NOTAT

# Multigrade teaching – for pedagogical reasons or only as a necessary model?

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**SAMANDRAG**

I dette notatet presenteres norske erfaringer med fådelt metodikk, internasjonal forskning knyttet til fådelt metodikk/multigrade teaching og det gis en kort innføring i læringsteorier og metoder som kan ha relevans for fådelte skoler i Zambia. Jeg diskuterer hvordan fådelte skoler kan basere sin undervisning og eksistens på pedagogiske grunnlag mer enn på økonomi og nødvendighet. Gjennom å presentere internasjonale forskningsfunn og norske erfaringer har jeg påpekt noen utfordringer en må være klar over når en arbeider med fådelte skoler. Læreren må være veileder mer enn en kunnskapsformidler, elevene må lære å ta ansvar for egen læring gjennom elevaktive læringsformer og skolesystemet må være fleksibelt om du ønsker å lykkes i fådelte skoler. Gjennom min presentasjon av læringsteorier og metoder har jeg diskutert teorienes relevans for fådelte skoler og funnet eksempler med relevans til zambiske skoler. I konklusjonen trekker jeg fram noen forutsetninger som skal til for å lykkes med fådelt metodikk i Zambia.

**SUMMARY**

The paper presents some Norwegian experiences with multigrade teaching, international research about multigrade teaching and a brief introduction to some learning theories and methods that may be useful in Zambian multigraded schools. I discuss how multigrade Teaching can be used based upon pedagogical reasons more than only economically reasons or necessity. With a presentation of international research findings and some experiences from Norway, I have point out some challenges we all should be aware of when we are working with multigrade teaching. The teacher have to be a facilitator more than a lecturer, the pupils must learn to take responsibility for their own learning through pupil-active methods and the school system must be flexible if you want to succeed with multigrade teaching. During the presentation of the learning theories and methods I have discussed the relevance to multigrade teaching and given some examples related to Zambian schools. I conclude with some assumptions for multigrade teaching in Zambia.

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# Foreword

The purpose of this paper is to give a brief presentation of some of the Norwegian experiences with Multigrade Teaching, international research about Multigrade Teaching and a brief introduction to some learning theories and methods that may be useful in Zambian Multigraded Schools. I have emphasised to find examples according to the Zambian education politics and tried to refer to the Zambian Curriculum, Zambian Syllabus and Manuals/Modules from Ministry of Education in Zambia.

This paper has been presented and discussed at several workshops in Zambia in 2002 – 2004 related to my work as the Norwegian advisor in Multigrade Teaching for the Ministry of Education in Norway (UFD)/Minestry of Education in Zambia (MOEZ). As an advisor in Multigrade Teaching in Zambia it has been important to give my colleagues in Zambia some theoretical material as an introduction to the field "Multigrade Teaching and General Learning and Method Approaches". In this co-operation dialogue and exchange of experiences have been important, and many discussions in Zambia have influenced this paper. In my work with Multigrade Teaching in Zambia I have been aware of the importance of being a facilitator, not only a lecturer at workshops. The ownership and faith to change and hopefully improve the Zambian schools system is important. This paper is a result of different presentations, discussions and reflections in the Norwegian and Zambian co-operation of education. Different educational officers from Zambia have visit Norway and Sogn og Fjordane University College once a year since 2002, and their experiences and reflections have inspired me to see the relevance Multigrade Teaching in Norway can be to Zambian schools.

As an advisor in Zambia, I have extended my work from a pilot project at district and school level to now become a part of the writing team for Zambia's first national Manual for Multigrade Teaching. Part of this paper will be used in the Manual for Multigrade Teaching in Zambia.

This paper has been written mostly for my colleagues in Zambia, but hopefully will teachers, lecturers and other educational officers working with Multigrade Teaching in Norway or other countries find this paper useful.

# Contents

## Multigrade teaching for pedagogical reasons or only as a necessary model?

Multigrade teaching is a world-wide phenomenon in most rural areas. Multigrade teaching is organised as a "necessity model" or as a "design model". In the necessity model groups of children varying in age and numbers are combined together under the supervision of a teacher or two teachers to be taught as a class. This model may be a result of financial constraints, non- availability of teachers or lack of resources. Multigrade classes of this type are commonly found in sparsely populated areas in rural settings or in areas with high pupil population but few teachers. Multigrade teaching is also planned as a design with a rationale to meet pupils' individual needs. In this model pupils are grouped together across ages in combinations most beneficial to their educational stimulation and success (Hussein, 2002).

As Little (2001) emphasizes, it is important to understand whether multigrade teaching has arisen through necessity or choice, and the literature about multigrade teaching often fails to indicate this. In all countries multigrade teaching is found mainly in rural areas and arises largely through necessity. Where it takes place in urban areas it usually does so through choice, not necessity, and as a part of broader reform of philosophy and pedagogy of teaching (Little, 2001). While multigrade teaching is chosen because it is cost-efficient in many developing countries, it is usually more expensive to run multigrade schools than monograde schools in many industrialised countries (Little, 2001).

It is important to remember that research about multigrade teaching in industrialised countries has to be seen in such a context. There are a lot of challenges to face in choosing multigrade teaching for pedagogical reasons where resources are insufficient or not available, but we have to try to see the possibilities within the frames and context we have. In Norway there are regulations that indicate how many pupils a teacher can teach at the same time. If the teacher has many grades together the number of pupils will be less. The Norwegian education law of 1998 indicates how many pupils you can have in a classroom[1]. For single grade schools the number is 28 pupils for Grade 1 – 7, and 30 pupils for Grade 8. – 10. But where a teacher has at least 4 grades together in a classroom, the maximum number is 12, with 3 grades together it is 18 and with two grades together it is 24 pupils.

Even if there seems to be a lot of differences between Norway and Zambia I will try to argue for using multigrade teaching methods in Zambia also for pedagogical reasons. In Norway as in many other countries, multigrade schools have been very common in rural areas during the historical development of education, and the number of pupils in the classroom has vary from time to time.

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[1] From 01.08.2003 the Norwegian education law of 1998 § 8.2 has changed and from 01.08.2003 the school is more flexibly to choose how they want to group the pupils.

## Brief History about Norwegian School system and why it can be useful for Zambia

The year of 1739 saw the beginning of schools in rural areas and the teacher travelled around to the children's home. The teachers had low social position, below that of public servants. After 100 years the teacher's position improved to a higher status in the society. In 1860 it was decided that there should be a school and a school building in every community. (It was often said that the school was the best building in the community). In rural areas pupils went to school every second day, the school was multigraded and closely connected to the local community and offered practical subjects. In 1959 Norway got a common law for both urban and rural areas, and a lot of schools in rural areas had to close down. One implication was that children had to move to the bigger schools because of the politics of centralisation (Befring, 2001). Nevertheless, there were still a lot of multigrade schools in Norway. In 1997/1998 there were 1384 multigrade schools in Norway, which makes about 40 % of all schools. In Sogn and Fjordane County (Western Norway) 85 % of primary schools were multigrade, and 43 % of pupils in the county went to multigrade schools (Melheim, 2001).

Until 1959 schools in rural areas were mostly multigraded, the pupils attended school every second day and in some places the teacher taught different classes in the morning, in the afternoon and evening. In many rural areas there still exist many multigrade schools that still have many similarities to rural multigrade schools from before the changes brought about by the school-law of 1959.

I believe it is important to remember the Norwegian school history in comparing multigrade teaching in Norway and Zambia. Many of the pedagogical principles and arguments used today in multigrade teaching have been used in Norway from the beginning of the school system without the same resources as we have today. In Norway it has been common for hundreds of years that pupils should teach each other and it has been common to use clever pupils from the age of 9 years (Melheim, 1998).

## Use of Multigrade teaching in some countries

Multigrade teaching has much to offer communities that are not well served by the existing formal system of primary education. Such communities are frequently isolated, both physically and socially, and consequently may have only limited access to a school. Even where they do have access, the school curriculum may seem irrelevant to the lives of the local community. Multigrade schools have the potential both to increase the accessibility and relevance of schooling to such communities. (Berry, 2002)

In Vietnam, for example, multigrade schools are being used as a means of reaching communities in mountainous areas of the country, many in areas where no schools existed at all before. In Zambia, multigrade schools have been seen as a way of upgrading existing primary schools in remote areas that only previously offered an incomplete, or partial, primary education (Little, 1995). Zambia started a pilot project with 4 multigrate schools in 1984, all in remote areas, based on commendation from the Swedish Professor Faggerind (MMTC, 2002). Lungwangwa (1989) carried out an evaluation and he concluded that multigrade teaching system should be implemented countrywide in Zambia and MMTC was given the responsibility to train teachers in multigrade teaching from 1984 (MMTC, 2002).

One of the effects of increasing the accessibility of schools to remote communities may be that more girls are allowed to attend school. In communities where families are reluctant to allow their daughters to travel long distances to the nearest town for school, there may be more willingness to let girls attend a small local day school. This is reported to be the case in Vietnam, and it has also been put forward as one reason for developing the multigrade schooling in Burkina Faso (Berry, 2002).

Where curricula and materials are produced for urban areas of a country, schooling may be perceived as largely irrelevant in remote rural locations. Not only that, but the inflexibility of graded structures also makes it difficult for normal schools to accommodate irregular attenders in areas where children are needed at certain times for work in the community. For this reason, there may be little parental interest in the idea of sending children to school. Multigrade schools can be a means of providing more relevant schooling to pupils, and hence of potentially reducing dropout rate. In Vietnam, for example, the curriculum for multigrade schools has been reduced so that children can have a reduced school day (Berry, 2002). The same situation using reduced school day or school every second day could be a solution in some rural areas in Zambia.

