87410 | 12,5 | 77,4 |
| G3 | 1,00000 | * | 3 | ,79877 | 11,4 | 88,8 |
| G4 | 1,00000 | * | 4 | ,36704 | 5,2 | 94,0 |
| G5 | 1,00000 | * | 5 | ,21967 | 3,1 | 97,2 |
| G6 | 1,00000 | * | 6 | ,14776 | 2,1 | 99,3 |
| G7 | 1,00000 | * | 7 | ,05056 | ,7 | 100,0 |

PC extracted 1 factors.

VARIMAX rotation 1 for extraction 1 in analysis 1 - Kaiser Normalization.

>Warning # 11310
>Only one factor was extracted. The solution cannot be rotated.

01 Oct 98 SPSS for MS WINDOWS Release 6.0 Page 37

- - - - - - - - - - - - F A C T O R A N A L Y S I S - - - - - - - - - - -

Analysis number 1 Listwise deletion of cases with missing values

Extraction 1 for analysis 1, Principal Components Analysis (PC)

Initial Statistics:

| Variable | Communality | * | Factor | Eigenvalue | Pct of Var | Cum Pct |
|---|---|---|---|---|---|---|
| H1 | 1,00000 | * | 1 | 2,71444 | 45,2 | 45,2 |
| H2 | 1,00000 | * | 2 | 1,40844 | 23,5 | 68,7 |
| H3 | 1,00000 | * | 3 | ,69464 | 11,6 | 80,3 |
| H4 | 1,00000 | * | 4 | ,55654 | 9,3 | 89,6 |
| H5 | 1,00000 | * | 5 | ,40770 | 6,8 | 96,4 |
| H6 | 1,00000 | * | 6 | ,21824 | 3,6 | 100,0 |

PC extracted 2 factors.

VARIMAX rotation 1 for extraction 1 in analysis 1 - Kaiser Normalization.

VARIMAX converged in 3 iterations.

Rotated Factor Matrix:

| | Factor 1 | Factor 2 |
|---|---|---|
| H1 | ,15989 | ,86469 |
| H2 | ,76457 | ,21961 |
| H3 | ,87256 | ,05534 |
| H4 | ,01740 | ,87549 |
| H5 | ,66521 | ,03037 |
| H6 | ,86035 | ,04446 |

01 Oct 98 SPSS for MS WINDOWS Release 6.0 Page 38

- - - - - - - - - - - - F A C T O R A N A L Y S I S - - - - - - - - - - - -

Factor Transformation Matrix:

| | Factor 1 | Factor 2 |
|---|---|---|
| Factor 1 | ,93677 | ,34995 |
| Factor 2 | -,34995 | ,93677 |

01 Oct 98 SPSS for MS WINDOWS Release 6.0 Page 39

- - - - - - - - - - - - F A C T O R A N A L Y S I S - - - - - - - - - - - -

Analysis number 1 Listwise deletion of cases with missing values

Extraction 1 for analysis 1, Principal Components Analysis (PC)

Initial Statistics:

| Variable | Communality | * | Factor | Eigenvalue | Pct of Var | Cum Pct |
|---|---|---|---|---|---|---|
| PH1 | 1,00000 | * | 1 | 3,28454 | 65,7 | 65,7 |
| PH2 | 1,00000 | * | 2 | ,64992 | 13,0 | 78,7 |
| PH3 | 1,00000 | * | 3 | ,53431 | 10,7 | 89,4 |
| PH4 | 1,00000 | * | 4 | ,30160 | 6,0 | 95,4 |
| PH5 | 1,00000 | * | 5 | ,22963 | 4,6 | 100,0 |

PC extracted 1 factors.

VARIMAX rotation 1 for extraction 1 in analysis 1 - Kaiser Normalization.

>Warning # 11310
>Only one factor was extracted. The solution cannot be rotated.

01 Oct 98 SPSS for MS WINDOWS Release 6.0 Page 40

- - - - - - - - - - - F A C T O R A N A L Y S I S - - - - - - - - - - -

Analysis number 1 Listwise deletion of cases with missing values

Extraction 1 for analysis 1, Principal Components Analysis (PC)

Initial Statistics:

| Variable | Communality | * | Factor | Eigenvalue | Pct of Var | Cum Pct |
|---|---|---|---|---|---|---|
| | | * | | | | |
| PA.1 | 1,00000 | * | 1 | 4,27482 | 35,6 | 35,6 |
| PA.2 | 1,00000 | * | 2 | 2,09151 | 17,4 | 53,1 |
| PA.3 | 1,00000 | * | 3 | 1,56109 | 13,0 | 66,1 |
| PA.4 | 1,00000 | * | 4 | 1,14661 | 9,6 | 75,6 |
| PB.1 | 1,00000 | * | 5 | ,61597 | 5,1 | 80,7 |
| PB.2 | 1,00000 | * | 6 | ,52231 | 4,4 | 85,1 |
| PB.3 | 1,00000 | * | 7 | ,44457 | 3,7 | 88,8 |
| PB.4 | 1,00000 | * | 8 | ,38218 | 3,2 | 92,0 |
| PB.5 | 1,00000 | * | 9 | ,34475 | 2,9 | 94,9 |
| PB.6 | 1,00000 | * | 10 | ,26460 | 2,2 | 97,1 |
| PB.7 | 1,00000 | * | 11 | ,18082 | 1,5 | 98,6 |
| PB.8 | 1,00000 | * | 12 | ,17077 | 1,4 | 100,0 |

PC extracted 4 factors.

VARIMAX rotation 1 for extraction 1 in analysis 1 - Kaiser Normalization.

VARIMAX converged in 8 iterations.

Rotated Factor Matrix:

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|---|---|---|---|---|
| PA.1 | -,59077 | -,18284 | ,47964 | ,44825 |
| PA.2 | -,04967 | ,19484 | ,00295 | ,88788 |
| PA.3 | ,40222 | ,00344 | ,23045 | ,75625 |
| PA.4 | ,01872 | ,07434 | ,83854 | ,20875 |
| PB.1 | ,31912 | -,04369 | ,79896 | -,05759 |
| PB.2 | ,54075 | ,43114 | ,30526 | -,16902 |
| PB.3 | ,60890 | ,50575 | ,18512 | ,06167 |

01 Oct 98 SPSS for MS WINDOWS Release 6.0 Page 47

- - - - - - - - - - - F A C T O R A N A L Y S I S - - - - - - - - - - -

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|---|---|---|---|---|
| PB.4 | ,27681 | ,63716 | ,44891 | ,17115 |
| PB.5 | ,19366 | ,86940 | ,04508 | -,01261 |
| PB.6 | ,07650 | ,82980 | -,27956 | ,20673 |
| PB.7 | ,78269 | ,13557 | ,03007 | ,42118 |
| PB.8 | ,82094 | ,14604 | ,21745 | ,07889 |

Factor Transformation Matrix:

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|---|---|---|---|---|
| Factor 1 | ,67724 | ,57758 | ,35431 | ,28673 |
| Factor 2 | -,22924 | -,42293 | ,69107 | ,53945 |
| Factor 3 | -,36136 | ,35226 | -,46972 | ,72436 |
| Factor 4 | -,59851 | ,60286 | ,41983 | -,31951 |