Professional Development Centre Chitral

School Improvement in a Multigrade Situation
An Action Research carried out in Chitral-Pakistan
By

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Abstract

In Multi-grade Teaching (MGT), teachers are responsible for teaching across two or more grades, within a timetabled period. This is a common practice in Pakistani primary schools in general and in Chitral district in particular. Teachers find MGT a difficult pedagogy, but necessary pedagogy. This paper discusses some achievements and challenges for example, academic and attitudinal achievements, observed on the part of the teachers and students as a result of an action research conducted by the Professional Development Teachers (PDT) of the Professional Development Centre Chitral in a government primary school. A cyclic approach of action research was opted to explore the achievements and challenges of MGT interventions. Classroom observation, formal and informal interviews of stakeholders, reflective journal of teachers and document analysis were used throughout the study. The study found that teachers' professional development with respect to MGT, support for teachers at the workplace and teachers' positive attitude towards MGT play important roles. Consideration on the findings of the study may help to improve teaching and learning in multi-grade setting and the adoption of MGT in schools..

 Key words: Multigrade Teaching, Concept Grid, Routines

Introduction

Professional Development Centre Chitral (PDCC) is a sub unit of the Aga Khan University Institute for Educational Development (AKU- IED) established in Chitral in the year 2003. Since its establishment the PDCC is striving to improve the quality of teaching and learning in schools. PDCC works in close collaboration with its partner organizations (Government Education Department, AKES, P and the private education sector) for the professional development of teachers, head-teachers and other stakeholders to enhance learning outcomes of students throughout the district. PDCC started its activities with a baseline survey in order to identify teachers' and head-teachers' professional development needs. The findings were shared with the partner organizations in a stake holders' conference and planning for future activities was done based on the findings of the survey and the feedback given by the stakeholders. A number of issues related to quality education were identified at the conference.

Multi-grade situation (2-3 teachers for 6 classes) in primary schools was one of those issues which came out during our need analysis survey as well as during the stakeholders' conference. Most of the schools both in the AKES, P and the Government Education System, have Multi-grade settings. Surveys conducted in Chitral and Northern Areas by AKES, P show that although in primary schools students' learning achievements were better than some of the mono-grade schools, no effective learning was reported in majority of Multi-grade setting. As reflected in the report on Multi-grade Teaching (MGT) by professional development team of AKES, P Chitral says,…..."no worthwhile tasks are given to the students who are not focused during MGT. with the result students sit idle and hence, no effective learning takes place" July, 2003. Similarly, a teacher of a Government primary school said: "No teaching and learning takes place if one of us is absent, one teacher can only control the students'' (Needs Analysis report of PDCC, 2004). By control, the teacher meant the students sitting quietly so that they could not misbehave.

Effective teaching and learning in primary school acts as a foundation stone for higher education, but currently it does not happen in most of the primary schools in the region. Hence, as an attempt to deal with the challenges of multi-grade teaching, the PDCC introduced a model 'School Improvement in a Multi-grade Situation' (SIMS). Our classroom teaching and learning observations with respect to the model piloted in some primary schools showed encouraging results. But there was a need to conduct a study of the model by working with teachers in actual classroom situation in any of the primary school where MGT situation exists. Therefore, we two Professional Development Teachers (PDT) set out to carry out an action research in order to explore how SIMS model works in the context of Chitral.

Multigrade Teaching and its Effects

Multigrade teaching refers to the teaching of students of different ages, grades and abilities in the same group. In educational literature different terms have been used for it such as multilevel, multiple class, family class, unitary school, heterogeneous class and composite class. Besides many educational researchers for example, Miller (1997), Collingwood (1991), Cohen (1986), Gastad (1994), Berry (2000), and the Institute of Education, University of London has carried out a systematic research on learning and teaching in multigrade settings. The research is designed to raise awareness among policy makers, planners and practitioners of the extent, problems, opportunities and needs of the multigrade

learning and teaching environment. Little, (2001) who plays a leading role in the research project of Institute of Education, distinguishes Multigrade from monograde teaching as;

> In multigrade teaching, teachers are responsible, within a timetabled period, for instruction across two or more curriculum grades. In 'one-teacher' schools, the teacher is responsible for teaching across five or six grades of the curriculum. In two or three-teacher schools the teacher is responsible for teaching across two or more curriculum grades. In monograde teaching, by contrast, teachers are responsible, within a timetabled period, for instruction of a single curriculum grade.

Little (2001) reviewed literature and explored different reasons and conditions in which educational systems of different countries have adopted MGT for reasons of necessity, while others have employed it for pedagogical reasons.

Although many teachers all over the world work in multigrade teaching context, no adequate attention is given to proper functioning of MGT in schools by education systems. Heargeaves (n.d) identified,

> "In many systems of education, where monograde classes are the norm, the multigrade classrooms and the needs of the multigrade teachers often unrecognized in national and international policy, in teacher education curricula, in curriculum or assessment studies of curricula and in education information networks"

This has been practiced in the education system of Pakistan where teachers are trained for monograde teaching and are posted to teach in multigrade schools. Little (1995) expresses similar views while reviewing researches, "primary curriculum documents and their associated lists of "minimum learning competencies" have not been specifically designed for use by teachers in multigrade schools". Little (2001) in her research review argues that current multigrade and monograde teaching practices are similar in terms of the the cognitive achievements of learners but that social and interpersonal skills may be stronger among students in multigrade classes. She further argues if teachers are given proper multigrade teaching training their practices will have deeper cognitive as well as non cognitive effects on students. Collingwood, (1991) argues in favor of multigrade teaching thus, "Multiclass Teaching brings together children of different ages and development in a learning environment, which mirrors society and how it learns. This produces a more natural learning situation: for example, older children naturally help younger ones".