In Southern Africa, multigrade schools have been suggested as one of the means of reducing the marginalisation of the "San people" from formal education. Multigrade schools are suggested not only because they would reduce the dependence on boarding schools, but also because schooling in multigrade classes more closely resembles the cultural norms of this group. It has been argued that the less formal, more 'family-like' atmosphere in the multigrade school would make the transition from home to school less traumatic for San children. (Berry, 2002) More family-like schools, schools close to home and a more flexible curriculum can make it easier for girls and boys to attend schools.

# What we can learn from research about Multigrade Teaching in different countries

When considering the implementation of multigrade programmes for countries in Africa and the Caribbean, attention needs to be paid to the 'will' of teachers to implement (Berry, 2002). This is potentially affected by four factors. These are lack of faith in multigrade pedagogy, professional and social isolation, difficulties of teaching in a multigrade classroom, and 'ownership' of multigrade teaching. Each of these factors has implications for the development of multigrade teaching programmes in developing countries (Berry, 2002).

**Lack of faith in multigrade pedagogy**
Most teachers view monograde teaching as the 'normal' way to organize classes. Multigrade classes are viewed as an unavoidable 'nuisance'. Consequently, teachers may be resistant to the idea of being trained in multigrade teaching methods, and motivation may be low. There is a need, therefore, to convince teachers and other practioners in the field of education of the merits of multigrade pedagogy. In Colombia, this is reported to have happened by 'word of mouth', with those teachers who were participating in the programme telling others about it. Certainly, programmes need to be developed in a coherent rather than a piecemeal manner, and all stakeholders should be clear about the rationale for the introduction of multigrade pedagogy (Berry, 2002).

**Professional and social isolation**
Multigrade education often takes place in remote schools and in areas difficult to reach. Teachers not only face the difficulties of dealing with a multigrade organised class, but also other constraints such as lack of resources, infrequent supervision, and poor living conditions. These conditions also make teachers resistant to the idea of multigrade teaching and reduce their enthusiasm for the task. It also makes it difficult to recruit teachers to teach in remote areas, and to retain those teachers who are recruited.

Teacher recruitment and posting in isolated areas, demands a coherent strategy from the central government. In some countries, for example, there is compulsory teacher assignment to rural locations. However, this latter approach does not solve the problem of low teacher morale, nor does it increase either recruitment or retention. One of the best strategies is probably the provision of specialised ongoing training, together with a policy of training and recruiting teachers from local villages (Berry, 2002).

**Multigrade teaching is more demanding**
There is no doubt that in a graded system of education multigrade teaching is more demanding than monograde teaching. Planning from the curriculum is more difficult because of the way in which it is structured, classroom management is more complicated because of the necessity of having more than one group on a task at the same time, teachers may be required to write

multiple lesson plans, and end of term tests have to be set for each grade level. The Headteacher of a multigrade school is also usually a class teacher, and this places greater demands on her time. Other staff members may have to fill a wider variety of duties, than their counterparts in larger schools.

For these reasons, graded systems need to move in directions that support the multigrade teacher, but also encourage more innovative teaching methods in the monograde classroom. One way in which this may be achieved is through curriculum reform. The graded curriculum model encourages teachers to view their class homogenously, so perhaps other curriculum models need to be considered. One example is the modular approach adopted in Colombia, which involves dividing the curriculum into specific objectives and producing associated learning materials. Another approach is to develop curriculum frameworks that are based around themes rather than subjects. With such curriculum reforms, there is also a need for changes in the types of instructional materials that are made available to teachers (Berry, 2002).

**Ownership**
The types of policy level changes described in relation to curriculum reform run the risk of alienating teachers from the reform unless they are intimately involved in the process. One of the reasons for the early success of "Escuela Nueva" was that it was a grass roots movement, in that it was teachers themselves who did the innovations and then disseminated good practice. When the project went to scale, however, the package of inputs was 'frozen' and there was less scope for teacher involvement in the innovation. This may have reduced the teachers' ownership of the programme (Berry, 2002)

**Multigrade Teaching in some countries**

Hargreaves et al (2001) carried out a research in Peru, Sri Lanka and Vietnam about multigrade teaching. Their findings in all the three countries are that the classroom teaching methods are very traditional in multigrade schools, with teachers taking few initiatives and rarely encouraging pupils to take responsibility for their own learning. All three countries have the same problems coupled with a high rate of unskilled teachers, unconductive learning environment in schools, with pupils coming from poor background and isolated teachers. To address the problems they have started by increasing administrative support to multigrade schools through a new educational network, to improve physical facilities and working conditions and also to integrate the efforts of teacher training centres with periodic in-service training courses (Hargreaves et al, 2001).

In the Colombia Escuela Nueva project, a system of flexible promotion that is organised around a modular curriculum has been introduced. This is to give children more opportunities to leave and re-enter school as commitments at home demand. In addition, the school curriculum has been

integrated into the life of the community , and also by including more activities that are relevant to the child's daily life. (Berry, 2002)

The Escuela Nueva programme in Colombia has three key features, (a) its flexible, rather than automatic, promotion system, (b) its rural-oriented curriculum, and (c) its instructional materials designed for self-study and individual learning. Evaluations conclude that pupils at Escuela Nueva have higher scores in Spanish and Mathematics than traditional schools, and Escuela Nueva seems to have positive effects on self-esteem and civic behaviour (Psacharopoulos, 1993, Little, 2001). In-service training for teachers played a key role in capacity building for teachers and the programme more generally. Teachers' "will and commitment" appears to be an important explanation of the adoption of the new pedagogy (Benveniste and McEwan (2000) in Little, 2001)

In the New School the largest remarkable point is introduction of self learning instead of forcing traditional teaching in multigrade. Detailed and systematic "learning guide" for self-learning was developed in order that the pupil can learn individually or in small groups. The pupils are expected to shift from traditional passive learners to active self-learners. The role of teachers is also transferred from a lecturer who provides knowledge and information to pupils of several grades at the same time, to a facilitator who supports the pupils who are learning by themselves (Saito, 2002).

Almost 50 % of all schools in Colombia have adopted the New School methodology (McEwan, 1998). Traditional instructions – lecturing, recitation, desk-work, copying from the chalkboard- generally proves to be ineffective in a multigrade setting. All pupils must be engaged at all times; otherwise "time on task is reduced, achievement falls, discipline degenerates, and the teachers become frustrated and feel overworked" (Thomas and Shaw, 1992 and McEwans, 1998).  Staff training in the New Schools' aims and methodology using "learning by doing" workshops is essential for better results (McEwans, 1998). I guess The New School Programme in Colombia can be used as a good model for countries like Zambia.

Montessori Schools, using the Italian Montessori pedagogy, use multigrade teaching mostly because of pedagogical reasons which emphasize that children are curious, and the teacher should be a facilitator guiding pupils in their search for knowledge. Special Montessori-materials are used, and methods like project work, peer tutoring and individualised learning are used. In the Montessori pedagogy it is important to have multiage groups and it is common to find multiage groupings in pre-school, grades 1-4, and grades 5-7. Dewey has influenced the Montesorri pedagogy with his "learning by doing" approach to learning. Before a discussion and presentation of different learning theories and methods in multigrade teaching, I will refer to some research findings about multigrade teaching.

## International and Nordic research findings on Multigrade Teaching

Little (2001) has summarized five major reviews of research on multigrade teaching over the past fifteen years and I will summarize her main points here.

1. Pratt reviewed studies between 1948 and 1983 in USA and Canada. Pratt concludes that there was no consistent pattern to the findings on cognitive outcomes, but there was a more consistent pattern on non-cognitive outcomes. None of the studies reported social developmental advantages in favour of monograde classes.

2. Miller in his 21 studies from USA concludes that multigrade pupils generally performed better than their single-grade counterparts on affective and none-cognitive outcomes.

3. Thomas and Shaw went beyond the USA and Canada and included Europe, India, Pakistan and Togo in their studies. They concluded that multigrade schools were as effective in terms of cognitive and non-cognitive outcomes as single-grade schools, but adequate implementation of multigrade programmes was essential.

4. Veenman (1995) conducted an extensive and world-wide review. It is important to note that the pattern of results from studies on developing countries is not the same as that found for other countries in Veenmans review.

5. Mason and Burns (1996) suggested that other things being equal, combination classes had small negative effects. Combination classes will here be classes formed for imbalanced or inadequate enrolments not for pedagogical reasons. Veenman (1997) challenged their evidence and the selection bias in a later article (Little, 2001).

Simon Veenman (1995) examined 56 studies of multiage classrooms in 12 countries. When Veenman looked at the research results of these 56 different studies, he took into account many factors. He looked at socio-economic standings, population of school, IQ factors, teacher training to name but a few. He found that when comparing multiage classrooms to single grade classrooms, there was little to no difference in the cognitive learning outcomes of the two types of classes. He did find, however, that there were significant differences in the affective areas such as attitudes towards school, self-concept, and personal and social adjustment in favour of the multiage classrooms. As he examined the results, he identified some factors that might help explain why pupil learning in multi-age classes did not differ from pupil learning in single grade classes. Some of these factors were bias in composition of multigrade classes, ill-prepared teachers, and the greater workload associated with teaching multiage classes.

While studying the research results and interviewing professionals who had dealt with multi-age classrooms, Veenman found that

advocates of multiage grouping claimed that it yielded the following cognitive and non-cognitive benefits:

1. Pupils have a chance to form relationships with a wider variety of children than is possible in the traditional same-age classroom. This leads to a greater sense of belonging, support, security, and confidence.

