Adapting the primary school curriculum for multigrade classes in developing countries: a five-step plan and an agenda for change

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Abstract

This paper draws on the findings from an international programme of research that has demonstrated the need for multigrade teachers in many developing countries to be given more support in adapting monograded curricula to the needs of their multigrade classes. It describes four empirical models of multigrade practice and examines the models of curriculum construction and child learning that inform them. It then presents an original five-step process that can be used by curriculum planners to adapt monograded curricula, taking account of the different empirical models of multigrade practice. Finally, it outlines a strategy for implementing such a process by providing further support to strengthen curriculum units and improve teacher education that may enable the experimental work that has been started to take root and have real impact on the ability of their countries to reach the Millennium Development Goals for Education by 2015.

1. **Introduction**

The term multigrade teaching refers to a situation in which one teacher has to teach students of two or more grade levels during one timetabled period usually in the same classroom. Multigrade teaching is not new, it has long been used in sparsely populated areas where there are not enough students enrolled to have one teacher for each grade level, it is also very common in both developed and developing countries. In Ireland, for example, 40% of primary schools are multigrade (Mulryan-Kyne 2004) and in Peru 78% (Hargreaves et al. 2001). What is new is that many countries struggling to reach Education for All (EFA) are now taking a fresh look at multigrade teaching to reach out to the children not yet enrolled. Many of these children are disadvantaged, belonging to impoverished, marginal populations who may be nomadic or live in remote mountainous regions. In these contexts multigrade schools can be attractive to policy makers because they can be located close to where children live to help increase enrolment, especially of young children and girls. They may also offer opportunities for cost saving because a teacher does not have to be provided for each grade.

Despite the high prevalence and persistence of multigrade schooling, education systems continue to be organised according to a monograded norm. This norm needs to be challenged because curriculum materials developed with the needs of monograde teaching in mind (where a teacher only teaches one grade level during a timetabled period) places a heavy burden on multigrade teachers who are expected to adapt these materials to their own needs. A study in Vietnam found multigrade teachers often work in very disadvantaged settings and having to adapt the curriculum

materials greatly increased their workloads leading to poor quality teaching and negative attitudes towards multigrade schooling (Pridmore and Vu, 2006). Little (2004, p.4) has argued that such heavy demands are unreasonable:

> Multigrade teachers should not be expected to adapt the general system to their specific multigrade circumstance, alone. In most education systems monograde teachers are not expected to exercise such levels of adaptive professional autonomy (and indeed are often discouraged from doing so). Why should so much more be expected from the multigrade teacher?

The central concern of this paper is therefore to consider how curriculum planners can give more support to multigrade teachers by presenting the curriculum in different formats and permitting some flexibility in delivery to make lesson planning easier and avoid students wasting time waiting for their turn with the teacher. Curriculum adaptation is complicated by the different ways that multigrade teachers manage their teaching and also by deeply entrenched attitudes and patterns of working found in many curriculum development units.

This paper starts by describing four different empirical models of multigrade practice and exploring the theories of child learning and curriculum construction that inform them. The models of multigrade practice draw on the findings from an international programme of research on learning and teaching in multigrade settings at the Institute of Education, University of London. This programme has been ongoing since 1998 and is co-directed by Professor Angela Little and the author of this paper (see: www.ioe.ac.uk/multigrade). The paper then makes an original contribution by

presenting a five-step process for adapting monograde curricula for multigrade classes that takes account of the different empirical models described. This systematic process has been developed through experiences gained by the author of this paper in providing technical support for multigrade curriculum adaptation to curriculum planners in Bhutan (Pridmore 2004), Nepal (Pridmore 2005) Vietnam (Pridmore and Vu 2006) and nine countries in sub-Saharan Africa, Uganda, Kenya, Zambia, Lesotho, Nigeria, the Gambia, Ethiopia, Ghana and Senegal, (see www.dgroups.org/groups/worldbank/Multigrade). Finally, the paper outlines a strategy for implementing this systematic process, which involves providing further support to strengthen curriculum units and improve teacher education. This strategy could enable the experimental work that has now started to take root and make a real impact on the learning of students in multigrade classes.

