Chapter 1

INTRODUCTION

Multi-grade teaching may be defined as the strategy which a teacher adopts to teach the students of more than one grade at a time at the same place. Multi-grade strategy can be compared with mono-grade teaching where a teacher is in-charge of only one grade. Mono-grade is arranged grade wise (Anya, 2013).

The term multi-grade describes a situation where students of various grades are positioned together for guiding purpose. This comprises multi-grade classes in both multi-grade schools, where multi-evaluating is a response to the way that there are less teachers than grade levels, and bigger schools, where multi-reviewing is a reaction to uneven student consumption. Rare different terms might be used as a part of writing to mean to a multi-grade classroom. These include mix class, vertically collected class, mixed age class, split-grade class, and double grade class. It is similarly significant to distinct between multi-grade classes to which students can't be called on the principle of such things as capacity or mentality (non-deliberately doled out) and multi-grade classes to which students can be selected (intentionally assigned). Brown (2010) presented these two terms to explain why many investigations of multi-grade settings discover no change in psychological accomplishment when contrasted and mono-grade settings. Students are dependably non-intentionally doled out to multi-grade classes in multi-grade schools. Investigations of the things of multi-grade classroom association have not generally made this difference obvious.

A class that includes children of a solitary class, yet ordinarily of blended capacities is called mono-grade class. Ordinarily such classes include students of
a comparative age group, however in nations where repeat and rushing are normal, a mono-grade class may likewise be of blended age. The term single age class is once in a while used to distinguish classes that have children of a predefined age extend harmonious with grade level (Aksoy, 2007).

A class that has been pre-arranged crosswise over grade levels and ages by decision and for instructive reasons is called multi-grade class. Such classes may occur in either graded or ungraded school settings. Multi-age classes can vary as far as the many-sided quality of the instructional techniques utilized. For instance, students of various ages might be purposefully gathered together for one subject with the aim of lessening heterogeneity of capacity and making it less demanding to educate the entire class. Then again, multi-age gathering might be introduced over the educational modules to exploit the obvious points of interest of blended age classes for concentrating on the formative needs of individual children. Multi-age classes, fundamentally of the last sort, slope to vary in two vital regards from multi-grade classes.

i. Multi-grade classes slope to be graded while multi-age classes are wanted to be ungraded.

ii. In multi-age group children of different ages and grade levels are brought together into one learning group, while in multi-grade classes, grade levels stay unique (Brown, 2010).

1.1 STATEMENT OF THE PROBLEM

This study was conducted to compare the multi-grade teaching with mono-grade teaching at primary level.
1.2 **OBJECTIVES OF THE STUDY**

Major objectives of the study were:

1. To investigate the effect of multi-grade strategy on the performance of primary school children in the subject of English.
2. To compare multi-grade teaching strategy with mono-grade teaching strategy at primary level.
3. To find out the effectiveness of multi-grade teaching at primary level.
4. To give recommendations to suggest suitable method of teaching English through multi-grade teaching at primary level.

1.3 **HYPOTHESES**

In order to achieve the above objectives following null hypotheses were tested:

1. No significant difference is there between the mean scores of the experimental and control groups on Pre-test.
2. No significant difference is there between the mean scores of low achievers of experimental and control groups on pre-test.
3. No significant difference is there between the mean scores of high achievers of experimental and control groups on pre-test.
4. No significant difference is there between the mean scores of the experimental and control groups on post-test.
5. No significant difference is there between the mean scores of low achievers of experimental and control groups on post-test.
6. No significant difference is there between the mean scores of high achievers of experimental and control groups on post-test.

1.4 DELIMITATION OF THE STUDY

1. Only English was included in the experiment.
2. Private sector school (Army Public School, Nowshera).
3. Ten units of English (Five unit for grade-IV and five units for grade-V).

1.5 SIGNIFICANCE OF THE STUDY

Strategy of multi-grade teaching involves fundamental position in Pakistani Education System particularly at primary level. There is larger part of primary schools where a teacher teaches more than one classes in a school by multi-grade teaching including different classes in exercises and teaching a solitary class for quite a while. This territory was deserted by the field of research in circumstance of Pakistan. The review will concentrate on examination of multi-grade teaching with mono-grade teaching at primary level by utilizing test technique for research.

This study might be mammoth significance for people in general and private area associations, which are pushing educational projects in the nation to progress/enhance their educational system and for the leaders, principals and educators to create mindfulness and understanding of their parts and capacities and expert prerequisites to play out their relegated assignments amicably. The
study will strengthen the approach makers and organizers through perceiving capable shortcomings and preparing necessities of teachers and heads of educational organizations in respect of multi-grade teaching. The consequences of the study will be useful for teachers, managers, policy makers and for future researchers.

1.6 METHOD AND PROCEDURE

1.6.1 Population

The population of the study included all 17,037,700 students studying in primary classes in Pakistan constituted the population of the study.