2. Teaching a diverse group of pupils' demands individualised instruction.

3. The development of a balanced personality is promoted by fostering the attitudes and qualities that enable pupils to live in a complex and changing social environment.

4. The self-concepts of slower, older pupils are enhanced when they are asked to tutor younger pupils in their class.

5. More secure teacher-pupil relationships may be established as the pupil remains with the same teacher for two or more years.

6. Fewer anxieties may develop because the educational atmosphere is conducive not only to academic progress but also to social growth.

7. Multi-age grouping provides younger pupils with the opportunity to observe, emulate, and imitate a wide range of behaviours; older pupils have the opportunity to assume responsibility for less mature and less knowledgeable pupils.

8. Multi-age grouping invites cooperation and other forms of pro-social behaviour and thus appears to minimize competitive pressures and the need to discipline.

9. Pupils in the lower grade(s) can enrich their learning by attending to the material designed for higher grade(s), while the pupils in the higher grade(s) can profit from opportunities to review the material designed for the lower grade(s).

10. Current concepts of cognitive development (e.g. the zone of proximal development and cognitive conflict) imply that children whose knowledge or abilities are similar but not identical can stimulate each other's thinking and cognitive growth.

11. Finally, multi-age grouping relaxes the rigid curriculum with its age-graded expectations, which are inappropriate for a large number of pupils (Veenman, 1995, p. 322).

Veenman also found that opponents of multiage/multigrade classrooms claimed that there were problems and concerns on both the part of the teachers, administrators and parents. Some stated that teachers preferred single-grade classes because multigrade classes entail more planning, preparation, and work. Administrators found problems in the integration of curricula, individualising instruction, lack of time for adequate teaching of certain subjects, lack of time for preparation and assessment, and lack of time for individual remediation. Parents were negative to the multiage concept fearing their child would not get adequate individualisation. Veenman also noted that the biggest critics of multiage classrooms were in urban areas. Rural areas were much more accommodating the multiage

concept. In conclusion many significant benefits of the multiage classrooms outweighed its disadvantages (Veenman, 1995).

Melheim (1998) refers to some of the same results from Norwegian and Swedish research about multigrade teaching. See Appendix 1. Melheim has study multigrade schools in Western Norway for many years, and his conclusions arise from a lot of school-based developing projects in Sogn and Fjordane County. Melheim (1998) finds that multigrade teaching can better obtain:

**Social goals**
- It can be easier to teach about values, norms and attitudes when in multigrade group
- Better social relations and the environments, specially young-elders
- To create safety and well-being, especially for the youngest
- Better possibility to give model learning and identifications
- To improve engagement in society and community.

**Subject/professions goals**
- It can increase the interest for the subjects, learning by teaching others
- Better self-confidence when succeeded in front of younger
- Better learning environments and faster and easier learning for the youngest.

These imply that multigrade schools are using multigrade teaching methods and Melheim (1998) emphasizes the use of pupils teaching pupils, independent and individual work, project learning and integrated day as important methods in multigrade teaching which all improve the pupils' responsibility for their own learning. Use of traditionally methods may not necessary give the same effects in multigrade schools (Mason and Burns, 1996).

## Different approaches/methods to teaching and learning in multigrade teaching

In Zambia as Lungwangwa has described, there are mainly three approaches used in time-tabling in the curriculum in multigrade schools and these are (i) common timetable, (ii) subject staggering and (iii) subject grouping (Little, 2001). These three approaches were also emphasized at the Workshops at DLTTC in Livingstone in September 2002 and September 2003. A brief mention of another approach was made and this was called the integrated day option. It was learnt that this fourth approach/option was not common in multigrade teaching in Zambia.  As I have done before, I would like to impress upon all the concerned to use this option in Zambian multigrade schools for pedagogical reasons. I will not discuss the three other options since they were very well handled during the workshops I have attended in Zambia.

Choices of methods in multigrade teaching will always be influenced by many circumstances as the curriculum, the syllabus, the school, the local community, teachers, parents, pupils, environment and resources in general. I want to emphasize the importance of teachers and parents motivation and expectations related to multigrade teaching methods. Do we believe that giving instructions and the use of chalkboard is the best thing to do? Which pedagogical theories do we believe in? Shall we usually use the way we were educated as a model for the right education? Which aims do we emphasize? Are we aware our own perspectives of methods and learning? Studies in many countries like Vietnam, Sri Lanka and Peru concluded that traditional methods were used in many multigrade schools (Hargreaves et al, 2001), and evaluation reports about multigrade teaching emphasize the importance of using multigrade teaching methods to gain the same results as in singlegrade schools (Veenman, 1995; Mason and Burns, 1996; Little, 2001). What is the situation in Zambia?

Many multigrade teaching methods demand the availability of resources as the learning corner with materials/books, more flexible curriculum and new developed materials for self-learning. Even if it is difficult to make changes and create new materials given poor or non- availability of resources in schools, it might create a better learning situation for pupils and a better working situation for the teacher to use methods for multigrade teaching. Schools with low financial support need to be more creative and use freely-available materials from the environment more than richer schools. There are lots of cost-effective possibilities if one looked around and used one's creativity. As already discussed regarding the New Schools in Colombia, the pupils and teachers' role has to change in multigrade teaching. A teacher becomes more like a facilitator to support the pupils in their construction of knowledge.

Bacharach et al (1995) has written a manual for multiage grouping and has provided a summary of some common elements across multiage classroom:

| Common beliefs | Instructional elements | Assessment elements |
| --- | --- | --- |
| Child-centred | Process writing | Ongoing, continuous |
| Active-based | Literature-based reading | Authentic |
| Focus on process | Thematic teaching | Multidimensional |
| Hands-on learning | Learning centres | Collaborative efforts |
| Diversity is valued | Math manipulatives | Informs instructions |
| Pupils are self-regulating | Cooperative learning | Use of portfolios |
| | Peer tutoring | |
| | Computer assisted instruction | |
| | Team teaching | |

(Bacharach et al, 1995)

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I will briefly discuss some multigrade teaching methods/approaches to learning in multigrade schools:

**Process Writing**

Process writing is an approach to teaching writing that focuses on valuing and learning the processes that are part of writing, instead of focusing on a product. This model is a natural fit in a multiage/multigrade classroom because it allows for differences in abilities and interests. All pupils can be involved in writing, working and progressing at their individual developmental levels (Bacharach et al, 1995). The story-line described below, can be one of many methods in process writing. The pupils can use their experiences and imagination to make stories.

**Literature-based reading**

Literature-based reading is an approach that uses children's literature and a wide range of reading materials to teach reading. Materials used in this approach are written to be read for enjoyment, as opposed to texts that are written exclusively for instruction. In a multiage/multigrade classroom literature-based reading allows for children to be reading at their own level and allows the diversity of interests and skills we find in all classrooms (Bacharach et al, 1995).

**Learning centres**

Learning centres include collections of materials and activities ranging from concrete to abstract. Pupils interact with the centres to learn, reinforce or apply concepts. Learning centres provide an opportunity for pupils to interact, collaborate and participate in an active, hand-on format (Bacharach et al, 1995). Using the local environment and resources from the local community can be a sort of learning centre as well. See "Sigsworth and Solstad: Making small schools work" for more details and examples.

**Math Manipulatives**

Math manipulatives are concrete materials and activities with which pupils interact to better understand a mathematical concept. Pupils recognise similarities and differences by collecting and organising buttons, blocks or beans. This is a preliminary step to classifying. Sand timers and pictures prepare pupils to understand the concept of time and paper clip chains and body measurement can prepare children to understand the concept of measurement. These hands-on, process-oriented activities fit well into a multiage/multigrade classroom (Bacharach et al,1995).

**Cooperative Learning**

Cooperative Learning is a collection of strategies designed to foster interdependence among learners. The collaborative, group consensus, supportive learning that occurs in cooperative groups reflects the skills and attitudes the children will need to contribute to society as adults. Cognitive development and the use of critical thinking strategies are promoted through peer interaction (Slavin, 1990 in Bacharach et al (1995)). The type of environment created through cooperative learning honours the diversity of

individuals present in a multiage/multigrade classroom and support the concept of social learning. See "Sigsworth and Solstad: Making small schools work" for more details and examples.

**Thematic Teaching**

Choosing a central theme that is the focus throughout the various content areas during a school day is called a thematic teaching. Thematic teaching allows children to explore a particular topic in depth from multiple disciplines. Ties between content areas are made explicit and children read, write and respond to a topic in a variety of forums. Theme teaching provides the opportunity to create an environment that supports and encourages process learning (Thompson, 1991 in Bacharach et al (1995)). In multiage/multigrade classroom, theme teaching allows all pupils to share a common concept, yet provides the opportunity for each child to work on the concept at the appropriate developmental level. In Zambia the integrated day or the open day approach, is similar to thematic teaching the way it is explained here. In a study from Belize many teachers were excited about the integrated day approach and they felt that it made learning more useful to the children in multigrade schools (Wright, 2002).