2. Empirical models of multigrade practice and the models of curriculum construction and child learning that inform them

At the start of our research programme we set out to explore how teachers organised and managed the multigrade classroom in Vietnam, Sri Lanka and Peru and later worked in Nepal, Greece, Finland, Spain the UK. From classroom observation we found that teachers who had no multigrade strategies commonly resorted to giving direct teaching to one grade group at a time whilst the other groups sat idly waiting for their turn with the teacher. We also identified four empirical models of multigrade practice that are being used to increase the time students spend actively learning (Little 2004). This section will describe each of these models, which we have called:

quasi monograde, differentiated curricula, multi-year curriculum cycles and learner and materials-centred. It will also examine the theories of child learning and curriculum construction that inform them.

Model 1: Quasi monograde

This model of multigrade practice has been adopted in all the developing countries we have worked in. In this model the teacher gives direct teaching to each grade group in turn as if the class were monograded. When it is not their turn students work unsupervised on an activity set by the teacher. Teachers may spend the same amount of time with each grade group or deliberately give more time to groups that are tackling a more difficult subject or task and need more intensive teacher input.

During school visits in Vietnam and Senegal highly trained Master teachers in well resourced demonstration classrooms have been observed teaching five or six grades at the same time using the quasi monograde model. However, average teachers in average classrooms have only been observed teaching two or three grades and all teachers have complained about the additional time they spend planning separate lessons for each grade. A study in Ireland found that even where teachers are well trained, well motivated, supported and well resourced they find it difficult to deliver a different curriculum to more than two or three grades at the same time (Mulryan-Kyne, 2004). It is therefore of concern to find that one-teacher schools with six grade levels are being piloted in countries such as Senegal with a view to them being adopted as the national model for schools in remote, sparsely populated areas (Fournier 2004).

In teaching students strictly within their age/grade groups in the multigrade classroom the quasi monograde model draws strongly on Piaget's (1970) cognitive, constructivist theories of child learning which emphasize the role of psychological maturation in cognitive development and define a scheme of age-related developmental stages linked to a child's readiness to learn. These theories have long been instrumental in scheduling the monograded development of primary school curricula despite much accumulated evidence that the scheme is too rigid and cannot be universally applied. In a multigrade class, strict adherence to these theories can present a serious barrier to realising the potential of cross age/grade learning, which has been found to be consistent with positive student achievement (Veenman,1995).

Classroom observation in Vietnam has shown that the quasi monograde model is strongly driven by the early traditional or Content Model of curriculum construction described by Ross (2000), which views the curriculum as a syllabus or body of knowledge to be transmitted. In the classes observed lessons were strongly teacher led and content based. Interaction between students was generally discouraged and students worked individually even when they were seated in a group and supposedly doing group work (see Aikman and Pridmore, 2001). This gives cause for concern because in a multigrade class the teacher cannot be constantly available to each student and needs to use strategies that encourage students to support each other's learning, such as collaborative learning tasks and same-age or cross-age peer tutoring.

Collaborative learning and peer tutoring are informed by Vygotsky's (1978) social constructivist theories of learning which view cognitive development as a linguistic

dialectical process where the student learns through shared problem solving experiences with someone else. These strategies can enable students to travel through what Vygotsky has termed a Zone of Proximal Development, which is the gap between what a given student can achieve alone and what he or she can achieve through problem solving in collaboration with more capable peers. Hobsbaum et al. (1996) have drawn a parallel between Vygotsky's notion of Zone of Proximal Development and the metaphor of 'scaffolding' put forward by Wood, Bruner and Ross (1976). Scaffolding can be described as the process by which a learner is encouraged to carry out the part of a task that is within his or her ability and then be supported by others to complete the rest. Multigrade classrooms offer increased potential for scaffolding because students of different ages and abilities are learning together. Both social and cognitive learning can be scaffolded across age and gender boundaries and make greater use of student's readiness to learn. A study conducted in the Turks and Caicos Islands found that scaffolding enabled weaker students in multigrade classes to gain higher scores in language tests than similar students in monograde classes (Berry, 2006).

Model 2:Differentiated curricula

This model is a variation of the quasi monograde model except that the same general topic/theme in the same subject is covered with all learners at the beginning and end of the lesson to facilitate learning across age/grade boundaries. If the teacher can direct questions to the whole class that are formulated at different grade or ability levels then this model can be very effective in both supporting and extending learning. In the middle of the lesson students in each grade group engage in learning tasks

appropriate to their level of learning. In our international research programme experimental work has been done to develop and test differentiated curricula for health topics in Vietnam (Pridmore and Vu 2006), for mathematics in Sri Lanka (Vithanapathirana 2006), for Social Science in Nepal (Little and Pridmore, forthcoming) and for all primary subjects in Bhutan (Pridmore 2004).