1.6.2 Sample

Thirty students of grade-IV and thirty students of grade-V of Army Public School Nowshera were included in the sample for this study. These students were divided into two groups, i.e. the experimental group (multi-grade teaching) and control group (mono-grade teaching) by pair random sampling on the basis of pre-tests scores (separate for class IV and V).

1.6.3 Research Instruments

Four teacher made tests, i.e. two pre-tests (separate for class IV and V) and two post-tests (separate for class IV and V), were used as research instruments for this study. The purpose of pre-tests was to distribute the students into two groups i.e. experimental group (multi-grade teaching) and control group (mono-grade teaching). Instantly after the treatment, two teacher made post-tests (separate for class IV and V) were administered to students of
both the experimental and the control groups to collect data on the achievement of students of both groups.

1.6.4 Data Collection

After the treatment was over two teacher made pre-tests were administered to collect data to measure and compare the achievement level of students of both experiment and control groups.

1.6.5 Analysis of Data

The data gathered through teacher-made pre-test and post-test was tabulated, analyzed and interpreted by applying $t$ test and ANOVA to determine the significance of difference between the performance of experimental (multi-grade) group and control (mono-grade) group. Level of significance was 0.05.
Chapter 2

REVIEW OF RELATED LITERATURE

This chapter deals with review of related literature, the purpose of which is to produce an appropriate framework for proposed study. Review of academic concepts related to contribution and empirical evidences provide a comprehensive picture that helped in designing conceptual framework for this research study. Literature was reviewed under captions meaning, definition and historical background of multi-grade teaching in the perspective of Pakistan. Prevalence of multi-grade teaching worldwide, the rationale of multi-grade teaching and models of multi-grade teaching are also included in the review. Conditions in which multi-grade teaching occurred, evidence on the impact of multi-grade teaching on student's achievement and productive personal and social effects are presented. The strategies used in multi-grade teaching are also discussed. After this, the review highlights issues and challenges of multi-grade teaching, advantages and disadvantages of multi-grade teaching, performance of schools and educational management are also discussed. Finally, the review of related researches has also been added.

2.1 EDUCATION AND MULTI-GRADE TEACHING

Education has become one of the most favourite topic of discussion of the 21st century with the emergence of globalization and increasing global competition. Pakistan is determined to respond positively to emerging needs, opportunities and challenges of globalization. Education is being considered a legacy to change and progress. Progress and prosperity of the country depend on the type of education that is provided to the people. Pakistan holds that education
assists in harmonious development of the individual. It increases the economic, social and political adjustment of the individual in the society. Education is an essential prerequisite for an efficient and equitable development process of the society. It is an admitted fact that without minimum level of education for the entire population, a human centered development process cannot be sustained (Farooq, 1996).

According to Farooq (1996) Pakistan has inherited the present education system from the British rule in India. Since independence various governments have made efforts to develop the system of education in consonance with national, social, ideological and economic needs. Some of the significant policy landmarks in the history of educational development are: All Pakistan Education Conference (1947); Education Conference (1951); Six Year Education Development Plan (1952); Commission on National Education (1959); Commission on Student Problems and Welfare (1966); National Commission on Manpower and Education (1969); New Education Policy (1970); The Education Policy (1972-80); National Education Policy (1979); National Education Policy 1998-2010). By and large all the documents have emphasized:

a. Emphasis on Islamic ideology and character building.

b. Quantitative expansion of primary education and eradication of illiteracy.

c. Qualitative improvement of education at all levels.

d. Emphasizing scientific and technological education.

e. Provision of equal educational opportunity to all citizens of Pakistan.
All nations should ensure that education is a right for their entire citizens. Pakistan has also signed Jomiten Declaration on Education for All (EFA) in September 1990. Pakistan has to make sure to give access to all children to education and fulfill the promise of eradication of illiteracy by 2015. To do so the multi-grade teaching is one of the best strategy that will improve access to education particularly in rural areas where there are few teachers who handle all the grades (UNESCO, 2003).

Multi-grade and mono-grade terms are needed to use with precision because the conflation of studies from different context has possibly led to misleading claims being made for the cognitive effects of multi grade settings. It is particularly important to distinguish between terms referring to mixed age classes formed by administrative necessity and those formed by choice (Mason and Burns, 1997).

2.2 MULTI-GRADE TEACHING IN HISTORICAL PERSPECTIVE

Little (1995) states that multi-grade teaching means to teach students of different grades, ages and abilities in the same group. It is different from mono-grade teaching in which students within the same grades are seemed to be more similar in term of age and ability. It is also different from multi-grade teaching; in multi-grade setting students of the same grade have variation in age. That is why PASTEP (2000) said with full confidence that multi-grade teaching occurs when a single teacher teaches more than one grade at the same time in the same room. Vithanepathirana (2006) explains that multi-grade teaching is a teaching setting where one teacher has to take charge for teaching the students across more than one curriculum grades within the given time of period. Brunswick and
Valerian (2004) argue that multi-grade teaching is an educational setting where a single teacher is responsible for students of different age, grades and who study different curricula. Joubert (2007) explains multi-grade teaching as an educational setting where a teacher teaches students of different grades at the same time.