Palmer and Pettitt (1993) gives one example used for children from 4 to 8 years about the topic **"Food"** and the relevance for different disciplines:

| Math | Art | History | English | Geography | Health Education | Science |
|------|-----|---------|---------|-----------|------------------|---------|
| Prices of food | Colour and texture of fruits and vegetables | Food through the ages | Stories, poems and rhymes about food | Food from distant land | Food hygiene | Edible plant parts (root, seed, leaf, fruit) |
| Costing a menu | Root and stem prints | | Imaginative stories and food description – fantasy food | Farming system | Need for a balanced diet | Food ingredients |
| | Cross-sectional drawing of fruits and roots | | Writing about favourite foods and disliked food | Soils and soils type | | Food as an energy source |
| | | | Menu design | Ethnic dishes | | Cookery |
| | | | Creative stories…if people became food | Importance of climate in agriculture | | Conditions necessary for plant growing |

(Palmer and Pettitt, 1993)

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See "Sigsworth and Solstad: Making small schools work" for more details and examples. The Ministry of Education in Zambia has also made at least six different Modules related to the curriculum. See Module 4 page 18 on how English, Mathematics and Science can be integrated into the domestic Water Supply.

**Peer Tutoring**

Pupils that help other pupils are the basis of peer tutoring. With a range of abilities in a classroom, peer tutoring allows for the more advanced pupil to assist the emerging learner in any area of the curriculum. Peer tutoring can be beneficial for all pupils and has been shown to enhance both the tutor and the tutor's academic performance. In addition, peer tutoring enhances self-esteem and confidence and lead to better social relationships and more positive attitudes (Melheim, 1998, Melheim 2001, Little, 2001, Veenman, 1995) Further, learners often grasp material more readily when it is presented by a peer pupil. In addition, learners are provided with excellent models to emulate (Bacharach et al, 1995). See "Sigsworth and Solstad: Making small schools work" for more details and examples.

Teaching pupils of different ages within one classroom has social and academic advantages. When the classrooms are more heterogeneous, teachers must find ways to meet the needs of the individual pupils rather than teaching to the mean. Pupils within a multiage classroom have the benefit of the older children as leaders and instructional facilitators, and the younger children as learners. Social interactions within a multiage classroom tend to be more positive as the pupils are less competitive, more understanding, and more appreciative of the other pupils' abilities. (Johnson, 2002)

As Sigworth and Solstad (2001) have stated, senior pupils can supervise practice groups, be mentors or guides to new school entrants and teach children in lower classes. More clever children can also help less clever children in the same grade. If the 6th grade pupils are grouped with 1st grade pupils, the pupils in the 6th grade can read for the younger pupils and both groups can have a good learning outcome. Which grade one should group together can be different from time to time and change from topic to topic and of course it should be related to which aims you want to gain.

**Computer-Assisted Instructions**

Computer-assisted instruction enables a concept to be taught, practised, applied or reinforced by utilizing a computer program (Bacharach et al, 1995). Limits here will be the numbers of pupils to each computer, which pedagogical computer programs the school have and the technological skills among teachers and pupils. This approach may still be too early to introduce to some of the Zambian multigrade schools, but since it is provided in the Zambian Curriculum Framework (CFD) that pupils should learn how to use the computer from as early as grade 3, this approach can be useful for schools that have the equipment.

**Team Teaching**
Team teaching can be defined as two or more teachers simultaneously responsible for an entire educational program for a group of pupils. Team teaching provides collegial support for teachers (Bacharach et al, 1995). Team teaching can stimulate, motivate and evaluate each other and that can enhance their teaching quality. More examples are given in MOEZ Module 4 Unit 4: The teaching/learning resources meeting. An approach to common planning for different subjects and topics is suggested, but the teachers can also work closer together in the classroom and combined different grades together such as 1st grade, 4th grade and 7th grade together in groups.

In addition to the list from Bacharach et al (1995), I will proceed to describe some more multigrade teaching methods:

**Project work**
Project work is a method used for studying a topic or theme. The pupils as individuals or as a group engage in active methods of learning such as observing, interviewing, organising data and preparing a presentation that may include displays, models and reports (Sigsworth, 2001). When working with projects it is important to remember the possibilities one can find in the local environment. See "Sigsworth and Solstad: Making small schools work" for more details and examples.

A project can be a literature-review, information-search, empirical research and design projects. The different disciplines usually emphasize different kinds of projects (Henry, 1994). It is common to use a combination of these four project types in the schools. As the Zambian Curriculum Framework emphasizes, project-work can be very useful in the four cross cutting themes, basic health, environment, living together and making a living (CFD, 2000).

In Norway it is common to use project as a method in both multigrade and singlegrade schools. Project can be for a short or long time, and it can be part-time or full-time for the pupils. It is more and more common that singlegrade schools form multiage groups, often called "familygroup", when they are working with projects. For pedagogically reasons, they organise multiage groups to gain positive effects regarding cognitive as well as non-cognitive outcomes. As reported earlier in this paper, there has been a lot of research supporting the positive effects of multiage grouping, especially non-cognitive effects.

Many of the multigrade schools in Western Norway are using project as a method. Brekke school is using a model in the lower secondary where the oldest are "masters", those in the middle become "tutors" and the youngest become "apprentices". After three years in school the pupils will have passed through the process of being an apprentice, a tutor and finally becoming a master (Melheim, 2001). Multiage grouping in a project period can have a wider age grouping-ranging from 1st grade to 10th grade in same group. If the oldest are reading to the youngest they both will be learning at

the same time, but for differently aims. Some arguing that to teach others might give the most effective learning outcome. See appendix 3 with the learning pyramid or page 20 in MOEZ AIEMS Module 4.

An example:
In Finland, Kimonen and Nevalainen (1995), did a case study on active learning in a small and combined grade school. In the project work of the case study, school pupils study using themes that change every three weeks. Usually they worked in groups made up of pupils of different ages. Two teachers supervise them during the work.

The orientation phase of the learning process in the project work involves preliminary familiarisation with the topic under study and they used a concept map as a tool. In the working phase of the learning process pupils examine different sources for information about their research subject. They also design experiments and examine natural objects and phenomena. Note-taking is carried out simultaneously. Pupils plan and carry out their project work as independently as possible. During project work pupils often work in groups of five, including pupils from all grade levels. Where project extend beyond a single week pupils prepare a final product, which can be a presentation, wall paper, cartoon, exhibition, book, play, or a recording. Individually the pupils may also make written studies. At the end of the project work, teachers, pupils, and parents evaluate the success of the learning process and outcome. Each pupil has his/her own study-book, in which the process and evaluation of the project-work is recorded. Teachers and parents are also giving comments in the study-book (Kimonen and Nevalainen, 1995).

In project work the teacher can also reflect upon the theme and value if the groups should be single-sex across the grades. As Zambian Curriculum Framework (CFD) suggests, particularly in middle and upper basic school and in subjects as Mathematics and Science girls like to be in single-sex classes. In all kinds of group work it is important to also remember the gender approach in addition to the multigrade approach.

**Using local environment / Outdoor education**
Approaches to outdoor education reveal the quality of implementing the local curriculum. The teacher should realise which natural, industrial or cultural aspects of the community he/she could exploit in his/her teaching and be familiar too with the various teaching methods of outdoor education such as study visit, study trips and school camps (Kimonen and Nevalainen, 1995). Outdoor education is common among many multigrade schools in West of Norway. Some schools use a half-day or a whole day outside the school building once a week. This can be a part of a project, an integrated day, a specific discipline or a combination of many of the methods described so far. I believe this can be a very useful approach to multigrade teaching in Zambia. See also "Sigsworth and Solstad: Making small schools work" for more details and examples related to use of the environment. Since environment and making a living are two of the cross cutting themes in the Zambian curriculum, there are many more possibilities that this approach offers.

**Problem-oriented learning/problem-based learning (PBL)**
Problem-based learning is a way of constructing and teaching courses using problems as stimulus and focus for pupil activity. Problem based courses start with problems rather than exposition of disciplinary knowledge. They

move pupils toward the acquisition of knowledge and skills through a staged sequence of problems presented in context, together with associated learning materials and support from teachers (Boud and Feletti, 1991).

PBL can be a research project, a case method, a design project, a trouble-shooting situation, a clinical encounter, "guided design" or a self-directed, self-assessed, small learning group. The options can often depend on who is responsible for directing the activity, teacher-directed or pupil-directed (Woods, 1994). PBL has been seen as a shift in perspective from teaching to learning. Since it is important in PBL to see learning in a meaningful context, real-life scenarios are used as the point of departure for the learning (Dahlgren, 2001). The case/picture/text you start with shall usually be connected to future professional work.

The PBL-method is usually connected to 7 or 8 tasks where you start with number one and the tasks can be seen as a circle that never ends.

Woods (1994) talk about seven tasks/steps in PBL:

1. Explore the problem, create hypothesis, identify issues, elaborate.
2. Identify what do you not know and need to know for solving the problem.
3. Prioritise the learning needs, set learning goals and objectives, and allocate resources. If you are in a group, identify different tasks.
4. Self-study and preparation.
5. The group shares the new knowledge effectively so all acquire the knowledge.
6. Apply the knowledge to solve the problem.
7. Give yourself feedback by assessing the new knowledge, the problem solution and the effectiveness of the process used. Reflect on the process (Woods, 1994)

Since some of the specific goals of the education system in Zambia are to develop an analytical, innovative, creative and constructive mind (CFD, 2000), PBL can be good approach to gain such goals.

**Story-line Method**
Story-line is a structured approach to learning and teaching that was developed in Scotland It builds on the key principle that learning, to be meaningful, has to be memorable, and that by using learner's enthusiasm for story-making, the classroom, the teacher's role and learning can be transformed. Story-line is a strategy for developing the curriculum as an integrated whole. It provides an opportunity for active learning and reflection as essential parts of effective learning and teaching. At the same time it develops learners a powerful sense of ownership of their learning. (The Scottish Consultative Council on the Curriculum).