This model was observed in practice in Finland in a small class of eight grade 1 and grade 2 students. (The only reception grade student in the school was also working with grade 1 students because she was able to do the activities.) The lesson on shapes began with a few minutes of direct, whole class teaching to explain the aim of the lesson and revise some previous work in order to remind students of the concepts and skills they would be using. The teacher then took the students to visit a series of graded practical tasks set out on small tables and show them the tasks written on instruction cards on each table. After this she grouped students in twos and threes according to their grade level and their ability to work well together and told them that they did not need to finish all the tasks in that lesson. The grade two students used the simpler tasks as revision before moving on to the more difficult tasks whilst the grade one students stayed on the simpler tasks. In each of the groups students were involved in collaborative group tasks and peer learning. During the group activities the teacher visited each group to check on their progress, assess their understanding and give short bursts of direct teaching as needed to support slower learners or extend faster learners. (A further example of how this model can be applied in practice is given by Cash (2000)).

When students are involved in collaborative group work and peer learning the differentiated curricula model can provide useful interaction of curriculum content, objectives and process to enable the teacher to cover the curriculum in the time given and also give due attention to process. Consequently this approach puts theory into practice by drawing on both the Objectives and Process Models of curriculum construction. The Objectives Model (Bobbit 1928, Tyler 1949, Bloom 1956) viewed the curriculum as a product to be driven by behavioural objectives and measurable outcomes. The Process Model (Stenhouse 1975) viewed curriculum not as a physical thing but rather as an active process of continual interaction between teachers, students and knowledge that is open to critical scrutiny and can be translated into practice.

Model 3: Multiple-year curriculum cycles (also known as rolling programmes)

In this model, students in two or more consecutive grades work through common topics and activities together but start and finish the curriculum cycle at different times. For example, in the first year of a two-year cycle all students in a class with grades three and four will work together through the grade four syllabus for the chosen subject. At the end of the school year grade four students move up a grade and leave the classroom. Grade three students also move up a grade becoming grade four but stay in the classroom and are joined by a new set of grade three students with whom they work through the grade three syllabus. At the end of the school year grade four students have completed the two-year syllabus and leave the cycle whilst grade three students continue on for another year, becoming grade four students, and are joined by a new set of grade three students. In the developed countries involved in our

research programme (Finland, Spain, Greece and the United Kingdom) multiple-year curriculum cycles are widely used and have been shown to work well in all subjects except for number work in mathematics and reading work in language which need to be learned more incrementally and where each grade is therefore generally taught separately.

In the United Kingdom, the Department for Education and Employment (DFEE)/the Department of Education and Skills (DFES) and the Qualifications and Curriculum Authority (QCA) give teachers subject-specific advice on how best to adapt the National Curriculum using multiple-year curriculum cycles. (See: www.qca.org.uk, www.standards.dfes.gov.uk/schemes using the search words "mixed-age classes" or "small schools".) For example the following advice is give for teaching literacy:

> Where most classes contain pairs of age groups - Year 1/2, Year 3/4, Year 5/6 – with Reception pupils either taught separately or included in the mixed Year 1/2 class - schools usually run their curriculum on a two-year rolling programme. This is to ensure stability and continuity for students and to make the curriculum manageable for teachers….. The Framework for teaching is based on two-year cycles so that objectives within Years 1/2, 3/4, 5/6 are more closely linked than those between these pairs of years. It needs only some small adjustments to be taught as a two-year rolling programme.

However, teachers are also advised that they may need to include some learning objectives from the other year (e.g. in the second year of the cycle when grade 3 are being taught grade 4 objectives; or in the first year of the cycle to extend the work of

the older students). If very young students from Reception level are combined with grades 1 and 2, teachers are further advised to give these students some differentiated time especially when they have just arrived in school.

Multiple-year curriculum cycles strongly challenge Piaget's theories of developmental stages and readiness to learn by viewing learning as more open for students within any age/grade group and by recognising student diversity. This model allows for integration of content, objectives and process but places a strong emphasis on process and encourages project work to integrate different themes and subjects. This model facilitates cross age/ability learning and teachers have more time to scaffold learning because they are not constantly moving from one grade group to the next as in the quasi monograde model.