Birch and Lally (1995) were of the view that multi-grade teaching in Malaysia refers to the teaching of students of more than one grade in one classroom. This combination is made of adjacent grades. For example prep and one two and three, or four etc. and combination of grade one and three, grade two and four can be arranged. According to Little (2005), in Indonesia multi-grade teaching occurs with a teacher teaching two or more grades at the same time in the same room or in different classrooms. Brown (2008) states that in South Africa, multi-grade teaching exists but there is no policy of regulating the grades, how and which grades are to be combined.

In some countries, the interpretation of multi-grade teaching is different, for example, multi-grade schools in Greece are called "Mono-grade Schools" which is totally opposite term to those used in Europe and elsewhere in Africa. This contradiction is due to the approach used in Greece. Brown (2009) states that Greeks count the number of teachers instead of grades combinations. He explains that in single teacher school where one teacher teaches all grades (e.g. grade prep - 5th) are called mono-grade and the schools where two teachers have been appointed are called two grade schools and so on. If there is a separate teacher for each grade than it is called multi-grade schools. Birch and Lally (1995) point out that in China terms multi-grade class and multi-group are used.
These groups are arranged on the basis of ability, age, and grade differences. They further elaborate in multi-ethnic countries like Philippines, where one teacher teaching more than one grades in one classroom is called multi-grade class teaching. To overcome the challenges of multi-grade teaching, it is important to create common understanding about the phenomenon. Others terms like 'multi-level' 'multiple class' 'family class' and 'unitary school' are also used for multi-grade teaching which further complicates the common understanding (Kyne, 2005). The terms like composite, combinations class, split class, vertically grouped, blended classes, double class, further make it complicated (Russell, Rowe, and Hill, 1998).

Kyne (2005) explains that multi-grade teaching is understood in the first sense; it is referred to the teaching setting where a single teacher in the same room teaches students of different grades. Nawab and Baig (2011) explain that in Pakistan, two or more grades are adjusted in one classroom. And a single teacher teaches one grade and then moves towards the other grade engaging the former group in some activity and the latter is taught by the teacher. This is also a form of multi-grade setting but it cannot be compared with the one, in which the teachers integrate related and similar concepts or themes across contents of various grades.

Farooq (1996) says that Pakistan is very young as a nation but its culture is an ancient one. The concept of multi-grade teaching prevailed in the earliest days of Islam. The Muslim learnt the values, which are basic to the Muslim society. In the maktab the curriculum was composed of those parts of the Quran which every Muslim wanted to learn by heart in order to perform his devotion.
and religious function. These activities of teaching and learning have been continued, even today in deeni madaris (Mosques) where students of different age, abilities and level assemble and acquire knowledge of religious education from Paish-e-Imam or may be another learned person. According to views of Farooq (1996), the demographic characteristics of rural areas of Pakistan are a hurdle in the way of expansion of primary education.

These areas are scarcely populated. Other major problems are inadequate resources, lack of teachers, expenditure on construction of building for schools and required time for the completion of these buildings. To achieve the goal of universalization of primary education, the educationists in Pakistan made plan to use the mosque for the promotion of education. The scheme was named as maktab scheme. Maktab scheme was started in Bahawalpur division. It was a successful scheme towards universalization of primary education. In the first 15 months, 60 thousand boys and girls were given admission. These maktabs are pure example of multi-grade teaching in Pakistan. These schools were opened in the areas where there was no school in the village. The Muslim Imam was the teacher, aged (5-9) boys and girls of the village were the students, and mosque was the school and it exists till now. The prescribed regular primary school syllabi were taught (Farooq, 1996).

Mansoor (2011) is of the opinion that multi-grade teaching is prevailing but not in true sense and spirit. She further explains that less or no attention is paid to multi-grade teaching. It occurs when the appointed teachers are not appropriate to the number of students. Sometime, only one teacher is assigned to a school and multi-grade teaching takes place. Due to lack of infrastructure and
transfer of teachers to remote areas where they do not take charge and use political support which causes multi-grade teaching. However, multi-grade schools are not officially recognized in Pakistan. It is not adopted as an effective approach in the country but adopted as de facto solution to the inability and incapacity of the system to overcome the needs of education in the country. In view of UNESCO (2003) reports, there is no concept of multi-grade teaching and no special professional preparation in Pakistan. Generally, teachers are appointed on the basis of primary school certificate (PTC) for multi-grade teaching in remote areas and get training of multi-grade teaching through experimentation and experience using different techniques and strategies of teaching.