Teachers Attitudinal Change in Multigrade

Using MGT in schools for reasons of either necessity or pedagogy demands hard work on the part of teachers. Vincent (1999) suggests, "multigrade classroom is labor intensive and requires more planning, collaboration and professional development than the conventional graded classroom". This labour on the part of the teacher includes teachers' pedagogical skills as well as their attitude and behaviour and above all their beliefs. This point is further supported by Katzenmeyer and Moller (1996) cited in Tajuddin (2005) that the teachers' belief systems guide their practices and effectiveness, and educational philosophies. Besides teachers' beliefs, their commitment and motivation are crucial in change process. Hargreaves (1995) argues that the teacher is the ultimate key to educational change and school improvement. Miller (1997) also agrees with the fact that just knowing the subject matter is not sufficient for teaching it.

A Model of School Improvement in Multigrade Teaching

Looking into the necessity conditions and pedagogical reasons of using MGT in rural schools and taking into account the hindrances in the way to its effective functioning in the light of research, the PDCC has developed a contextually appropriate MGT model with acronym the SIMS. The model was developed in light of the contextual needs in which teachers are trained to teach in mono grade but have to teach multigrade classes without proper trainings. In such a situation teachers either just control the classes or teach two different classes separately making them sit in one classroom. This we believe is the wastage of instructional time and learning opportunities of students. We helped the teachers learn how to teach multigrade classes. Then we as the developer of the model, carried out an action research to explore its effectiveness and challenges in the real context. The findings of the study, teacher's reflections and the learning outcomes of the multigrade students all reveal that the model was successful and useful in terms of multigrade teaching. This research report was written after conducting the research in the real contexts of multigrade classrooms and schools.

The Problem/Issue

More than 80% of primary schools in Chitral are running in a Multi-grade situation, where two or three teachers are responsible to teach six classes. None of these teachers has undergone training to teach in a Multi-grade setting although they have obtained Primary

Teachers Certificate (PTC) either from the elementary colleges or from the Allama Iqbal Open University (AIOU), Islamabad. The irony is that these teachers have been trained for teaching in mono grade situation but they are teaching in MGT situation, where a teacher distributes 35-40 minutes time to two or three different classes. While the teacher is busy with one class the other two classes sit idle. The syllabus of the academic year is developed through putting month-wise distribution of page numbers given in the textbooks, on a piece of paper.

This study was an attempt to address the issues related to teaching in multi-grade situation, through an intervention in a government primary school to explore ways to improve the current multi-grade teaching practices.

Significance of the Study

The study was significant in many respects. Iit attempted to address an important issue (Multi-grade Situation) related to school improvement. No research has ever been done in Chitral on this topic, so the findings of the study would be of great value for PDCC and other partner organizations. Through this study PDCC's innovative model SIMS would be tested in a larger number of primary schools for its effectiveness and replicability at a larger scale.   The study is also important in building the capacity of the teachers who we worked with and of the school where the research was being conducted. The findings of the study may inform policy makers for organizing further training programme. The study was significant for the researchers as well, because it provided them with an opportunity to work in a social context and to test ideas in order to improve the situation.

Research Questions

The study attempted to address the following research questions.

Main Question

How can we help three primary school teachers to improve their Multi-grade Teaching practices through SIMS model?

Subsidiary Questions

- What is teachers' current understanding of multi-grade teaching?
- What are their current classroom practices?
- What challenges do they face in multi-grade teaching?

- How can those challenges be addressed?

Methodology

The study was conducted in a government primary school of Chitral district with the permission of the school management. It was an action research where the researchers worked with teachers in their actual work place (school) as well as at the training centre (PDCC). The nature of the work was conducting workshop, planning for variety of activities that are necessary to create teaching and learning friendly environment in a multi-grade situation. These activities included developing concept grids, setting routines, unit and lesson planning, resource development etc.

A cyclic approach of action research was used in the intervention stage. In the first cycle, entry negotiation and needs analysis was done with the research participants and the school management in order to get their consent to carry out the research. Details of the activities are discussed below in the reconnaissance stage (cycle 1).

Data Collection Methods

Four methods were used to collect evidence

- Reflective journals of both the researchers and research participants
- Formal and informal interviews of the teachers and students. Guiding questions were used for formal interviews. Besides formal interviews information were collected through informal interviews of teachers and students during school visits.
- Classroom observation checklist was used to see the teaching and learning achievements.
- Document analysis; Documents such as students' and teachers' daily attendance book and exams result register were analyzed to see the dropout rate, regularity of both the teachers and students and result output.

Cycle I *(Reconnaissance)*

During the cycle, we (the researchers) visited the school where this study took place. We observed overall school environment as well as the teaching and learning process in the classrooms, interviewed the teachers and had informal discussions with the students to identify actual issues to be addressed for improving teaching and learning through the SIMS model. We conducted workshop for the teachers (research participants) after doing needs analysis during this cycle and discussed below

The School

The school where this study took place is an Urdu medium primary school situated at a distance of about 30 kilometers from the PDCC. Textbooks of the NWFP textbook board Peshawar are used in the school. The school is attached to the premises of a High School. Outside the boundary wall there is a small assembly code where the students assemble for morning assembly and play some traditional games during short break. There are105 students in six classes as shown in the chart.

Class-wise enrolment

Classes	KG	I	II	III	IV	V	Total
Enrolment	12	11	09	15	34	24	105

Three male teachers who were our research participants will be written as T1, T2, T3 Each has Primary Teaching Certificate (PTC) training from an elementary college. T1and T2 had also participated in the workshop for the multi-grade teachers conducted by the PDCC in 2004.