Story-line is an innovative approach to curriculum integration. The essential elements of a Story-line are setting, characters and events or incidents. The unfolding of the story each day in the classroom provides a structure and logical connection to the curriculum. The difference between thematic teaching using a topic web and Story-line is the presentation of key questions that moves the story along. In a topic web the activities are random, whereas the investigations that take place during a Story-line are in

a logical sequence that is dependent upon the preceding episode (Smith, 2002).

Story-line is based on the theory that all learning is guided by one's prior knowledge and experiences (the conceptual model) and those learners construct their own meaning through action and experience. With this, pupils are able to be actively involved in their learning as tasks arise within the "story" which the pupils see as significant and meaningful (Smith, 2002).

With the story-line-method the pupil gets practice in taking a stand on a given formulation of a problem, in showing options for actions together, and in coming to an understanding of the fact that the world looks the way it does, because we act the way we do. That may further both the power of identifying oneself and the competence of action (Smith, 2002). Se Appendix 2 for more information about Story-line principles, and some critical elements of story-line.

**Entrepreneurship**
An entrepreneur is a person who has an eye for possibilities, is prepared to take risk and has the competence to set up new, economically feasible, business ventures. Entrepreneurship is the process of establishing such a venture, the success that will depend upon both the entrepreneurial qualifications of the person and the conditions surrounding the process. In school it will be important to focus at general entrepreneurial qualities such as creativity, courage, and cooperative skills. In entrepreneurship education methods like project-work, problem-oriented learning, peer teaching and presentations for each other are common.

Some entrepreneurial qualities such as being active, curious, responsible, independent, secure, cooperative and creative are important to instil in the learners. (Solstad, 2000, Solstad 2002) Similar lists can be made for what we believe already exist in teachers minds and for sure these qualities are stressed in nearly all new pedagogical theory. Included in the learning theory from Vygotsky, is social construction and situated learning (Ødegård, 2000). In entrepreneurship education methods like project-work, problem-oriented learning, peer teaching and presentations for each other are common.

Entrepreneurship and resource understanding is the foundation for the creation of new jobs an a point of departure for better competence to be active when children, youth and adults shall establish a good home, be constructive, creative and active both in leisure and in the local community (Landraak, 1998).

Pupil enterprises are being tried out as a learning arena in the Norwegian development project "Dynamic local schools". Pupil enterprise is comprehensive, multi-disciplinary project work in which the pupils are fully responsible for a complete production process which results in a product

that is also of value to others. The pupil**s** set up and run their enterprises as a regular part of their education. They are themselves responsible for their business idea, administration, production and sales, including financial responsibilities (Landraak, 1998.)

In the Zambian Curriculum Framework, entrepreneurship is one of two new goals of the education system. It is stated on Page 11 that:" In keeping with recent developments and needs in society, the Framework now adds the following two goals; i) developing a positive attitude towards self-employment and basic knowledge in entrepreneurship-related issues, j) safeguarding the personal health and that of others, particularly in relation to reproductive health issues, HIV/AIDS and other sexually transmitted diseases" (CFD, 2000)

For those that would like to learn more about entrepreneurship in education in primary schools, Georgia REAL Enterprises provides rich, intensive programs designed to prepare teachers to provide quality entrepreneurship education. See [www.realenterprises.org](www.realenterprises.org)

## Learning theories

What is learning? Is it a change in behaviour or understanding? Is it a process or a product?

Some years ago Säljö carried out a simple, but very useful piece of research. He asked a number of adult pupils what they understood by learning. Their responses fell into five main categories:

1. Learning as a quantitative increase in knowledge. Learning is acquiring information or 'knowing a lot'.

2. Learning as memorising. Learning is storing information that can be reproduced.

3. Learning as acquiring facts, skills, and methods that can be retained and used as necessary.

4. Learning as making sense or abstracting meaning. Learning involves relating parts of the subject matter to each other and to the real world.

5. Learning as interpreting and understanding reality in a different way. Learning involves comprehending the world by reinterpreting knowledge.

We can immediately see that conceptions 4 and 5 are qualitatively different from the first three. Conceptions 1 to 3 imply a less complex view of learning. Learning is here something external to the learner. It may even be something that just happen or is done to you by teachers (as in conception 1). Learning can here be seen as a bit like shopping. People walks out and buy knowledge - it becomes their possession. The two last conceptions look to the 'internal' or personal aspect of learning. Learning is seen as something that you do in order to understand the real world (Smith, 1999). Theories attempt to explain various types of learning but differ in their ability to do so.

**Behavioural theories** emphasize forming associations between stimuli and response through selective reinforcement of correct response. Behavioural theories seem to be best suited to explain simpler forms of learning that involve associations, such as multiplication facts, foreign language word meaning, and stating capital cities (Schunk, 2000). The behavioural theories of Pavlov, Skinner, Thorndike, Watson and Guthrie are all of historical importance and they dominated the psychology of learning for the first half of the twentieth Century (Schunk, 2000). The learning in behaviour theories is seen as change in behaviour and as a product you can see. Conceptions 1 to 3 imply a behavioural view of learning.

**Cognitive theories** explain learning in terms of factors such as information procession, memory network, and pupil perceptions and interpretations of classroom factors (eg. teachers, peers, materials, organization). Cognitive theories appear to be more appropriate for explaining complex forms of learning; for example, solving mathematical word problems, drawing inferences from text and writing essays (Schunk, 2000). Learning is something internal, process-oriented and related to understanding in cognitive theories. Conceptions 4 and 5 imply a cognitive view of learning.

The Curriculum framework for Zambia (ZFD) is as I see it, a shift from a more behavioural approach to learning to a more cognitive approach. On page 6 it is written: " The revised curriculum also responds to observations that the present school curriculum:

- Is compartmentalised, overloaded and inflexible;
- That there is too much emphasis on factual information;
- That the language of instruction is alien to the majority of pupils and to many of the teachers;
- That there is excessive rote learning geared largely to the memorisation of facts, simply for the purpose of passing examinations;
- And the school based continuous assessment is insuffiently used as a tool for the improvement of learning and teaching and is ignored in selection decisions for higher levels".

Effective teaching requires that we determine the best theoretical perspectives for the type of learning we deal with and draw on those perspectives for teaching suggestions. A continuing challenge for research is to specify similarities and differences among types of learning and identify effective instructional approaches for each (Schunk, 2000).

**Learning and different development theories**

Children's development is intimately linked with learning, and since development is often taken for granted (Schunk, 2000) I will briefly present few development theories:

### Biological theories

Biological theories cast human development as an "unfolding" process. Development is overwhelmingly determined by genetics and children proceed through a set of sequences of invariant stages in roughly the same time frame. (An example, shall children start school when they had lost at least one milk tooth?) Tendency for children to understand counting and language acquisition may be largely inherited and biologically predisposed according to this perspective (Schunk, 2000).

### Psychoanalytic theories

The psychoanalytic theories emphasize the fulfilment of needs, which differ as a function of development level. Development is viewed as progressive changes in personality, and that emerge as children seek to satisfy their needs. Children pass through series of stages, each which is qualitively different from preceding ones. Children interact with their environments to fulfil needs, and their success in resolving conflicts associated with need fulfilment influence personality. Freud believed in the basic structure of a child's personality was established during the first five years of life. Erikson by the other hand felt that development was a life-long process and postulated developmental stages into old age. The role of learning in development is downplayed in favour of need resolution. It is unclear how significant others in children's lives can best foster development. Theories that offer clearer predictions about development and the role of learning have greater applicability to education (Schunk, 2000).

### Behavioural theories

The behavioural theories postulate that development can be explained by the same principles that explain other behaviours. Major changes that occur in development are brought about conditioning. Small changes occur over time and children learn to do more in less time and more effectively. Behavioural theories do not specify critical periods in development. The capacity for learning continues throughout the life span. They also present a view in which the major changes in behaviour emanate from environment, which provides the stimuli to which children respond and the consequences of their actions. They downplay the role of personal factors associated with learners (e.g., thoughts, emotions) and the interaction between learners and their environments. Behavioural methods often are useful in teaching and learning but behavioural explanations for learning and development are incomplete because they negate the role of personal influences (Schunk, 2000).

### Cognitive theories

The cognitive theories focus on how children construct their understandings of themselves and of the world about them. Cognitive theories are constructivist in that they postulate that understanding is not automatic.

Children are active seekers and processors of information. Cognitive theories are interactionally because they explain development in terms of interactions between personal, behavioural, and environmental factors. Prominent cognitive theories are Piaget's, Bruner's, Vygotsky's, and social cognitive theory represented by Bandura (Schunk, 2000).

### Contextual theories

The contextual theories highlight the roles played by social and cultural factors. Evidence supporting this perspective comes from cross-cultural comparisons showing wide variability in developmental pattern as well as from studies demonstrating that even within societies there is considerable variation in development. Societal practices clearly play a major role in development. Bronfenbrenner formulated a contextual model who postulated that the child's social world can be conceptualised as a set of concentric circles with the child at the common point of three intersecting circles: school, peers, and family. Outside of these is a larger circle containing neighbourhood, extended family, community, church, workplace, and mass media. The outermost circle contains such influences as laws, cultural values, political and economic systems, and social customs. The model assumes that changes in one level can affect other levels. Thus, physical changes in children can alter their social groups, which in turn are affected by cultural values. The model is highly interactionistic and is useful for understanding the complexity and influences on human development and its effects (Schunk, 2000).

Cognitive and contextual theories stress that children are active constructors of knowledge and that development is a continuous process across life span. Contextual theories emphasize the altered nature of social pattern and how these lead children into different interactions with peers and adults. Some cognitive theories by Vygotsky's and Bandura's also are contextual in nature (Schunk, 2000).