2.3 MULTI-GRADE TEACHING IN GLOBAL PERSPECTIVE

According to Kyne (2005) and Veenman (1995), multi-grade teaching is a teaching phenomenon widespread in educational systems worldwide. Many scholars who reviewed the field are of the view that in some countries, the data on multi-grade teaching is not properly and systematically collected.

Kyne (2005) states that in Finland about 53% primary schools have less than 50 students where they are taught in multi-grade setting. In the year 2000-2001, there were 42% of the primary schools in Norway. In Australia, 25% of primary schools have multi-grade teaching and Greek has 31% of primary schools with multi-grade teaching.

Multi-grade teaching also exists in primary schools in Germany, Sweden and Switzerland. Poglia and Strittmatter (1983) are of the opinion that in Switzerland about 23% of all classes were with multi-grade teaching. Juvane (2005) reported that in African Counties, almost all countries have this type of
teaching. These countries include South Africa, Colombia, Burkina Faso, Uganda, Zambia and Fiji etc. In the USA the prevalence of multi-grade teaching is not more than 3% of the primary schools (Mason & Stimson, 1996). Multi-grade teaching is also prevalent in Australia where 40% of schools in the Northern areas are multi-graded and in Canada about 20% of the students up to class seven are taught in multi-grade schools. During the period of 1999, in Sri Lanka, 18% of the primary schools had multi-grade teaching where 4 or less teachers had been teaching from prep to grade-V.

Mansoor (2011) highlights that in Pakistan, in the province of Sindh 65% of the primary schools have only two rooms available for different five grades, which results in multi-grade teaching. More than 80% of primary schools in Northern area of Pakistan and Chitral in Pakistan are operating in multi-grade setting where two or three teachers have to teach from grade prep to grade five. The above mentioned facts prove that multi-grade teaching prevails worldwide, it is a common feature of primary schools in Africa (Juvane, 2005) but it is unfortunate that data on this phenomenon is insufficiently published and not systemically evaluated the world over.

2.4 RATIONALE BEHIND MULTI-GRADE TEACHING

There are many reasons and motivations behind multi-grade teaching in the recent time. There are certain circumstances and conditions under which many countries adopt multi-grade teaching as it become imperative for those countries. It is a fact that so many countries the world over struggle to achieve the desired goals to provide education for all (EFA). They utilize multi-grade mode of teaching which is the most suitable for accessible area with small
population and low enrollment rates. It is specifically beneficial for those girls and boys who remain away from education due to cultural or socio-economic rigid constraints. Multi-grade teaching is also helping in universalization of primary education, which is one of the main Millennium Development Goals (MDGs) of the United Nations. Research and application have proved that this type of teaching enhances cognitive as well as non-cognitive skills of the students (Kamal, 2010). Brunswick and Valerian (2004) stated that multi-grade teaching normally occurs as a result of necessity. These necessities are described as following: demographic or geographic restrictions such as scattered and less population density; declining of population as a result of migration of the people from rural to urban and urban to rural areas; inaccessible school in remote areas or administrative or pedagogical constraints such as leave or lack of teachers’ absenteeism; low enrollment rate of students in higher grades and greater number of students in certain grade.

2.5 MODELS OF MULTI-GRADE TEACHING

Pridemore (2004) suggested following four models for multi-grade teaching:

2.5.1 Quasi Mono-grade Curriculum Model

Pridemore (2004) explains that this model is traditional one where the teacher is transmitter of knowledge, the teaching is teacher-centered and the students are not encouraged to assist and collaborate one another. This approach is strongly based on Piaget theory of learning which stresses the role of physical maturation in cognitive development. This curriculum model has been adopted in many multi-grade settings, in this model of curriculum the teacher teaches or
instructs one grade in mono-grade class while the other grades in the classroom work at their own or the teacher keeps them busy in certain tasks (reading, memorizing writing). The teacher rotates after some time and gives instruction to another grade. This process is continued until all the grades in the class are taught. In this strategy, the teacher adjusts his / her timetable in accordance with needs of the students, to some grades more time is given and to some grades less time is consumed. It depends upon the nature of subject that she or he has been introducing. Multi-grade teaching is mostly prevailing in rural areas; therefore, the needs of rural people must be kept in view while adopting the curriculum (Hargreaves, 2001).

Joubert (2007) is also of the view that in adaptation of curriculum the students’ individual differences must be addressed; it must be flexible to the needs of the students; the curriculum should be based/focused on learning outcomes instead of context achievement. It must be student-centered rather than teacher-directed and the role of teacher must be that of a facilitator.