Model 4: Learner and materials-centred

In this model students work through interactive, self-study learning materials. The teacher may stimulate and check on learning but students rely mostly on the materials. A well-known example of this model is the Escuela Nueva Programme that has been implemented in rural schools in Colombia for more than thirty years. In this programme the monograded National Curriculum for each subject has been reorganised into a series of graded modules through which students work using individual learner guides. These guides are structured to integrate both content and process and have continuous assessment built in to support learning. Classroom observation has shown that although students work through the guides individually and at their own pace they sit in small groups to increase opportunities for

collaboration and enhance social and cognitive learning. A student only moves on to the next guide when he or she has achieved mastery at the present level.

This radical adaptation of the monograded curriculum enables teachers to deliver the curriculum very flexibly so that pupils can work at different levels in different subjects at the same time. The principle of flexibility also extends to promotion from primary to secondary school. Students do not all move on together at the end of the primary cycle, they move on individually or in small groups when they have completed (and gained mastery in) all the modules in the primary curriculum. We have also visited Escuela Nueva schools at secondary school level.

This model, consequently, provides for integration of content, process and objectives but is dependent on the availability of high quality learner guides and teachers willing and able to facilitate collaborative learning. The Escuela Nueva programme has been extensively evaluated and shown to be effective (Colbert, Chiappe and Arboleda, 1993) and the model has been adapted and used in other countries including Brazil, Guatemala, Panama, Chile, Nicaragua, Guyana, the Philippines and Uganda.

An important advantage of this model is that it supports the learning of students who miss lessons because they are needed in the family economy or because they have to take care of young siblings or sick family members. When they are able to return to school they can just carry on working from the learner guides where they left off. With this model there are no repetitions and drop out rates are very low. This model therefore has enormous potential for high HIV prevalence countries where two analyses of Demographic and Health Survey (DHS) data from more than thirty

countries have shown that young people orphaned by AIDS are missing out on education (Bicego, Rutstein and Johnson, 2003; UNAIDS, 2006). A study in South Africa and Mozambique also found that young people, especially girls, affected by HIV and AIDS were missing lessons, falling behind their peers and dropping out of school, thereby increasing their vulnerability to HIV infection and damaging their longer-term prospects for social and economic development. The investigators argued that a more open and flexible, materials-led approach which enabled affected young people to continue with their education even when they could not attend school regularly could offer an alternative route to education to complement and enrich conventional schooling (Pridmore and Yates 2006).

Using more than one model

The four empirical models of curriculum adaptation described above are not mutually exclusive and in developed countries involved in our research programme multigrade teachers frequently used more than one model most commonly combining the quasi monograde model and multiple-year curriculum cycles. These findings are consistent with those of other researchers, such as Mulryan-Kyne (2005) and Mason and Burns (1997). An example from our project school in Greece will serve to illustrate the way in which models can be combined. In this two teacher school one teacher had a class with grades one, three and four and the other teacher had a class with grades two, five and six. In both classes the younger grades were taught separately. The two older grades were taught together on a two-year curriculum cycle for all subjects except mathematics and language where each grade was taught separately using the quasi monograde model. In the lessons observed over a two-day visit to the school the

teaching was organised so that one group, known as 'the silent group', worked through exercises from the text book with minimal support from the teacher whilst the other group received direct teaching. To give another example, in the project school in Finland, a class with four grades was organised so that the teacher taught grades three and four together and grades five and six together on two-year curriculum cycles (3+4) (5+6). The exception to this rule was mathematics where students worked individually on exercises from their workbooks. In one lesson observed grades three and four were studying biology (drawing and labelling stuffed birds) whilst grades five and six worked individually on mathematics exercises. The teacher moved constantly between the two groups providing support and stimulation as needed.

3. A five-step process for curriculum adaptation

The grade combinations found in multigrade classes are too diverse for curriculum planners to cover every possible combination of grades. Nevertheless, some basic systematic curriculum development can be done at the central level to provide guidance on how grades can most effectively be combined and give sample programmes of work in each subject for these grade combinations. Multigrade schools need to be given a scope and sequence chart for each subject so that they can develop programmes of work for other grade combinations. Schools then need to be trusted to choose the most appropriate model or combination of models for each class and to deliver the curriculum flexibly to develop the required skills and competencies.