The School Timetable

According to the school time-table, 35-40 minutes were allocated for each subject in each class. After the training on multi-grade teaching held at the PDCC in 2004 the teachers introduced a new timetable of one-hour for each period without disturbing the total schooling duration of 5 hours. The teachers found this new timetable helpful in doing sufficient activities in the classroom to enable students to develop conceptual understanding of the concepts taught. For example, the students do group work, discuss things with their colleagues. The new time-table also allowed the teachers to have sufficient time for giving individual attention to the students of both the classes in MGT situation.

Seating Arrangement

K-G class and class I, were accommodated in one room while classes II & III in the other classroom and the students of class IV and V were made sit in one room. The lower classes up to class III were given desk-benches while class IV & V were provided with mattresses instead of desk-benches to make the classroom movement learning friendly and to give individual attention to students. Since, two classes sit in the same room they try to help each other.

Unit planning

Each teacher has started developing unit planning (teachers divide units given in the textbook e.g. 'Magnetism' or 'Matter' in science according to total working days over a period of one academic year. They put learning objectives, activities and assessment tool for teaching the units within the specified period) on a chart paper. This unit plan is based on concept grid (they put the similar concepts with different grade-wise learning objectives in a sequential order from the textbooks looking at the contextual appropriateness of teaching the concepts). Though the teachers were striving to exercise unit planning and making concept grids, they found it difficult. They needed much support and found the initial training not sufficient. Therefore, we realized the need to involve the teachers in the centre based training for MGT at PDCC.

The Class room Teaching and Learning

We observed the teaching and learning situation in the classroom and found that although, the teachers had started activity based teaching after coming back from the initial training and therefore, the students to some extent seemed to be confident, and they were trying to answer simple questions that was not seen before the training of the teachers. It seemed that the teachers had got some ideas of activity based learning however, they needed much more knowledge and skills to deal multi-grade situation.

As T1 & T 2 had already attended a workshop on multi-grade teaching at PDCC and thus had some ideas of multi-grade teaching, while T3 who had recently been transferred to this school was totally unaware of the concept of multi-grade teaching. Answering to a question about MGT the T3 said, "Teaching students of more than one grade is called MGT but it is impossible because giving individual attention to students is not possible even if there is low enrolment, grades are different" (November 24, 2005). Commenting on the statement of T3 the T1 said,

> Teaching in multi-grade situation is not impossible but difficult. It needs lots of hard work. Demand for single teacher for each class in a small school is, I think, not reasonable. Our problem is that we are trained in mono grade system but are placed in school where the situation is different. (Thursday 24th November, 2005)

Since the T1had once participated in SIMS teacher professional development workshop whose' belief about multi-grade teaching to some extent, had changed (more detail is given under the topic 'the workshop').

After observing the lessons of the teachers and interviewing them, we identified below findings that were addressed during cycle I & II:

- Participating in the workshop on multi-grade teaching had been helpful for the two teachers in developing their theoretical understanding of the concept, enhancing their content knowledge in some areas, pedagogical skills and confidence level. Teachers were found to be still facing lots of problems especially developing concept grids, planning lessons and activities.

- Although two grades were accommodated in one room, there were few occasions when multi-grade teaching took place. Most of the time the students were treated like mono-grade. Teacher was busy with one grade leaving the other grade with no learning activity or sometime they are left under the supervision of the monitor who has to ensure that the students are quiet so that the other class should not be disturbed.

- No visible work was done regarding parental involvement and peer tutoring. None of the parents ever come to the school to enquire about her/his child's performance. Teachers never realized the importance of parent-teacher interaction related to students' learning.

- Some resources were developed by the teachers and kept safely in the classrooms but they were not being used effectively in teaching learning process. For example, some basic resources (teaching kits) and some teacher made charts and models available in the school. They have the problem of these being locked or they do not used effectively. It was because of the fear that if an item in the kit is lost, broken or worn out the teachers will have to replace that from their own pockets.

- Classroom management and involving students in the learning process was an issue most of the time. Students who were without meaningful learning activities (Memorising some facts) were misbehaving resulting classroom management problem.

- Teachers were found to be enthusiastic about PDTs' support for effective implementation of SIMS interventions. They seemed to be determined to work with the PDTs and to be a part of the study.

- It was realized that there was a need of more professional support to the teachers before having an intervention in the school. This support will include enhancement of

teachers' understanding of MGT, improving their teaching skills and helping them in implementation of the learning in actual classroom situation.

After doing the needs analysis we decided to include the names of the research participants in the upcoming workshop for SIMS teacher professional development during the winter vacations. Specific objectives of involving the research participants in the workshop were to;

- enhance their content knowledge as well as improve their pedagogical content knowledge with particular reference to multi-grade teaching
- provide an opportunity to develop concept grids with the support of the facilitators (including the researchers)
- overcome their difficulties regarding planning of learning for the up coming academic year (unit planning, lesson planning, concept grids) keeping in mind multi-grade teaching
- revisit their beliefs and perceptions about MGT and its effectiveness and relevance to their school situation.

The Workshop

Although there were other course participants in the workshop from different primary schools with multi-grade classes, the three research participants (why not simply refer to them throughout as the three teachers) remained the focus of our observations and facilitation throughout the workshop. We facilitated the workshop and closely observed the achievements, performance of the research participants and did the analysis of the data collected as an on going process. Some details of the analysis are given below:

Change in Teachers' Belief about Multi-grade Teaching and Teaching Skills

At the beginning of the workshop the three teachers came in with the understanding of Multi-grade teaching as teaching of more than two grades one by one. They said, "Teaching more than one classes by one teacher is MGT" (composite quote, group work presentation, January 2, 2006). The new teacher with no previous training on multi-grade teaching (T3) said, disappointedly "Sir! it is impossible. As long as there are two teachers and five classes, effective teaching and learning is impossible". (January 2, 2006)