Pridemore (2004) pointed out that in quasi mono-grade model the planning of the classroom is very traditional and conservative. Quasi mono-grade teaching model is time consuming. The workload for the teacher is heavy, he/she always struggles to complete the content prescribed in the given time. The assessment practices are probably more summative and traditional. This type of curriculum model does not develop independent learning among the students, because this approach is always teacher-centered and mostly students do not find enough opportunities to develop independent learning.
2.5.2 Differentiated Curriculum Model

This strategy looks like an opposite of the quasi mono-grade curriculum model. In this curriculum model, the teacher teaches/instructs theme/general topic to all grades at the same time. This curriculum model is prevalent in multi-grade schools in Vietnam, Finland, and Sri Lanka. The teacher uses one theme for all grades at the same time. The beginning and end of the lesson is for the whole class, but the teacher can, in the middle of the lesson, differentiate and work with one specific grade. When the learners work at their own, they find opportunities for peer tutoring and self-directed learning (Vithanepathirana, 2006).

Pride more (2004) analyses this curriculum model in terms of Berry's five dimensions and agreed that the teachers planning must be good and he / she must spend a considerable amount of time before the lesson to plan which sections consist of general theme that can be taught to the whole class and which sections have to be differentiated and taught for a particular grade. The teacher can assess the learners through both formative and summative assessment, when they work at their own, the teacher carefully plans assessment activities to keep the learners busy. In this curriculum model, the grouping is important, the teacher moves around in the whole class teaching, group or grade teaching and even pair teaching. Differentiated curriculum model has the potential to develop learner's interdependence and independence, but it is limited, and the teacher consumes most the time in direct teaching to the whole class.

2.5.3 Multi-year Curriculum Cycle Model

In this curriculum model, the learners have to work in two consecutive
grades through common theme/activities together but begin and end the curriculum at different times (Dania 1988). Pridmore (2004) gives precedent of grade three and grade four in a composite class. The teacher teaches the curriculum of grade four to both grades. At the end of the year the grade four is promoted to grade five and the grade three moves to grade four and the new grade three moves in. It becomes same combination of grade three and grade four. This year the teacher will work on the curriculum of grade three. When second year is completed, the grade four covers the curriculum for both grades. Multi-year curriculum cycle means that the teacher instructs the same context for grades three and four but at different time. This model is useful in subject where there is no need to develop knowledge incrementally. However, in the subjects like mathematics and reading is not always possible, because the learners will have to acquire certain areas of knowledge before they continue. This model is very suitable for cross-age learning, to encourage the teacher to integrate the context.

2.5.4 Learner and Materials Centered Curriculum Models

According to Little (2005), this curriculum model depends more on the students and the learning materials rather than the teacher input. Learning is constructed as involving a relationship between learner, learning materials and the teacher. The students work on these materials at their pace with the support of teacher and complete the task. A well known example of this model is the Escudo Nuevo program implemented in rural schools in Colombia. The Escudo Nuevo is considered as an ideal program for multi-grade teaching. Under this program, the students receive a complete set of learning materials and they work
on these materials at their own speed. This model is very successful (Colbert et al., 1993). It allowed the teacher to be very flexible and learners to work at own, practice which revealed that they tend to come together in small groups to help each other. This model provides opportunity for the teachers to integrate context. This model has been adopted and utilized in countries like Brazil, Gyena, Chile and Uganda.

Pridmore (2004) explains this model in terms of Berry's five dimensions and says that planning and preparation of materials are the most important aspects. The model will fail if the materials were not properly planned and developed. Schools must develop material in advance so that it may be ready when the new year starts. Development of material is not easy and cheap because they require funds to develop the learning guides. The advantage of these materials is that, once they are developed can be used for so many times and places in multi-grade settings. This model certainly improves and strengthens the development of learner's independence and interdependence, because the students are forced to work through the materials on their own time and speed and can form small groups, which can assist with the development of interdependence.

2.6 SITUATIONS FOR MULTI-GRADE TEACHING

There are certain situations that are leading to the adoption of multi-grade teaching the worldwide. When multi-grade teacher is adopted, it is always taken as a result of necessity such as geographic or demographic constraints like low population density, scattered population, declining population density resulting from rural to urban migration, schools situated in remote areas or it be adopted as a result of administrative or pedagogical reasons such as teacher absenteeism,
insufficient number of learners, lack of teachers, competition between schools that are seen by parents as being of unequal quality. In advanced and developed countries, multi-grade teaching is adopted for educational reasons and utilizes multi-grade teaching as an effective teaching strategy by innovative teachers both in private and government school (Brunswick and Valerian, 2004).

According to Brown (2008), multi-grade teaching has been commonly understood which occur as a result of shortage of teachers in such type of condition/situation, educationists are of the opinion that multi-grade teaching can play an important role if the goals of the world education for all are to be achieved, affirmed in Jomtien and the Dakar Framework of action. Most of the educational systems, which face such situations, adopt multi-grade teaching as a last resort because it becomes the only option and necessity to be adopted.