This section presents original work on adapting the curriculum in the form of a five step-process that takes account of the empirical models of multigrade practice previously described.

Step 1 Making a scope and sequence chart

This chart, sometimes called a curriculum framework, needs to be made for each subject to show the major themes, sub-themes, units and expected learning outcomes across all grades of the primary cycle. Figure 1 presents part of the scope and sequence chart prepared for the subject of Natural and Social Science and Science in Vietnam. (For a published example of a scope and sequence chart for Science in the UK see QCA (1998).)

Insert Figure 1

Step 2 Identifying units of work that can be taught across grade levels:

The scope and sequence chart can be analysed to identify and list each unit of work that runs across more than one grade level and can be taught as a common unit to a multigrade class using the differentiated curricula model. A list can also be made of the units of work that do not run across more than one grade level and must be taught to a single grade only using the quasi monograde model. An example of some common units for multigrade classes is provided in Figure 2 from the Social Science Curriculum in Bhutan.

Insert Figure 2

Step 3 Identifying units of work that can be taught using a multiple-year curriculum cycle

The scope and sequence chart can be used to identify and list the units that can be taught to two (or more) grades combined using a multiple-year curriculum cycle. A separate list can be made of any units that are incremental in that they require students to build on previous knowledge from the lower grade level so that they can be taught to single grades only using the quasi monograde model. An example of this step is given in Figure 3 for the science curriculum in England showing the units that can be taught to grades combined and to single grades only.

Insert Figure 3

Step 4 Sequencing the units of work into a programme of work

For each subject the units identified in Step 2 or Step 3 of this process can then be sequenced into a programme of work to cover the main themes, units and essential learning objectives for the specific multigrade class. For subjects that have been adapted using step 2 (the differentiated curricula model) each programme of work will cover one school year. For subjects that have been adapted using step 3 (the multiple-year curriculum cycle) the programme of work will run across two years for a class with two grades, three years for a class with three grades, and so on. At the central level examples of schemes of work for each subject can usefully be developed for

classes with different grade combinations to help multigrade teachers develop their weekly lesson plans.

An example of a programme of work for the science curriculum in England using a two-year curriculum cycle can be seen in Figure 3. In this figure the units are shown sequenced into a programme of work using a two-year curriculum cycle stretching over six school terms for three classes with grades 1+2, 3+4 and 5+6. The sequencing of units given for these multigrade classes is different from that of the monograde classes because it only builds on the incremental nature of the units where this is necessary. (Teachers who have a wider range of grades in their class are advised to develop their own programme of work using the scope and sequence chart to assist them.)

Step 5 Writing multigrade lesson plans

Lesson plans for units of work that can only be taught to single grades using the quasi monograde model are similar to those for monograde classes but the plan for each grade is best written side by side on the page so that the teacher can balance direct teaching to one grade group with unsupervised self-study for the others. Lesson plans for units of work that can be taught to two (or more) grades combined using a multiple-year curriculum cycle are similar to those for monograde classes, except that they need to include additional support for younger or less able students and additional stimulation for older or more able students (as described in section 2 of this paper). Very little lesson planning is required for the learner and materials-centred

model because students follow the structure and activities laid out in the learner guides.

When the differentiated curricula model is used the lesson plan becomes more complex. This is because the plan needs to indicate how whole class teaching will be used to bring the class together at the beginning and end of the lesson and how grade-differentiated activities will be introduced in the middle section. It can be especially helpful to teachers if curriculum planners provide example lesson plans for key units of work that teachers can then adapt. An example of a multigrade lesson plan from Lesotho using this model is given in figure 4.

Insert Figure 4

4. The way forward

Some experimental work on curriculum adaptation has now started in all the developing countries we have worked in. However, it is one thing to conduct exercises to demonstrate that different models can be used to adapt the national curriculum for multigrade teaching and quite another thing for curriculum units to radically transform their established policies and patterns of work. This final section of the paper will consider how curriculum units may be further supported to enable the experimental work to take root and have real impact on the effectiveness of teaching and learning in multigrade settings?

The members of the curriculum working groups that have been set up in each country to undertake the experimental work have unanimously rejected multiple-year curriculum cycles and modularised curricula in favour of the quasi monograde and differentiated curricula models for curriculum adaptation. The reason they have given for selecting their chosen models is that these models require minimal adaptation of the existing curriculum materials (textbooks, exercise books, tests and examinations etc) and utilise the monograde training that most teachers have already received. It is interesting to note that in European countries multiple curriculum cycles are selected for much the same reason and also because they are seen to reduce teacher workloads and still deliver high student achievement.