It seemed that there was a great fear of multi-grade teaching in the mind of the teachers. In order to remove the fear of multi-grade teaching from the minds of the teachers

the facilitators tried to build on the previous understanding of the CPs and shared with them Miller's Model of Multi-grade Teaching where he discusses role of curriculum re-organization, community involvement, resource management and Peer tutoring related to MGT. They were also provided with research based literature on multi-grade teaching, for example, research based articles showing some advantages of MGT, difficulties with MGT, teachers in some countries using MGT as pedagogy by choice. In the process of change, teacher's belief about the desired change plays a vital role. So there was a great need to involve the teachers in activities and discussion that increase their commitment, motivation and change their behavior about multi-grade teaching. As a result of the discussion on MGT the participants came out with a different understanding of MGT as one of the CPs mentioned in his diary reflection, "Keeping more than one classes in meaningful learning activities at a time by a single teacher is MGT and is very challenging". The word 'impossible' dramatically changed into 'challenging' which is no doubt realistic. We ourselves observed through teaching in a multi-grade situation that without proper planning one cannot teach effectively. Planning and looking for appropriate resources demands for time and hard work.

Discussions in the classroom led to talk about different strategies regarding the MGT. For example, reframing class-wise timetable, putting concepts in to sequential order and developing unit plans, were some of the strategies used in the workshop. These discussions enabled the participants to understand both the positive and challenging aspects of Multi-grade teaching. The CP reflected, "Now I can teach easily in a Multi-grade situation as unit planning and putting concepts into sequential order (concept grid) are new and seem to be helpful ways in MGT". The other CP mentioned his views, "To me MGT seemed to be impossible, now although it is still challenging, not impossible". Re-organisation of curriculum especially developing concept grid from the textbooks was one of the major components of the SIMS teacher workshop. The CPs found the activity very helpful as they reflected; "Now we understood how these concepts which are to be taught in different level are interrelated? Now we can easily teach using concept grids" (composite quote, reflective journals of CPs dated January 24, 2006)

Improvement in Teachers' Content Knowledge

Subject content knowledge and pedagogical content knowledge are clearly interlinked. One can hardly know how to teach a subject in ignorance of the content knowledge. Miller (1997) also argues that just knowing the subject matter is not sufficient for teaching it. In order to enhance the CPs'(research participants T1, T2 & T3) content

knowledge and improve their pedagogical skills, a number of new ways of teaching for example, effective group work, presentation, doing inquiry, peer tutoring, story telling, modeling and circus format, were introduced during the workshop. T2 shared his reflection saying, "We enjoyed working in groups. It is not only a good way of learning but it also develops our confidence especially when we present our work" January 12, 2006). Their beliefs about teaching of different subject changed. T1 shared his reflection, "I got the idea that science can be taught with simple things which are available everywhere in the local environment". T3 said

> Now I know that science is not boring subject. It is we the teachers who can make it either boring by teaching it the way we are teaching or make it interesting by teaching it in an interesting way. (January 16, 2006)

Similarly, reflecting on teaching of Social Studies in primary school one (T3) of the CPs said, "Now I realized how important to teach social studies in primary classes is" (January 24, 2006). Reflecting on their own learning of mathematics and then their current teaching of mathematics they perceived mathematics as boring, difficult, dry subject both for students and teachers. During the workshop when the participants were introduced to pattern seeking, problem solving, magic squares they were saying, "This boring math is becoming interesting" (informal discussion). Reflecting on language game and story telling in language teaching especially in the Multi-grade classroom T3 said, "Story telling plays a vital role in teaching of Language", (composite quote, reflection of *CPs*. January 14, 2006). The mentioned quote revealed that the teacher realized the importance of the strategy 'story telling'. They not only realized the importance of the strategy but also seemed to be determined to apply them in their classroom. But our previous experience as teacher educators witness that only giving training to teachers and expecting from them of effective implementation at actual classroom situation was not realistic. The teachers have been practicing a type of teaching methodology (traditional) inherited from their teachers since long that they have internalized it and hardly willing to come out of it. Now in the centre based workshop although, they accept change as a result of available facilitation, they hardly implement at actual classroom. This is what Siddique (2003) has observed, "Teachers sometimes remain under the pull of gravitational force of switching to comfort zone" (p: 12). Therefore, the trained teachers need help at classroom level as well to internalize the change process and to discourage the routine. Anderson (2002) found, "…teachers who benefited from the workshops on child- centered teaching methods were less likely to put those

methods into practice than teachers who received in-class coaching by POs in addition to workshops" p:13.

We therefore, decided to work with the teachers just after the workshop to facilitate teaching and learning process (based on the learning in the workshop) in their actual classroom situation and to observe the successes and challenges of implementation during cycle II.

Cycle II

Intervention in the School

Schools in Chitral reopened on March 01, 2006 after long winter vacations of two months. The teachers were found fully involved in planning and teaching making a number of changes in the light of the learning from the workshop. To avoid dependency on external change agents we (the researchers), played the role of facilitators rather doing co-planning and co- teaching. For example, the teachers were developing concept grids from different subjects and we were helping where there they stuck. Similarly, they found difficulty in setting learning objectives for lessons they wanted to teach. It is worth mentioning that no idea or strategy was being imposed on the teachers. The teachers were encouraged to learn from their own practices and from the training. This approach was in lie with experience elsewhere,

> It is important to remember that establishing a schedule for a multi-grade classroom is a very personal process that reflects the experience and training of the teacher and unique needs of the students. There is no "best' schedule. (North West Educational Laboratory, 1999)

We the researchers were more interested in the process of planning and then implementing focusing on successes and challenges rather than the learning outcome of the students at the initial stage of the cycle II. The reason for focusing on the process was that we wanted to help the teachers in implementation of some driving strategies that were introduced to them in the workshop to improve teaching and learning practices in multi-grade situation. It is worth mentioning that the focus of action was on pre classroom activities (helping teachers in unit planning, developing concept grids, resource development and discussing routines). However, classroom activities (implementation of pre-classroom activities like teaching and learning) were also going on side by side. The detail of action on pre-classroom activities are discusses below.