Tambulakani (2004) says that the prevalence of multi-grade classes is due to its necessity rather than a choice because it gives access to education in remote and less populated areas, it increase access to learning in such schools where the number of teachers is insufficient as compared to the number of students. Little (2005) explains the conditions under which multi-grade teaching happens, are described as under:

i. Schools situated in low population density population are widely scattered, inaccessible and low number of students. Schools may have only one or two teachers responsible for teaching all grades.

ii. Schools that contain a cluster of classroom spread across in different location, in which some classes are multi-grade and some are mono-grade, for some reasons or others. Some teachers
within the same school spend most of their time with multi-grade classes, some with mono-grade classes.

iii. School in areas where the number of students and teachers is declining and where previously was mono-grade setting. Schools in which the number of students admitted to a class exceed official norms on class size, necessitating the combination of some students from one class grade with students from another grade.

iv. Schools in areas of population growth and school expansion, where enrollment, in the expanding upper grade remains small and inadequate number of teachers.

v. Mobile schools in which one or more teachers move with nomadic and pastoral list students spanning a wide range of ages and grades.

vi. Schools in which the official number of teachers deployed is sufficient to support mono-grade teaching, but where the actual number deployed is less for some reason or other. Schools in which students are organized in multi-grade rather than mono-grade groups, for pedagogic reasons, often as part of a more general curriculum and pedagogic reform of the education system.

2.7 TEACHING STRATEGIES IN MULTI-GRADE TEACHING

Kyne (2005) says that teaching strategies play an important role in improving the quality of teaching and learning in multi-grade classroom. The teachers utilize various types of instructional strategies in multi-grade teaching. Kyne (2005) proposes independent learning and cooperative learning, and these
approaches increase the level of understanding of the students. Three strategies are to be effective in multi-grade teaching. These include (i) peer instruction in which students act like teacher for one another, (ii) cooperative group work in which small groups of students work collaboratively on a given tasks, and (iii) individualized learning in which students are involved in self-study. Apart from above suggested instructional strategies, thematic teaching, various group technique, self-directed learning, team teaching and the use of learning centers in the classroom are also effective strategies utilized in multi-grade teaching. They are discussed as under:

2.7.1 Thematic Teaching

Thematic teaching is a useful strategy that is specially utilized in multi-grade settings. In thematic teaching, the teacher assembles all the students of different grades and ages, integrates the curriculum for teaching at the same time. Thematic teaching in multi-grade teaching permits the students to share the common concept, and allows each child to work on that concept at his level (Bacharach, 1995).

2.7.2 Grouping Techniques

In this type of technique teachers use various types of grouping techniques such as cooperative learning, whole class and small group work. The combination of various types of groupings for different purposes is the best thing to do (Chapman, 1995).

2.7.3 Cooperative Learning

Veenman (1995) says that cooperative learning is one of the best strategies used in multi-grade teaching. In this type of teaching and learning
approach, the students work together on the assigned task, each student participates actively. Students complete the task without guidance and supervision from the teacher. Cooperative learning strategy is increasingly used for developing higher order thinking and promoting pro-social behavior. Research shows that in cooperative learning heterogeneous groups are especially useful for low achievers. Cooperative learning technique enables the teacher to manage his multi-grade class more effectively. Every child in the group has a designed task and they complete the task jointly. Cooperative learning enables the students to be interactive, interdependent, develop team building skills.

2.7.4 Whole Group Teaching

In multi-grade settings, it has been seen that the teachers arrange whole group teaching; the teacher gathers all grades together and introduce a lesson of a common theme to the entire class (Muthayan, 1999). If the younger students not fully understand the theme, they are assured that the same theme will be taught again the next year and added that they will find it more interesting. Grades 2’s are that part of the whole group but they are not assigned work while the higher grades have to do the assigned work on the instructing whether in small groups or individually. In whole group teaching the teacher, assigns seatwork for the students and this technique allows him/her to more freely around the class and instruct small groups or individuals. Whole class teaching technique is very suitable for teachers because it saves time.

2.7.5 Small Groups

Small groups technique is a part of the whole group teaching. The students of different grades sit together in small groups, the students work on
tasks specific to their grades but the students, of different grades discuss their work with one another each time in small group the older students assist the younger students. In multi-grade teaching the teachers utilize a variety of teaching strategies because there is no one best strategy to be adopted. Teachers use different strategies according to needs of the children and the context in which learning occurs. Increased opportunities for children who are very different from one another by age to socialize and work together deepen and enhance the effectiveness of educational environment and strategies (Muthayan, 1999).

2.8 ISSUES AND CHALLENGES IN MULTI-GRADE TEACHING

According to UNESCO (2007) report, the teachers have to face a number of challenges while teaching in multi-grade setting. Following challenges in multi-grade teaching are indicated:

i. Lack of teachers training.

ii. Inadequate teaching material.

iii. Inflexible curriculum.

iv. Non-availability of school facilities.

v. In-sufficient incentives for the teachers.