Resistance to multiple-year curriculum cycles and modularised curricula reflects the way in which curriculum development is an ideological, value-laden task rather than merely a technical process. Discussion with members of the working groups has shown that this resistance has at least three causes: (i) long standing acceptance of the principle of incremental learning causing resistance to a view of learning that is more open and that acknowledges student diversity and the need to train teachers in the principle of differentiation (ii) the view that education is a driven, bureaucratic process rather than a leisurely pursuit build around conversations leading to highly prescribed curricula and little flexibility in its delivery (iii) a shortage of skilled curriculum planners with recent multigrade teaching experience, especially at the primary level. Let us now consider what an agenda to address these causes of resistance might include.

Increasing acceptance of multiple year-curriculum cycles and student diversity

It may be possible to increase acceptance of multiple year-curriculum cycles if a distinction can be made between the basic skills subjects of language and mathematics and other subjects such as social and environmental sciences and history. Language, especially reading, and mathematics, especially number skills, need to be taught more incrementally than other subjects where content can be used less as an end in itself than as a vehicle for the educational processes that develop the grade related skills through which these subjects need to be assessed. The first two years of schooling could usefully be given over to teaching language and mathematics, and little else, to help students develop effective literacy before they move into the multigrade classes where they will need to use self-study learning materials to access the wider curriculum. Focusing on language and mathematics teaching in the first year or two of schooling could also reduce resistance from interest groups such as the publishers of school textbooks because language and mathematics books are what they sell most of. To further support acquisition of basic skills organising the first two years as monograde classes is being promoted as best practice for multigrade schools in countries such as Nepal and Bhutan and is the practice in all Escuela Nueva schools.

To increase acceptance of student diversity the traditional view that lessons should be teacher led with all students at one grade level moving together through the curriculum needs to be challenged and awareness increased of the way in which all classes have a diverse range of students working at different levels. In this respect monograde and multigrade classes are similar except that multigrade classes have a wider range of student diversity. This diversity comes from differences in age,

academic achievement and capacity to learn, personality, interests, background knowledge, socio-economic status, school attendance and many other factors (see Little 2001, Pridmore 2004, Croft 2006).

Where student diversity is acknowledged, as in most Western, individualistic societies with small class sizes and adequate learning resources, all teachers are currently trained to recognise student diversity and apply the principle of differentiation to their practice. Teachers can apply this principle in the classroom by using peer tutoring and self-directed learning to support or extend student learning and by giving students different activities to do individually or collaboratively to achieve different outcomes. To be able to manage multigrade classes these teachers only need some additional training on how to use the different models of curriculum adaptation. To overcome resistance to the principle of student diversity in less individualistic societies with a deep-rooted collectivist orientation, larger class sizes and fewer resources, Croft (2006) has suggested that the principle of differentiation might be better applied to setting different activities to reach different outcomes for sub-groups within the class rather than for individuals.

Opening up the curriculum and increasing flexibility

To open up the curriculum and increase flexibility multigrade teachers need to be permitted to change the sequencing of units prescribed for monograde teachers and vary the duration of lessons to more closely respond to the needs of their students. The extent to which multigrade teachers are permitted to do this varies from country to country and decisions on what is the right balance between prescription and

flexibility are made by the curriculum units in each country. It is important, however, that these decisions are revisited from time to time as experience accumulates within the teaching body and attitudes change. At present countries such as Vietnam and Bhutan have a highly prescribed and tightly controlled National Curriculum with detailed teachers manuals and timetables for delivery being developed at the centre (See Aikman and Pridmore 2001, Pridmore 2004). In Bhutan the members of the curriculum working group explained that this was necessary because the teaching workforce was poorly trained and insufficiently experienced and should therefore not be left to make decisions for themselves. This points to a need for improved training of primary teachers. A start might be made by addressing the culture of teacher education, which is commonly dominated by an academic model with staff members being referred to as lecturers.

Recruitment of teacher educators also needs to be revisited because most teacher educators in the countries we have worked in have experience as secondary teachers, some have not taught at all and very few have any multigrade teaching experience. It may also be helpful to raise the profiles of teachers colleges and their staff by adding a greater research, monitoring and in-service element to their role.