Concept Grid

When the teachers (research participants) were setting Concept Grids two of them who had little idea of the concept grid found it very difficult at the initial stage of the exercise. One of them (T2) said, ""*Iss MGT nay nak Mey dam kar dia",* reflection of a teacher (March 13, 2006). (MGT made the life miserable, it is too difficult to teach. We are totally upset). This comment led to a discussion given below. R stands for researcher while P represents the research participant.

R: Why do you say this? Can you say some more?

P: There are some topics that are not similar

R: Can you give me example?

P: Most of the topics are somehow similar in science, I feel much difficulty in language teaching. For example, I have to teach Class III Singular and Plural and at the same time I need to introduce 'noun'. It is quite confusing.

R: Ok. Let's take the issue in this way. If we start our teaching just eliciting the names of different things in the classroom and may be from the surrounding (depending on students' ability) and expecting that the senior class will easily name the things and of course some students of the junior class will also response, that ultimately will lead to definition and recognition of noun. After this they will practice in their respective groups and your facilitation will be there to achieve their respective learning objective. So the learning grid will be: "Noun Vs Singular & Plurals"

P. I got it; I was thinking of the lessons rather than looking at the learning objective.

R. Yes, you will have to set learning objectives with the help of the lesson given in the textbook

After the above discussion that the teachers did not focus on the key learning components and learning objectives while developing concept grids. Therefore, they needed our help in developing of concept grid. So we involved them in developing concept grid on their respective subjects they teach. This they did successfully and below table is noted as evidence.

CONCEPT GRID FOR CLASS IV & V
SUBJECT: SCIENCE

Grade IV		Grade V	
Main Topics	Key learning	Main Topics	Key learning
Living things	Distinguish between the living and non living things (their growth and movement). Plants and animals are living things. Animals and their usefulness, correlation between population and food needs. Balanced died and its effect.	**Living things**	Resemblance/ similarity, reproduction, mammals, growth, the food of animals, the reproduction of plants, life cycle of the plant. Underground stems. Plants and animals are interdependent. Living things and their environment interact

Matter	States of the matter, changing one state into another, three conditions of water, sources of water. The uses of water. Air is also a state of matter. Air is also important for animals and plants.	Matter	Solutions, Sugar, salt etc more dissolve in hot water than in cold. Evaporation of water in air. Description of water cycle. Description of water, pollution. Air is everywhere. Identify the name of different gasses

Setting Teaching Objectives

The process of developing concept grids was a concern of the teachers. We provided the teachers with copies of the national curriculum document in which subject-wise objectives of teaching the specific concept of each subject were clearly mentioned. To make sure that the teachers got the idea of setting objective in the light of curriculum document and the textbooks, we involved them practicing the exercise. The issue of teacher time was major constraint in doing paper work. Since the activity was quite new and teachers had to involve themselves in much mental work, they were initially quite upset. But based on our experience, we believed that once the teachers become used to practice an activity and find the advantage of doing the activity then they would appreciate it. Thus we kept on involving the teachers in the mental work. Just after setting objectives for four lessons of science and offering them in the classroom the teachers came out with a changed attitude saying, "Sir, although the activity of developing concept grid and setting objectives for teaching is time consuming, it is very helpful"(April 21, 2006). One of the three teachers said,

> To me going to the class without setting objectives or just having a textbook in hand is useless. May be one can tackle the class of single grade but without proper planning effective teaching in multi-grade situation is impossible. (April 21, 2006)

The learning for the researcher, here, was that if you facilitate the teachers at the right time rather than working for them brings about positive change in their attitude as well as in their practices.

Teaching Resources

Resources play an important role in teaching and learning process and in a multi-grade teaching they become more important, Alvi (1992) cited in Khan (1998) sees the use of low cost/no cost teaching material from the local environment and writes,

> Low cost, no cost materials or in other words, teacher made materials should play a very important role in education. When skillfully combined, pictures, words, and sound have the power to evoke emotions, to motivate actions, to change attitudes and generate ideas. The impressions thus created are retained significantly longer than when they are only heard or read. (p. 2)

In this school, teaching kit was available but rarely used by the teachers, because they were not given training about its use. Therefore, a three hour session was organized for the teachers on effective use of teaching kit. The session helped the teachers in understanding the importance of resources. They also learned to develop and effectively use of simple teaching resources from locally available low- cost and no- cost materials. For example, Collection of seeds stored in used bottles, model of human body systems using plastic bottles, balloons, strings, plastic straws etc., Liquid thermometer, globe, mathematical games, paper clock and so many other things, were seen put on resources corners of different subjects as well as were being used during teaching.

Routines

During classroom observations and informal talks with the teachers and students, at the beginning of our study, a few things came out significantly that we believe, were an impediment in the way of effective learning in multi-grade teaching situation. For example, many of the students were hesitant to talk to teachers as well as with their colleagues. At the same time some of them were misbehaving with their colleagues. They just step on the desks and run out of the class pulling and pushing others at the recess (short break) time. Similarly, according to students' daily attendance register, many students were found to be irregular in their daily attendance. Irregular attendance and rush for going out of classroom for play as soon as the bell rang revealed that the students did not find the classroom a happy place for them to be in. It also showed that students had not learnt how to behave on particular occasions such as entering the classroom, going out of the classroom and during recess period.