See also Appendix 4 for another summarising and categorisation of different learning theories.

## Learning Theory and Multigrade Teaching

There are numbers of basic principles and practices that underlie multigrade teaching:
- Developmentally appropriate curricula and practices
- Active, child-centred, and continuous learning
- Attention to the education of the whole child
- The Teacher as facilitator
- Integrated curriculum across subjects
- The absence of rigid instructional strategies and assessments

The foundation for multiage grouping is rooted in a number of theoretical and philosophical frameworks with respect to child development and education. Children grow and develop at different rates, separate and distinct from each other but interrelated with their environment. Teachers need to be aware of the theoretical support for multiage grouping so that curricula and pedagogy that are consistent with the concept's philosophy can be developed. Multiage age grouping is based on some principles from the following theories: cognitive, social learning, sociocultural, psychosocial and ecological (Bacharach et al, 1995). In addition to Bacharach et al (1995) I would like to include some important theories for multigrade teaching and learning:

| Theory | Theorist | Application |
|--------|----------|-------------|
| Cognitive development | Piaget | Children are active constructors of knowledge |
| Sociocultural | Vygotsky | "Zone of proximal development" is the distance between actual and potential developmentally levels and is facilitated by collaboration with others. |
| Cognitive development | Bruner | Spiral curriculum and learning of structure is two key issues in his education theory. |
| Psychosocial | Erikson | Individuals face a series of psychological and social challenges, the success that is largely determined by relationship and societal demands. |
| Social learning | Dewey | "Learning by doing" |
| Social learning | Bandura | Development is the product of social learning, through observation, imitation, identification with others. |
| Ecological | Bronfenbrenner | Development is the result of interrelationship of child and all levels of society. |
| Oppressed pedagogy | Freire | Learning and development by reflection, problem-posing and dialogue. |
| Situated learning | Lave and Wenger | Learning in principle has to be understood contextually and as a process of social participation. |

Pedagogically reasons for choosing multi-age/multigrade teaching are related to cognitive theories. It is not surprising that the list from Bacharach including the additions I have made don't contain any behavioural theories. Before I can briefly present different theoretical approaches to learning in multigrade schools, I would like you to:
- Think about your own assumption to how pupils learn.
- Which teaching methods do you use?
- Why do you do what you do?
- How do you learn?
- Can you describe what learning is?

- Which approaches do you find most effective for multigrade schools and why is this so?

I will now give a brief presentation of some theoretical approaches to learning in multigrade schools:

### Piaget

Piaget hypothesized that children must have opportunities to interact with their environment in order to develop and such interaction enables them to construct knowledge. Learning is a dynamic process with individuals as active constructors of their own development (Bacharach, 1995). According to Piaget, cognitive development depends on four factors: biological maturation, experience with physical environment, experience with social environment, and equilibration. Equilibration refers to a biological drive to produce an optimal state of equilibrium between cognitive structures and the environment. Piaget talked about complimentary processes of equilibration, assimilation and accommodation. As reality is assimilated, structures are accommodated (Schunk, 2000).

Piaget noted from his research that children's cognitive development passed through a fixed sequence. His stage theory, where each stage is defined by how children view the world, contains four stages: (1.5 – 2 years Sensorimotor, 2-7 years Preoperational, 7-11 years Concrete operational, 11 to adult Formal operational). According to Piaget, learning occurs when children experience cognitive conflict and engage in assimilation or accommodation to construct or alter internal structures. Learning should be optimally when conflict is small and especially when children are in transition between stages (Schunk, 2000).

In a multi-age group setting, pupils are constantly adding to their knowledge bases, broadening their perspectives, and developing their social skills through increased opportunities to interact with one another. A multi-age grouping demands that teachers individualise content and strategies (Bacharach, 1995), and it might be easier to see and meet the individual's cognitive development in multiage compared to monoage groupings.

### Vygotsky

Vygotsky a Russian psychologist, stresses the importance of understanding the expectations, tools, skills, and interactions provided by a child's culture. The term *zone of proximal development* has been defined by Vygotsky to describe "the distance between the actual developmental level as determined from independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers". Peers in multi-age classrooms can facilitate development by assisting children in moving to the next level of understanding. The heterogeneity present in a multi-age classroom can also

provide a variety of tools, skills, and methods of interaction that are culturally appropriate (Bacharach, 1995).

Vygotsky's position is a form of dialectical constructivism because it emphasizes the interaction between persons and the environments. Mediation is the key mechanism in development and learning. Vygotsky thought that a critical component of psychological development was mastering the external process of transmitting cultural development and thinking through symbols such as language, counting, and writing. Once this process was mastered, the next step involved using these symbols to influence and self-regulate thoughts and actions. Self-regulation uses the important function of private speech (Schunk, 2000).

The concept of instructional scaffolding, which refers to the process of controlling task elements that are beyond the learner's capabilities so that they can focus on and master those features of the task that they can grasp quickly. In a learning situation, a teacher initially might do most of the work, after which the teacher and the learners share responsibility. As learners become better competent, the teacher gradually withdraws the scaffolding so learning can perform independently. The key here is to ensure that the scaffolding keeps learners in the ZPD, which is altered as they develop capabilities (Schunk, 2000). Multi-age classrooms offer possibilities to use instructional scaffolding among peers and use the language to stimulate cognitive outcome. Important application areas to Vygotsky's theory are reciprocal teaching, peer collaboration and apprenticeship (Schunk, 2000). In all approaches to teaching and learning as entrepreneurship, problem-based learning, story-line, project work, peer tutoring, thematic teaching, cooperative learning, math manipulatives, learning centre, literature-based reading and process writing, Vygotsky's theory is important.

The Zambian Curriculum Framework stresses the importance of numeracy and literacy and a stronger emphasis on basic knowledge and pedagogical methods in numeracy and literacy is made (CFD). We can here see some of Vygotskys key elements being emphasized.


**Bruner**
Although Bruner is not addressing the concept of multiage grouping, his philosophy fits the multiage model. Bruners educational theory about the importance of pupils learning of structure, or the general idea behind a skill or concept, followed by the pupils broadening and deepening knowledge can be useful in multi-age groups. Utilisation of a spiral curriculum, one that builds on earlier concepts, enable pupils to acquire and manipulate new information, and also challenge them to advance beyond their present dealings with information. Multiage classroom promote spiral curricula as well as intellectual curiosity and excitement (Bacharach, 1995)

**Erikson**

Erikson proposed that individuals face a series of psychological and social challenges as they develop. Success or failure in resolving the psychosocial conflicts of each stage of development is determined by the individuals' relationship and by demands placed on them by society. During stages from early through middle childhood, children face the conflicts of autonomy versus shame or doubt, initiative versus guilt, and industry versus inferiority. Multiage relationship can serve to affect the resolutions of these stage conflicts. The pupils can practice autonomy through their self-directed learning and solving opportunities ((Bacharach, 1995).

**Dewey**

John Dewey was one of the early 1900 vocal opponents. He felt that children learned best from their elders and that mixing the ages of the children was a natural way of learning. He felt that the current schools of the time (1930s) needed to be "liberated from their inflexible conceived subject matter" and groupings (Schmith, 1999).

Dewey stressed that the school was a community, but that too often educators overlooked this by keeping pupils isolated at uncomfortable desks. It can stifle both pupil activity and communication. In contrast, Dewey wanted schools to engage pupils in meaningful activities where they had to work with others on problems. Purposeful activity in social settings was the key to genuine learning in Dewey's view. The teacher's task in all this was to "provide the conditions that stimulate thinking" and to take a sympathetic attitude; the teacher had to participate in "a common or conjoint experience" with the learner. The best way to learn a new idea was by means of "normal communication with others" (Phillips and Soltis, 1991). Multiage classrooms give many opportunities to be active and "learning by doing" in projects, peer tutoring, different group work and an entrepreneurship approach where older and younger pupils cooperate and help each other.

**Bandura**

Learning could be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behaviour is learned observationally through modelling: from observing others one forms an idea of how new behaviours are performed, and on later occasions this coded information serves as a guide for action. (Bandura 1977: 22)

Bandura described the cognitive aspect of children's learning as a continuous reciprocal interaction between individuals and their environments. Through observations, children acquire new responses to add to future behavioural repertoires (Bacharach, 1995). Research in the social cognitive tradition highlights the importance of modelling and guided practice as facilitators of developmental changes and acquisitions of cognitive skills (Schunk, 2000).

Multiage classrooms provide a multiplicity of opportunities for younger children to emulate older children. Studies on positive social effects of multi-age grouping, as mentioned earlier in this paper with referring to Melheim and Veenman, substantiate Bandura's position on the impact of interactions on children's development.


**Bronfenbrenner**
Bronfenbrenner is most famous for his views on ecological psychology. Very briefly, he suggests that: Interactions with others and the environment are the key to development and we all experience more than one type of environment, including:

*The microsystem* - such as a family, classroom, etc is the immediate environment in which a person is operating,
*The mesosystem* - which is two microsystems interacting, such as the connection between a child's home and school,
*The exosystem* - which is an environment in which an individual is not involved, which is external to his or her experience, but nonetheless affects him or her anyway. An example of an exosystem is the child's parent's workplace. Although a child may never have any role in the parent's workplace, or, in fact, never even go there, the events which occur at the child's place of employment do affect the child. For example, if the parent has a bad day at work, or is laid off, or promoted, or has to work overtime, all of these events impact the child, and finally,
*The macrosystem* - or the larger cultural context.