Opening up the curriculum and increasing flexibility also requires adaptation of student assessment so that multigrade students do not have to pass the same end of term and year examinations that have written for monograde students. Hargreaves (2001) points out that students in multigrade classes need to take more responsibility for their own learning and to have a system of continuous assessment so that they get feedback on progress. She argues that this makes multigrade classroom ‘a fertile land

for new models of assessment' (p.555). Providing curriculum units with targeted support to experiment with new forms of assessment for multigrade classes could help to move this forward.

Increasing the number of skilled curriculum planners with recent multigrade teaching experience

To address this issue we need to look more closely at the context in which curriculum planning frequently takes place in developing countries. Firstly, staff in all the curriculum units we have worked with appear to be overloaded and in some of the countries they do not enjoy high status. There is a need here for both policy and programme development to raise their quantity and also their quality. Secondly, very few curriculum planners have teaching experience at the primary level let alone multigrade teaching experience. In Bhutan, for example, the curriculum specialists seconded to the working group for multigrade curriculum adaptation were all secondary curriculum specialists and had no multigrade teaching experience and wished that multigrade teachers had been included in the group. Thirdly, there is a need to rethink the way in which curriculum planning is commonly based on single topic lessons with behavioural objectives linked to these topics so that the approach can become more process oriented. For example, activities and experiences to develop skills in for example, language, mathematics, scientific thinking and also psychosocial 'lifeskills' can still be isolated, not necessarily linked to dedicated lessons but sometimes also to topic and task. This is nothing new, it is already central to the culture and practice of non-formal education. Established patterns of curriculum

planning therefore need to be reviewed and the current interest in multigrade teaching may be a catalyst to kick start such a process.

To summarise, this paper has argued that curriculum planners can do more to support the work of multigrade teachers and presented a five step process to help them deliver the curriculum in a range of different formats. It has outlined a strategy for implementing such a process by providing further support to strengthen curriculum units and improve teacher education that may enable the experimental work that has been started to take root and have real impact on student learning.

In conclusion, let us consider what more education opinion leaders can do to help. Three possibilities are worth looking at. First, is the need to promote and fund problem-based, multigrade task forces with real power to look at the issues, make plans and influence change. These task forces would need to include curriculum planners, writers and teacher educators and be given the highest level of support. Second, is the need for experienced multigrade teachers to work alongside curriculum planners and writers to build up effective low-cost, alternative curriculum models of best practice in multigrade teaching, supported by effective materials development. Third, is the need to continue building up credible national and international expertise in curriculum planning and materials development for multigrade classes. Policy symposia, workshops, video-conferences, and on-line discussion fora have already proved useful here (see www.dgroups.org/groups/worldbank/Multigrade).

Whilst far from exhaustive, it is to be hoped that this agenda for change may further help to realize the potential of multigrade teaching to reach out to those children not

yet enrolled in school so that more countries are able to achieve the Millennium Development Goals for Education by 2015.

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List of Figures

Figure 1 Part of the Natural and Social Science and Science Curriculum in Vietnam showing how the units on safety were reorganised across all 5 grades. (Source: Pridmore and Vu 2006)

Figure 2 Part of the Social Science Curriculum in Bhutan identifying units that can be taught across grade levels and units that must be taught to single grades. (Source: Pridmore 2004)

Figure 3: Programme of work for the Science curriculum in England using a two-year curriculum cycle (Source: Adapted from QCA 1998, p.15)

Figure 4: Example of a Science lesson plan from Lesotho for a class with grades 5 and 6

Figure 1

Theme: Human beings and health. Sub-theme: Safety and disease prevention				
Units in Grade 1	Units Grade 2	Units in Grade 3	Units in Grade 4	Units in Grade 5
Safety at home Know how to avoid getting burnt, cut, and electric shock.	**Safety at home** Be alert against food poisoning by not eating stale food. Not to take medicines without instructions from doctors or parents. Know who to call for in emergency **Safety at school** Can take precaution against falling. Can realise the danger, not to play, stand, run or jump near dangerous places.	**Safety at home** Be alert against food poisoning by not eating stale food. Not to take medicines without indications from doctors or parents. Know who to call for in emergency **Safety at school** Can take care against unexpected accidents caused by naughty playing. Can avoid danger caused by contacting strangers.	Food safety Be aware of the harm caused by stale, contaminated food, or undercooked food	**Safety in society** Avoiding drug abuse. Being conscious of the harm caused by cigarettes, liquor, drugs and heroin, etc. Being determined to refuse all invitations to use any kind of stimulators. Not being involved in transport or dealing of stimulants. Know how to take medicine safely.