To overcome such type of hindrances and to develop confidence in students, we and the teachers planned to introduce some classroom routines such as practice of social skills and use of teacher made 'Adjective Badges' labeled with words like Intelligent, Punctual, Cooperative, Tidy, Active and Cheerful etc. These badges were given to students to wear who demonstrated respective manner/s. Sometimes, teachers have to use the badges depending upon the context and looking at the psychology of the students. For example, given below success story was shared with one of us by one of the teachers:

> There was a student of class V named 'X' in the school. He was very naughty and irregular in his daily attendance. The students, specially, the girls were fed up of his misbehaviors. In spite of verbal advice and sometimes corporal punishment by the teachers, he did not change. I distributed some of the

Adjective Cards (badges) among the students and gave a badge labeled with 'Cooperative' to Mr. X. After one week I gave him another badge labeled with 'Friendly'. In a two week practice I observed Sir! you cannot believe that the behavior of   Mr. X was enormously changed. Now he was really friendly and cooperative boy in the class and it was because of the 'magic' Adjective cards

The other teacher further added that the use of Adjective cards were very helpful in creating healthy competition among the students in school generally and in the classroom particularly. Besides, that inclusion of time (once in a week) for sports and Art & Craft in the timetable played a role in making the school a happier place for the students.

At the beginning the teachers were quite reluctant and were not sure of the positive effects of using routines. But soon after practicing some of the social skills such as ' saying thank you, sorry, please, listening to fellows, taking turn, raising hands to share something in the class and using 'adjective cards', involving students in Art & Craft and sports activities, a rapid behavioral change was noticed both in the teachers and students. It was not only a matter of school based activity but there were examples of practicing such skills in their home context as well. Below I quote a dialogue between the students of class IV & V and one of us:

R: Ok. Do you say thank you to your Mom when she gives you food or something else?
S: Yes Sir.
R: But your Mom does not know English
S: Sir! Sir! Sir! (Many students at a time)
R: No! No! Just tell me one by one
S: Sir! We say it in Khowar (local language) Ta shukria Nan

We believe that although the above examples represent change in bit, lead to big change in students' behaviors and attitude towards social developments. However, these small changes demands for appreciation by the teachers and to promote them further through an encouraging learning environment.

Use of Mobile Library

In order to help students and teachers improve their reading habits, the PDCC has introduced a mobile library service to some of the schools in Chitral. Through mobile library system, a collection of books (kept in small boxes) are given to schools for a period of one month. The boxes are changed after one month. As a result of this mobile library, the students of different schools benefit from different books. The school where this study was done did not have library and students did not have access to reading materials other than textbooks before the SIMS. Therefore, this school was also provided with a mobile library service.

Students and teachers not only appreciated the books but also found to be enthusiastic about reading the materials. A student said very enthusiastically, "Thank you very much for the story books". The students were not only reading story books but also developed their own stories in their own words both verbally and in writing. A student produced the story in pictorial form after reading the text. These types of reading materials were found to be helpful in developing students' language skills as well as affective and psychomotor skills.

Our discussions with the teachers during our visits to the school from time to time revealed that not only students of the school did benefit from the mobile library but the teachers also found the books very helpful. One of the teachers said, "Sir! There were many new words in these books and I had to consult dictionary to find out their meanings. In this way I increase my vocabulary". The other teacher said, "I used some of the story books during my teaching that made my teaching interesting" (May 17, 2006).

Community Involvement in Child Learning

"I am sure parents will not spare time for school activities". This was initial belief of the teachers. But this belief changed when they invited the parents and received more participation than they expected. The teachers quoted a father who said, 'students' involvement in co-curricular activities should also be encouraged". It was a good indication towards change. The teachers were so enthusiastic about the achievement that they made a Parent Teacher Association in consultation with the parents. Though there was the so called concept of Parent Teacher Association (PTA) in the school, no proper mechanism for selection of PTA members was found to be in practice. The PTA now introduced, for the first time in the history of the school following a proper mechanism that involved majority of the parents in selection/nomination of the PTA members. The teachers and the representatives of parents jointly developed timetable for after school activities of the students. Since it was first ever meeting with the parents, teachers seemed to be determined to continue the meetings with parents for the purpose of effective parental involvement in students' learning.

During the 1st and 2nd cycles of this action research our focus remained on looking at the whole school rather than just academic teaching and learning activities. Further, we made the teachers realize the importance of different agencies' contribution such as students, parents, and support staff in school improvement. Durrant, Dunnill, Clements, (2004) mentioned,

Students, too, are 'expert witness' in the classroom and around the school and they can play their part in leading learning (MacBeath et al., 2002; Rudduck & Flutter, 2003). Others such as parents, support staff and governors, will have insights, experiences and information to contribute. P: 153

Therefore, we prepared the teachers to plan activities for creating conducive environment taking the school as a whole and for the students to perform well in a multi-grade situation. The experience of the cycle II was interesting in a number of ways in terms of its successes and challenges. The teachers found the activities, (discussed above in detail) very difficult at the initial stage, that was really challenging for us. But later on they were quite comfortable with their work. The reasons of the teachers' being comfortable and motivated, we believe, were our continuous encouraging behavior, timely support and the evidences of success of their efforts, in the classroom.

Cycle I was more theoretical as most of the activities were centre based while Cycle II focused on putting theory into practice at actual classroom situation. To see the effects of the exercise of cycle II in more detail, we had to go for the Cycle III. In Cycle III, we focused on our actions, being participant observer, on exploration of successes and challenges in the classroom as a result of the exercise practiced during Cycle II. Besides teaching and learning achievements in the classroom, we looked at behavioral changes in both the teachers and students in the Cycle III and detail is given below:

Cycle III (Achievement Analysis)
Classroom teaching and learning

In the 2nd cycle of the research, planning and teaching went side by side, but the focus of helping teachers remained on planning and identifying successes and challenges regarding process of planning. However, effects of planning on learning and attitudinal change of both the teachers and students were also recorded. During cycle III the focal point of support to teachers was the implementation of lesson plans and to find out the difficulties faced by the teachers so that they could be guided on the spot. Besides, helping the teachers in implementation of the lesson plans, it was intended to see students learning achievements as well. Here the researchers' role was of participant observers who observed and participated in the classroom activities. The researchers also interviewed teachers and students to unpack the learning outcome of students as well as the teachers.