Titus (2004) has mentioned the challenges of human resources, infrastructure and material in South African counties. The teachers are untrained or trained only for mono-grade teaching. A teacher trained for single grade is given the responsibility to teach in multi-grade setting. NWREL (2001) reports acknowledged that multi-grade classes face more challenges than traditional single situation. Collingwood (1991) is of the opinion that the challenges of
multi-grade classrooms worldwide are that most countries have human, structural, and material problems such as: Reduced instructional time for teachers; curriculum materials are designed only for one year; inadequate self-instructional material; lack of pre and in-service teacher training required for multi-grade situation; wide range of abilities and interest levels in one classroom; exam pressure, which compel teachers to focus on exam classes only; a large number of students in the classroom and shortage of teaching; and learning resources (NWREL, 2001). Berry and Little (2005) reported the following challenges faced by multi-grade classrooms:

i. The structure of national curriculum and related expectation of curriculum coverage and assessment or achievement targets.

ii. The range of abilities of the students in multi-grade setting where students have been assigned on criteria other than ability homogeneity.

iii. A pressure to prepare students for internal assessment. Structural issues are common in British system where multi-grade teaching is practiced.

Passion (2002) indicated different challengers of multi-grade situation and suggested following solution to the problems:

i. Provide special treatment for multi-grade classes by creating a unit within the department of education dedicated to develop such classes. Special legislation should be made for multi-grade teaching.

ii. Special measure should be taken for facilitation, teacher training,
and assessment of teaching strategies or approaches. Grants or special funds should be provided for multi-grade setting in order to improve teacher performance.

Doyle and Rice (2002) are of the opinion that the research evidence on the significance of community members and local stakeholders in multi-grade teaching is not encouraging. Little (2001) also agrees with the opinion of Doyle and Rice by saying the isolated nature of multi-grade teachers in their classrooms is well documented. Cornish (2006) explains that teachers find it hard to gain the support of parents. Parent's perception about multi-grade teaching is commonly reported as negative. Parents are the basic stakeholders in education of their children. They have the following concerns with multi-grade teaching:

i. A large number of parents do not believe in management and teaching of multi-grade classrooms.

ii. Many parents are of the opinion that some grades and some children are more suited than others being part of multi-grade classroom.

iii. Many parents are concerned about the practices of putting students of different ages together. Parents are anxious about cohesion both within the class (Class identify) and with grade peers in mono-grade classrooms (grade identified).

iv. Parents question perceived choice (Between multi-grade and mono-grade classes) and selection bias.

According to Cornish (2006), biased selection of teachers or students has both positive and negative effects. Parents think that when better teacher are
selected from mono-grade and placed in multi-grade classes, the selection will have positive effect on multi-grade classes but it will have negative effect on mono-grade classes. Little (2001) agrees that it is a fact that multi-grade teaching is not a well known practice in schools, but this does not explain their behaviors in all cases. This perspective favors the claim by Little (2005) that for children to learn effectively in multi-grade settings, teachers need to be well trained and supported, well resourced, and have positive attitudes towards multi-grade teaching. Multi-grade teaching has lack of best practice of effective teacher support modes in literature. Several studies have directed attention on challenges faced by the multi-grade setting for teachers and their teaching tasks.

According to Vithanepathirana (2006) in Sri Lanka, the attitude of multi-grade teachers is generally negative towards multi-grade teaching. But a recent action research shares idea that teacher's attitude become positive towards multi-grade teaching when they realize that there are strategies that can be used to lessen the teachers' burden of intensive lesson planning for several grades and to improve student's achievement outcomes. In Turkey and Caicos Islands, teachers in multi-grade schools also have negative perception about multi-grade classrooms. They complain for the burden of lesson planning required for multi-grade classrooms. Several other challenges faced by teachers from earlier students related to rural and remote areas where multi-grade schools are situated (Little, 2005). These include:

i. The absenteeism of teachers in rural areas.

ii. Non-filling of vacant posts in multi-grade schools in remote areas.
iii. Inattentiveness of education officer to fulfill the needs of multi-grade schools. Insufficient provision of houses to live in.

iv. Lack of opportunities for in-service training.

v. Lake of special financial incentives for teachers teaching in rural and remote areas.

vi. Absence of promotion incentives.

Joubert (2005) states that in African counties the perception of the teachers is the same as in Sri Lanka and Nepal. While successful teaching efforts can make difference in students learning in all teaching context or regardless of the subject areas.

2.9 ADVANTAGES AND DISADVANTAGES

According to Little (2006), so many educationists are in favor of multi-grade classes, but a large number of educationists are not in its favor. Many feel that multi-grade approach provides opportunity of access to education in scattered population and rural areas, but teachers are also of the view that integration of curriculum, teaching in multi-grade setting, individualizing instructions, and inadequacy of teachers are the basic problems of multi-grade teaching. Even, the parents have also negative perception about multi-grade teaching. However, lack of understanding and lack of personal attention are the main causes of these phenomena.