Each of these systems are characterised by roles, norms (expected behaviour) and relationships. For example, an individual usually acts differently within his or her own family than within a classroom. The person may speak more frequently at home, be less goal-oriented, and, almost certainly, will not sit at a desk for hours on end. Other things being equal, according to Bronfenbrenner, when the relation between different micro-systems is a compatible one, development progresses more smoothly. A common example of this is the relationship between home and school. When role expectations are similar in both settings, e.g., try your hardest, do your own work, be on time, etc., children will be expected to perform better than if role expectations differ substantially from one setting to the next. (Schmith, 1999)

A child in a multi-age classroom is a product of his or her home, peer relationships, community, broader society, and country. What the child brings into the classroom in terms of abilities, interests, cultural values, and beliefs will be unique. A necessary continuity between school and home is made possible in a school setting that more closely represents a diverse world (Bacharach, 1995).

**Freire**
Paulo Freire was known as a philosopher and theoretician of education, and he argued to never separating theory from practice. Domination, aggression and violence are an intrinsic part of human and social life. Paulo argued that few human encounters are exempt from oppression of one kind or another because by virtue of race, class or gender, people tend to become victims and/or perpetrators of oppression. He stressed that racism, sexism or class exploitation are the most salient forms of dominance and oppression, but he also recognized that oppression exists on the grounds of religious beliefs, political affiliation, national origin, age, size, and physical and intellectual handicaps.

He believed education could improve the human condition, counteracting the effects of a psychology of oppression, and ultimately contributing to what he considered the ontological vocation of humankind: humanisation. In the introduction to his widely-acclaimed Pedagogy of the Oppressed, he argued that: "From these pages I hope at least the following will endure: my trust in the people, and my faith in men and women and in the creation of a world in which it will be easier to love".

Perhaps the most influential thinker about education in the late twentieth century, Paulo Freire has been particularly popular with informal educators with his emphasis on dialogue and his concern for the oppressed (Schmith, 1999).

Freire's emphasis on dialogue has struck a very strong chord with those concerned with popular and informal education. Paulo Freire was able to take the discussion on several steps with his insistence that dialogue involves respect. It should not involve one person acting **on** another, but rather people working **with** each other. Too much education, Paulo Freire argued, involves 'banking' - the educator making 'deposits' in the educatee.

Paulo Freire was also concerned with praxis - action that is informed and linked to certain values. Dialogue was not just about deepening understanding - but was part of making a difference in the world. Dialogue in it self is a co-operative activity involving respect. The process is important and can be seen as enhancing community and building social capital and to leading us to act in ways that make for justice and human flourishing. Paulo Freire argued for informed action and as such provided a useful counter-balance to those who want to diminish theory.

Freire's attention to naming the world has been of great significance to those educators who have traditionally worked with those who do not have a voice, and who are oppressed. His idea of building a "pedagogy of the oppressed" or a "pedagogy of hope" and how this may be carried forward has formed a significant impetus to work. An important element of this was his concern with conscientization - developing consciousness, but consciousness that is understood to has the power to transform reality'.

Paulo Freire's insistence on situating educational activity in the lived experience of participants has opened up a series of possibilities for the way informal educators can approach practice. His concern to look for words that have the possibility of generating new ways of naming and acting in the world when working with people around literacy is a good example of this (Schmith, 1999).

The two most distinctive features of the Freirean Approach are *dialogue* and *problem-posing*. Freire describes *dialogue* as an "I-thou relationship between two subjects" in which both parties confront each other as knowledgeable equals in a situation of genuine two-way communication. Teachers possess knowledge of reading and writing; pupils possess knowledge of the concrete reality of their culture. As with advocates of other humanistic teaching approaches, Freirean educators vehemently reject what Freire has termed "the banking concept of education," where the teacher's primary role is to transmit knowledge to pupils, "depositing" information into pupils as they would deposit money into a bank ". Instead, Freirean education is a mutual process of reflecting upon and developing insights into the pupils' evolving culture. The lecture format, where the teacher talks and the pupils passively receive information, is replaced by the "culture circle" where teachers and pupils face one another and discuss issues of concern in their own lives (Spener, 2002).

**Lave and Wenger**

A more radical model - *situated learning* - has been put forward by Lave and Wenger (1991). Rather than looking to learning as the acquisition of certain forms of knowledge, they have tried to place it in social relationships – situations of co-participation.

Lave and Wenger illustrate their theory on observations of different apprenticeships (Yucatec midwives, Vai and Gola tailors, US Navy quartermasters, meat-cutters, and non-drinking alcoholics in Alcoholics Anonymous). Initially people have to join communities and learn at the periphery. As they become better competent they move more to the 'centre' of the particular community. Learning is, thus, not seen as the acquisition of knowledge by individuals so much as a process of *social* participation. The nature of the *situation* impacts significantly on the process.

> Learners inevitably participate in communities of practitioners and… the mastery of knowledge and skill requires newcomers to move toward full participation in the sociocultural practices of a community. "Legitimate peripheral participation" provides a way to speak about the relations between newcomers and old-timers, and about activities, identities, artefacts, and communities of knowledge and practice. A person's intentions to learn are engaged and the meaning of learning is configured through the process of becoming a full participant in a sociocultural practice. This social process, includes, indeed it subsumes, the learning of knowledgeable skills. (Lave and Wenger, 1991: 29)

There is a concern with identity, with learning to speak, act and improvise in ways that make sense in the community. What is more, and in contrast with

learning as internalization, 'learning as increasing participation in communities of practice concerns the whole person acting in the world' (Lave and Wenger, 1991). The focus is on the ways in which learning is 'an evolving, continuously renewed set of relations' (ibid: 50). In other words, this is a relational view of the person and learning.

A social theory of learning according to Wenger (1998) must integrate the components necessary to characterise social participation as a process of learning and of knowing. These components include the following:
- *Meaning:* a way of talking about our ability - individually and collectively - to experience our life and the world as meaningful
- *Practice:* a way of talking about the shared historical and social resources, frameworks, and perspectives that can sustain mutual engagement in action.
- *Community*: a way of talking about the social configurations in which our enterprises are defined as worth pursuing and our participation is recognisable as competence.
- *Identity*: a way of talking about how learning changes who we are and creates personal histories of becoming in the context of our communities.

These elements are deeply interconnected and mutually defining (Wenger, 1998).

This orientation has the definite advantage of drawing attention to the need to understand knowledge and learning in context. However, situated learning depends on two claims:
- It makes no sense to talk of knowledge that is decontextualised, abstract or general.
- New knowledge and learning are properly conceived as being located in communities of practice (op cit).

Questions can be raised about both of these claims. It may be that learning can occur that is seemingly unrelated to context or life situation. Second, there may situations where the community of practice is weak or exhibits power relationships that seriously inhibit entry and participation. This said, the idea of situated learning does provide significant pointers for practice (Schmith, 1999)

## Conclusion

Multigrade teaching in Zambia should be based on general assumptions as:
- Developmentally appropriate curricula and practices
- Have active learners,
- Use of child-centred methodologies
- Promotion of continuous learning
- Attention be paid to the education of the whole child
- The teachers role to be that of a facilitator
- Existence of an integrated curriculum with cuts across subjects
- Absence of rigid instructional strategies and assessments

These assumptions are based on a cognitive approach to learning that also reflect the Zambian Curriculum Framework. It is therefore not necessary to think about multigrade methods as something completely different from singlegrade methods. Actually one can say that methods developed from multigrade situation have commonly been used in many countries as the main methods or approaches to learning as peer tutoring, problem-oriented learning, entrepreneurship, and out door school to mention a few. All these methods have elements from multigrade teaching in the past in rural areas in countries like Norway. Instead of using singlegrade methods adjusted to multigrade schools we should think the opposite. It is methods developed from multigrade situations that are extended to singlegrade schools as well.

We select methods to gain goals and it is therefore important to know more about learning theories to understand why some methods are better than other in different situations, and it is also important to always be aware of the goals we are working towards. What is the Curriculum and how much freedom do we have to emphasize what we find most important in our district and with which methods?

In this paper, I have tried to show how multigrade teaching can be chosen as a needed model or for pedagogical reasons, and the importance of using efficient multigrade methods to attain good outcomes for the pupils. Most of the international research about multigrade teaching, concludes that multigrade teaching methods give more non-cognitive outcomes as social skills for pupils in multigrade schools and cognitive outcome for the weakest pupils compared to singlegraded schools provided that they use multigrade methods as those described in this paper.

Zambia is using multigrade teaching as a solution in rural areas mostly as a needed model for economic reasons. However, Zambia should think of using multigrade teaching for pedagogical reasons. A stronger emphasis to knowledge about more cognitive learning theories and multigrade methods would improve the pupils' cognitive and non-cognitive outcomes. And if the pupils have been taught to take responsibility for their own learning this could offer more flexible solutions in the manner that the learning and teaching process is organised.

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# Appendix 1

## Melheim (1998) summarize some arguments for using multigrade teaching

- Children prefer to play and interact with children at the same age in only 35 % of the time. Most children want to teach younger children and be pupils for older children.

- The best way to increase the quality in schools will usually be using the pupils as a resource, with helping other pupils. It is 9 times more effective than have more lessons, 4 times more then have smaller classes or using computers (Bjørkvold 1989 in Melheim, 1998).

- Older pupils can learn a lot from teaching younger pupils, both the subject and social skills.

- The older becomes more motivated for their own study when they teach others. They also increase their self-confidence. Especially slow learners and noisy pupils become better when they teach others. The language training seems also to be better when pupils teach younger pupils because pupils do not tolerate incorrect sentence**s** in the same way as adults do.