The teachers had already learnt how to develop concept grids and how to set learning objectives and were practicing them in the classrooms during the first cycle. Both the researchers and the teachers were reflecting on the practices from time to time. As it was

already found that expecting much time for paper work (detailed unit plan, lesson plan etc) from the teachers did not seem to be realistic because of the workload and other commitments of the teachers. Therefore, lesson plans could not be made in detail, because the teachers found it difficult to develop subject-wise and topic wise written plans for both the classes at a time. For example, one day one of the teachers said, "Sir my plan is ready. I want to teach Irrigation in class IV & V. I find it difficult to introduce it in both the classes. Can you help me?" We discussed the plan where learning objectives for both the classes were clearly mentioned (for class IV, definition and source of irrigation and for Class V Names of dams and their locations) and were clearly interrelated. We discussed a few simple questions with the teacher rather than giving model lesson and it went very well. We quote the discussion that we had with the teacher:

> R: OK. You know the main topic is 'Irrigation'. Learning objectives are clearly mentioned in your plan. You also know that students of class V have already learnt what does irrigation means and its sources? Suppose if not all of the students of class V, some of them will respond to your simple questions such as what are some of the uses of water? Where do you get water from? These questions will lead to probe further to say that they needed water for their fields and crops. Getting responses and giving some explanations you can distribute your worksheets and facilitate the students going to their respective groups as planned. What do you think?
> T: Yes Sir! The picture is striking my mind. I need to practice it.
> R: Shall I take the lead in the class or you yourself start teaching and I shall be with you?
> T: No Sir! I think I should practice myself

The teacher tried his best and the activity went quite successfully. However, the teacher's lack of questioning skills became a hindrance in the smooth delivery of the lesson. We cannot expect from the teacher to become confident in creating an ideal environment overnight. Following the steps towards the philosophy of multi-grade teaching (start with the whole class, create subject cum topic wise environment, go to groups, pairs and individual according to the situation) was important to move forward towards improvement that will come over a period of time and frequent practice. Research also supports that, "For most teachers in most situations learning to put new ideas and practices into place is incremental" (Aderson, 2003: 3). The important event was to focus how the teacher strives to internalize the process. The teacher said, "It truly creates an opportunity for students to learn from one another, especially juniors to learn from their seniors. It is important to proceed systematically and for that pre planning is crucial" (May 30, 2006)

Evidence of Success

The achievements have been grouped in three broad categories i.e. Structural achievement, behavioral achievement and academic achievement.

1. Structural Achievement

The desks and benches were replaced by mattress (chatai) of class IV and V. (why was this not done also for the younger classes? This replacement made classroom movement easier for the students as well as for the teacher in a MGS. Now students can work in groups easily. The classroom was looking as it was different groups of one grade rather two different grades. The teachers can reach every student for guidance and facilitation. The students can easily get help from teachers and from one another. A student mentioned, "We are learning from our seniors". (May 30, 2006) Answering to another question whether the students wanted to sit separately, the students answered in chorus, "No Sir, we enjoy and we help each another. We want to sit in one room". They further added, "Now we can easily show our written work to our Sir" (May 30, 2006)

Government schools where there are benches and desks, those are so heavy and fixed that the students cannot move them. As a result, the students who sit once on one bench have to remain seated throughout the day. Moreover, besides, the heavy and fixed furniture in rows the classrooms are too small to make it learning friendly especially when it comes to multi-grade situation in primary schools.

2. Behavioral Achievements

Visible attitudinal and behavioral change in both the teachers and students towards teaching and learning was seen as a result of the intervention for example, the teachers reflecting on their practices before and after the SIMS intervention said, "Now, we feel ashamed reflecting on our act of using stick". The teachers also shared the comments made by the students, "Sir! What happened to you? You are now laughing and not beating us even if we misbehave" (April, 21, 200)

Each of the three teachers has started developing concept grids, lesson plans, unit plans based on the concept grids. Though it was a challenging task, the teachers seemed to be enthusiastic and they sat late hours to develop such type of activities.

> At the beginning we had to sit after school but it made our teaching easy. We put the similar concept of both the classes in a sequence. It helped us in planning lessons to involve both the classes at a time", (quote from reflective journal of one of the teachers. May 30, 2006).

The teachers have started improvising and using low cost/ no cost teaching materials. For example, they are making charts, drawing maps, making thermometers from plastic bottles, making card badges etc. This shows a positive change in teachers' behavior towards

valuing their profession. They wanted to make their teaching interesting for their students to learn effectively. The change of teachers' behaviour and appreciating resources led to the change students' behaviour towards appreciating learning. In an informal discussion with the students they said, "We enjoy drawing, coloring and making story using wall pocket-board (teachers have developed pocket board from cloth)". As a support of behavioural change occurred in the teachers and students we quote another example. Answering to a question of teachers' behaviour before and after the SIMS intervention, the students mentioned:

> We enjoy learning as our teachers are now friendly and give us books to read, tell us stories, and allow us to play. We bring things from our home that is used in teaching by our teachers. April 18, 2006

It shows that both the teachers and students, who believed and practiced only on rote memorization from textbooks before the intervention, enjoy different ways of learning and appreciate practical work now. Hoyle (1994) observed, "A classroom that works for equality in which pupils and teachers are working together to enable the learning process to occur" (p. 233). Such type of environment can only be created in a situation where both the teachers and students exercise positive attitude towards change.