Figure 2

Grades 4 + 5 + 6 combined. Common unit on Buddhism with differentiated learning objectives (and activities)	Grade 4 How Guru brought Buddhism to Bhutan. Learning objectives: Students can i. identify 746 AD, as the year Guru Rimpoche brought Buddhism to Bhutan ii. locate Jampa Lhakhang and Kuje Lhakhangs on a map of Bhutan.	Grade 5 What the Buddha contributed to the society Learning objectives: Students can i. Describe what the Buddha contributed to the society ii. draw timeline to show when he lived iii. mark the location of the country where he lived on world map.	Grade 6 Early life and teachings of Guru Rimpoche Learning objectives: Students can i. find and write stories to share in the class or with sister school about, monastery, temple. ii. find and locate one monastery and two temples on the map of Bhutan.
Separate unit for grade 4 only	Our Kings, Important buildings and bridges Learning objectives: Students can i. identify the four kings and important contributions each has made to Bhutan. ii. learn local history through the investigation of important/old buildings and bridges.		
Separate unit for grade 5 only as for	The Himalayas, One country, one people. Learning objectives: Students can i. know that we are one country and one people, and that we should respect, help and be kind to one another.		

Figure 3

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year (grade)	Units of work					
Years 1 and 2	1A/2A	IC ID	2E 2D	1A/2A	1B 2F	2B 2C
Years 3 and 4	1E	4F 4C	3F	1F	4A 3B	4E 4B
*Years 5 and 6	3C	6C	4D	3E	6E	
together	3D	5F		3A	5F	5E 5B
*Year 5	5C	6F 6B	5E	5A	6F	6D
children only	5D		5B	6A	6B	
*Year 6			6D			
children only	6G			6G		

* Work from the middle of the spring term will require separate groups for year 2 and year 6 children taught in the same class.

Key to the Units: 1A Ourselves, 1 B Growing Plants, 1C Sorting and using materials, 1D Light and dark, 1E Pushes and pulls, 1F Sound and hearing, 2A Health and growing, 2B Plants and animals in the local environment, 2C Variation, 2D Grouping and changing materials, 2E Forces and Movement, 2F Using electricity, 3A Teeth and eating, 3B Helping plants grow well, 3C Characteristics of materials, 3D Rocks and soils, 3E magnets and Springs, 3F Light and shadows, 4A Moving and growing, 4B Habitats, 4C Keeping warm, 4D Solids, liquids and how they can be separated, 4F Circuits and conductors, 4E Friction, 5A Keeping healthy, 5B Life cycles, 5C Gases around us, 5D Changing state, 5F changing sounds, 5E Earth, Sun and Moon, 6A Interdependence and adaptation, 6B Micro-organisms 6D Reversible and irreversible changes 6E Balanced and unbalanced forces, 6F how we see things, 6G Changing circuits.

Figure 4

THEME: Water. UNITS: Grade 5: Water as a magnifier Grade 6: Precipitation DURATION: 50 minutes.	LEARNING OBJECTIVE(S) Can water be used to make things look bigger? What do we call water that falls from the sky?		**MATERIALS**
Whole Class Introduction 10 minutes	Ask pupils to sing a popular song/recitation about water Ask the pupils questions in relation to the learning objective		
Differentiated activities 20 minutes	Grade 5 pupils fill transparent bottles with water, close them with lids and look at an insect through the bottle and record their observations	Grade 6 pupils analyse the words of the song/recitation and identify types of precipitation and write them down. Grade 6 pupils then identify other types of precipitation that did not appear in the song/recitation.	Clear bottles of water, Insects, old magazines, bottom of broken bottle, chart paper, exercise books

Whole class feedback and discussion (10 minutes)	Grade 5 pupils report to whole class about their experiment Grade 6 pupils report types of precipitation to the whole class.		
Formative Evaluation	Written work from class activity		
Homework and closure: (10 minutes)	Grade 5 pupils use different types, sizes and shapes of bottles at home and report what they observed.	Grade 6 pupils to ask parents/siblings in which seasons different types of precipitation occur.	