- Model learning is an effective way of learning and it is easy to use in multigrade learning. The oldest learn to be critical to their own behaviour because they know they are a role-model. They have to do more reflections.

- Slow learners are usually silent in single grades and will not be able to practice their language. The pupils usually think it is easier to read for younger ones because they don't have the same exceptions and competition. They will realise that they know something the others do not know.

- To keep important culturally values and norms it is important to not be single graded.

- It is much easier to identify an older pupil than the teacher, and the pupil may use better examples and more understanding words in his/hers explanations.

- Multigrade makes less rigid roles because you do not compare with same ages all the time. If you are the weakest one you will always be in single grade schools.

- With multigrade you will be able to develop the whole person, intellectually, socially and physically. Pupils have to change roles and positions from being the youngest to the oldest one through the education.

- Melheim (1998) refers to Sundell (1993) and his summary of some advances we can expect with multigrade teaching as:
    - Easier to begin to school,
    - Better self-confidence
    - Developed responsible behaviour
    - Increased initiative
    - Increased safety/security
    - Less victimization
    - More clear rules
    - Less competition
    - More individualism among pupils (they have to think about each of the pupils, less classroom teaching gives the teacher better time to be a tutor/guide)
    - Better conditions for learning and understanding
    - Less able learners make it better

Melheim (2003) has summarised eight school-based development-project in West of Norway. He concludes that using groups with a large gap in years can improve the social environments at the school. He concludes here as he earlier did that especially slow learners have a bigger cognitive outcome in multi-age groups and clever pupils have a bigger outcome in multi-age groups related to social and methodical issues. Disadvantages in multigrade schools are concerned with problems with grade specific materials and textbooks, discipline and segregate curriculum.

# Appendix 2

## Principles of the Story-line Method

### The Principle of Story

Story is a central part of human experience. Our history, our religion, our heritage has all been passed from generation to generation through stories for thousands of years. When we seek to understand the world around us or the culture of a people, we look to stories to enlighten us. Stories provide children with a predictable, linear structure and a meaningful context for learning what we are trying to teach. The Scottish Story-line method uses this powerful principle to teach required curriculum in a way that closely mirrors real life.

### The Principle of Anticipation

A good story draws us into its spell as we predict what is coming and we anticipate its unfolding with joy and excitement. All children want to know, ":What's going to happen next?" They follow the story from episode to episode, eager to see where it will go. Anticipation is also present at the end of a story when children ask, "What is the next story going to be about?" Anticipation ensures that learning goes on all the time whether in school or at home because children are involved in a process that they feel a part of. They are thinking about the story all the time and bringing their thoughts and ideas with them to each class session eager to contribute to the growing story unfolding around them.

### The Principle of the Teacher's Rope

This principle refers to the critical partnership between teacher and pupil in a Story-line topic. The Story-line method is also referred to as collaborative storymaking because of the balance between teacher control and pupil control. The teacher at all times holds the rope which is the actual "story-line" planned to include specific curricular goals. The magic of a rope is that it is flexible and allows for numerous bends and twists and knots while moving from one end to the other. This gives children their control. Still, the rope is the road that is being travelled and, in spite of the unexpected detours and diversions, the children still follow the path the teacher designed and learn the curriculum the teacher had planned.

### The Principle of Ownership

This is surely the most powerful motivator for children. Children feel responsible, are proud and are enthusiastic for projects in which they play a substantive role. Story-line honours children by beginning with the key question "What is a _____?" or "What do you think a _____ is like?" This idea of starting by building the childrens' conceptual model first says that children are not empty vessels waiting to be filled. Collectively they know far more about a given subject than they do as individuals. In fact, my experience has been that my children often know more than I do about any given subject. By taking the childrens' conceptual model seriously and visually bringing it to life in the classroom, we provide the fuel that drives the entire Story-line topic.

### The Principle of Context

This principle is closely linked to the principle of story. New learning must be linked to previous knowledge. Children build their understanding by going from the known to the unknown. Context provides children the reason for learning what we want them to learn. Since a Story-line topic mirrors real life, the context is familiar and children see its relationship to their own lives. The linear, predictable structure of the story is also a context they understand. Children research, practice skills, and assimilate new knowledge because the story demands it and because they care about it.

### The Structure Before Activity Principle

Before asking children to build their conceptual model we want to make sure that we have given them the chance to push their prior knowledge to its edges. When they have reached this point we know that they will frame their own questions and go about trying to find the answers. Children need to discover what they don't know by articulating what they do know and seeing the gaps. Once this has been done, children need to be given structures which will enable them to find out what they want to know and to present what they discover. The teacher provides an appropriate structure for creating a frieze, doing some research, writing a report, doing a presentation or creating a person so that all children have a point of reference or starting point. This structure equals freedom for those children who don't have the skills to accomplish the task on their own. Those who do possess the skills have the freedom to use the structure if they choose, or to diverge from it. This principle

supports the belief that all children can accomplish what is being asked of them, provided they are given the necessary structure first.

This list of six principles provides a framework to keep in mind as you plan a topic and implement it in your classroom. Use them as filters to focus your planning, your assessment and your work with children. In the next issue of The Connection we will look at one or two of these principles in more detail and share some examples of how they shape what we do with children in the classroom (Creswell, 1997).

The critical elements of a story-line are:

•Setting the scene in a particular time and place -- Pupils create a "frieze" or 3D representation of the setting in their classroom.

•People or animals or both -- Each pupil creates a character that he or she then becomes throughout the "story-line." This provides pupils with a chance to be someone else of a different age, race, culture, personality, time period, etc.

•A way of life to investigate -- Daily life is explored as well as rules and expectations of that particular day and age.

•Real problems to be solved -- The teacher and pupils create incidents which could possibly come up in the given setting. Pupils then must work together or individually (in character) to solve these challenges.

•Celebration or Culminating Activity -- Each story-line ends in a way which pupils are able to share their knowledge with others. Often this is through a presentation for parents, a field trip or community outreach.

•Reflection and Assessment -- Pupils are always given opportunities to reflect and assess their learning in a variety of ways.
For example, with an Oregon Trail topic, the pupils become pioneers leaving home in the East to settle in the West. The journey requires pupils to investigate why people migrate, what supplies are needed, what rules they must follow along the trail, what are the possible hardships and challenges. Carefully planned episodes engage pupils in actual practice and application of basic skills within the context of the story-line. The story motivates pupils to extend those skills and refine them for "real life" challenges.
The following features guide the development of the story-line:

•The story is progressive and sequential.

•The teacher sets out key questions within each episode that the pupils must address. •Each episode has limitless potential as every pupil investigates and contributes depending on their personal experiences and innovation.

•Each pupil will reach different levels within each key question and will return to the story-line for the next question.

How is Story-line used in Scotland?

The Story-line Method (called Topic Studies in Scotland) has served as a means of moving discipline-based education toward meaningful integration. Twenty-five years ago, Scotland began to take a serious look at the integration of content subjects. Three educators, Sallie Harkness, Steve Bell and Fred Rendell were asked by the Scottish Consultative Council on the Curriculum to develop an approach that would specifically meet the needs of high risk pupils but would also be appropriate for pupils throughout Scotland. Over time the Story-line method has been improved and is now being used by many not only in Scotland but also in Denmark, Iceland, Germany, Hong Kong and the US.

By Elaine Smith and Colleen Vallerga http://geog.pdx.edu/oga/yaks/TheScottishStory-lineMethod.htm

## Appendix 3

## Learning Pyramid

Average retention rate:

Lecture  5 %

Reading  10 %

Audio-Visual  20%

Demonstration   30%

Discussion group  50%

Practice by doing   75%

Teach others or immediate use of learning  90%


National Training Laboratories, Bethel, Maine


The REAL program in Entrepreneurship uses the experiential educational cycle that focus on practice by doing and teaching others, which produces a much higher retention rate than most traditional school programs.


## Experimental learning cycle


1. Experience                                                                          2. Reflection

*Tell me, and I forget*
*Show me and I remember.*
*Involve me, and I understand.*

4. Application                                                                        3. Expansion

# Appendix 4

**Four orientations and categorization of learning theories and theorists:**

| Aspect | **Behaviourist** | **Cognitivist** | **Humanist** | **Social and situational** |
|---|---|---|---|---|
| **Learning theorists** | Thorndike, Pavlov, Watson, Guthrie, Hull, Tolman, Skinner | Koffka, Kohler, Lewin, Piaget, Ausubel, Bruner, Gagne | Maslow, Rogers | Bandura, Lave and Wenger, Salomon |
| **View of the learning process** | Change in behaviour | Internal mental process (including insight, information processing, memory, perception | A personal act to fulfil potential. | Interaction /observation in social contexts. Movement from the periphery to the centre of a community of practice |
| **Locus of learning** | Stimuli in external environment | Internal cognitive structuring | Affective and cognitive needs | Learning is in relationship between people and environment. |
| **Purpose in education** | Produce behavioural change in desired direction | Develop capacity and skills to learn better | Become self-actualized, autonomous | Full participation in communities of practice and utilization of resources |
| **Educator's role** | Arranges environment to elicit desired response | Structures content of learning activity | Facilitates development of the whole person | Works to establish communities of practice in which conversation and participation can occur. |
| **Manifestations in adult learning** | Behavioural objectives Competency - based education Skill development and training | Cognitive development Intelligence, learning and memory as function of age Learning how to learn | Self-directed learning | Socialization Social participation Associationalism Conversation |

(Smith, 1999).