3. Academic Achievement

We believe that the changes in both the teachers and students' attitude towards teaching and learning led to improve students' academic achievements. In other words the process of learning in the classroom improved. We believe that this improvement in the process of teaching and learning will ultimately lead to learning outcomes both quantitatively and qualitatively. A few quotes from our classroom observations, interviews and informal discussions with the students and teachers support these changes. In an interview with the teachers they mentioned,

> Students are more interactive and take interest in activities. They enjoy readings (especially stories) from the mobile library. The students now perform better in weekly and monthly tests given to them. They do home tasks regularly. (May 18, 2006)

Our own classroom observations from time to time also witness that the students were becoming more confident and motivated to learn day by day. Displays of students work were seen on the walls of the classrooms. Students talked about the displays, writing on the notebooks and answering to simple questions also witness the positive impact of the SIMS intervention on students' learning. One of the students said, "I like drawing and coloring very much". Another student mentioned, "We are learning from our senior friends. They help us".

We observed that the students not only take interest in making dolls, animals from old pieces of cloths and mud but also presented their work with confidence. Students could now draw color and display their work with their group name as well as with individual name and feel proud to do so. "I never thought that young children could do such creative work", noted T1 in the reflective journal (May 18, 2006). The teachers reported that the students becoming more active, confident and interested as a result of SIMS intervention. So, it was a great learning for the teachers that they should enhance their knowledge and skills to deal with the multi-grade teaching realities. For example, while discussing challenges of MGT and the SIMS, the teachers mentioned, "Now we are finding difficulties in developing challenging activities for the students" (May 22, 2006). It is too early to talk about academic achievements in the form of examination result however the students of the school where this action research was conducted appeared in the examination of grade V in the clustering of four schools, performed comparatively better.

Researchers' own learning and implications

The study was of great signification for our own professional growth as well as to achieve the organizational objectives of the Professional Development Centre Chitral. We as students of Master of Education (M. Ed) at the Aga Khan University Institute for Educational Development (AKU-IED) had read a lot about Action Research. This study provided us with opportunity to actually conduct an action research. As teacher educators we often conduct courses, workshops but rarely work in the actual classroom. This study allowed us to work within the complexities and realities of a classroom. Some significant learning from the study is mentioned as under:

- During the study we had to read more literature on multi-grade teaching that resulted in enhancement of our own understanding of multi-grade teaching.
- Though, we had read theories and studied different models of multi-grade teaching, putting the learning from theories and models into practice was an unique learning experience for us.
- Since we as Professional Development Teachers had developed an indigenous type of school improvement model 'School Improvement in Multi-grade Situation (SIMS)', and our involvement in this study was an excellent opportunity to test the model and to see its effectiveness or otherwise.

- This study provided us the opportunity to experience the work place complexities and realities, which the teachers and the students face in their respective schools and classrooms.

- Since the study is an initiative of the PDCC so it would be a valuable addition to the efforts being made in providing quality education in the region.

- This is the first research study of its own nature (on Multi-grade Teaching) in the context of Chitral that may inform practitioners as well as policy makers involved in primary education.

Conclusion

This study found that for meaningful teaching and learning in a multi-grade situation teachers' commitment, beliefs about MGT and pedagogical skills play an important role besides, other factors, which promote conducive teaching and learning environment in a MGS and are discussed below:

Discussing teachers' beliefs of MGT it is obvious that teachers had a fear in mind that MGT is a pedagogy that is very difficult and not practical. In other words teachers did not seem to be willing to take up MGT as a choice pedagogy because of many reasons. Inappropriate training facilities to teachers and shortage of resources could be few examples. Similarly, without acquiring sound content knowledge and practicing certain strategies that are helping hands of teachers, it is difficult for them to enjoy teaching and to make the school a happy place for students and it will come through proper teacher training. Unluckily, teacher training curriculum generally in the context of Pakistan and particularly of Chitral, does not meet this critical issue of MGT even though majority of the schools here, are running in a MGS. Teachers Training colleges only prepare teachers for teaching in a mono-grade setting but are sent to schools where there multi-grade setting exists. In her review of research and practice Little (1995) observes, "The knowledge required for effective multi-grade teaching is rendered illegitimate by those with a responsibility for training and supporting teachers in their work" (p. 5). During this study, it was found that besides, lack of content knowledge and limited pedagogical skills of the teachers, with particular reference to MGT, their unawareness of the national curriculum document objectives is a great hindrance making meaningful teaching and learning in a MGS. The teachers most of the time depended

on the textbooks before our intervention in the school, that resulted in lack of efficiency of setting learning objectives and meaningful activities for the students.

The study also found that only conducting workshop/ courses (enhancement of content knowledge, improving pedagogical skills and developing positive attitude towards MGT) for the teachers teaching in a multi-grade situation is meaningless unless they are supported at the actual classroom once they participated in the workshop/course. The support would include of implementation of the learning from the workshop and effective utilization of factors such as community participation, appreciating small changes brought about by both the teachers and students.

Going through the collected data and the result drawn as a result of this action research we concluded the study by making the following recommendations:

- The teachers of multi-grade setting would be provided with intensive training followed by frequent developmental support at workplaces in order to internalize the learning and putting the learning into practice.
- The primary school curriculum has been designed for mono-grade situation and in the pre- service trainings, the teachers are prepared to teach in single-graded classes, therefore, they face lots of challenges while teaching in a multi-grade situation. It is recommended that necessary changes in the curriculum of primary schools as well as the teachers training institutions may be made.
- Teacher development programme must not solely focus on teachers' professional practices but also have a component to enhance teachers' commitment and motivation towards multi-grade teaching.
- Evidences of small changes with respect to multi-grade teaching should be acknowledged by the school professionals to facilitate big changes to occur.
- External change agents (especially those who run professional programme for teachers) agents have to keep in mind the teachers' workplace complexities and contextual realities, while initiating any change process in schools.
- There is a need of composite dialogues between PDCC and the concerned educational systems regarding roles and responsibilities of all stakeholders if SIMS model has to be replicated in other schools.

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