2.9.1 Advantages of Multi-grade Teaching

i. Multi-grade teaching provides opportunities to learners for basic education in rural areas.
ii. They are also an efficient means of using less educational input, such as trained teachers, classrooms, and materials.

iii. Multi-grade schools maintain the village identity and cultural life.

iv. In multi-grade setting students can achieve higher achievement levels especially in mathematics, language and science.

v. Students in multi-grade setting are found to be more obedient as compared to mono-grade students who show significant gain in reading and language (Logue, 2006).

vi. Multi-grade schools provide opportunities of education to girls in villages because those schools are located closer to home.

vii. Through independent query and peer tutoring, students "learn to learn" and "learn to teach".

viii. Teachers and individual students develop a strong relationship with passage of time, which helps the teacher to access the student, and adopt different instructional strategies required. Creates caring environment as a result older students help the younger ones and thus social interaction improves among the students (Frasco, 2004).

ix. The stigma associated with repetition is washed. Multi-grade grouping has positive effect on student's attitude and behavior, without loss of academic achievements.

x. Multi-grade system provides natural environment to students for play and project.
xi. Normally, in multi-grade classes' age and achievement differences are accepted by the students.

xii. In this situation, the students land to integrated curriculum. Children are able to work at different developmental levels without obvious remedies, thus, avoiding emotional or social damage caused by retention.

2.9.2 Disadvantages of Multi-grade Teaching

Thomas and Shaw (1992) have also explained some disadvantages of multi-grade teaching. They are as under:

i. If properly trained teachers and required resources were not provided; students' achievements may fail. Demands on teachers’ time and organizational capabilities are high; they need special training and perform their duty effectively. Students may get less individual attention and often work independently.

ii. The teachers have to teach more than one grade at the same time and they have to complete the entire curriculum in the stipulated time, which is practically very difficult.

iii. Teachers always feel lack of time for teaching the required contents.

iv. Teachers feel over burden in multi-grade classes and over burden created lack of interest among them. In multi-grade situation teachers have lack of classroom management skills.

v. Inappropriate teaching and learning material also affects the academic achievement of the students.
2.10 ROLES AND RESPONSIBILITIES OF TEACHERS

In conventional or mono-grade teaching, one of the principles of learning is to know the learners and start working with them. A teacher is deeply concerned about knowing the situation in which he/she will work and the people with whom he/she will associate. She/he is also concerned to know about the curriculum plans of school. He/she will need to become familiar with particular units of work in which the pupil will be engaged when he/she begins his/her student teaching. Another whole area of concern is his/her relations to other staff members and the school administration to parents and school community.

Holden (1987) has reported the tasks of a teacher, which are given under:

i. A teacher must be familiar with his role as a leader of the teaching experience.

ii. He must be able to integrate and apply content, theory and teaching methods to the real classroom situation.

iii. He should start first serious attempt to become part of the teaching profession.

iv. He must have greater professional awareness of the teaching profession.

v. He must be competent enough to develop the ability to plan according to the school and class characteristic in particular.

vi. He must be able to make full use of every human or material resource available in the school and its community.

Brown and Brown (1990) say that every supervisor has his/her idea of what makes a good teacher as well as what constitutes a successful lesson. Some
of the things most supervisors will expect from teachers when evaluating them.

i. Punctuality, to arrive in school well in time.

ii. A well written lesson plan; a teacher should have a file or a notebook containing all the lesson plans.

iii. High standard in dress and behavior; dress appropriately, smart without being overdressed.

iv. Standards of speech, poise and posture should be appropriate for teacher.

v. Teacher should exhibit a pleasant personality without being arrogant or shy.

vi. Versatility in teaching strategy; proficient in the different teaching strategies, in the use of instructional materials and techniques.

vii. Have an introductory meeting with the head teacher.

viii. Familiarize him/her with school buildings, grounds and its surroundings.

ix. Familiarize him/her with school procedures/rules and regulations.

x. Familiarize oneself with national curriculum.(Tolley, et. al., 1996)

McIntyre and Byrd (1996) have suggested the following roles of teachers:

i. Observing cooperating teacher and other teachers, keeping in mind the special issues.

ii. Talking about the concerned issue to cooperating teachers observed by him and discovering the strategies they used in relation to the issue.
iii. Taking part in discussion with teachers who had observed them with the issue in mind.

vi. Discussing with the teachers their own developing theories related to the issue.

2.11 TEACHERS’ PROFESSIONAL DEVELOPMENT

Kyne (2005) described the point made by the teachers of multi-grade setting that multi-grade classroom is more of a challenge than mono-grade classroom. The required skills and behavior of the teachers are different, and coordinating activities are more difficult, it is logical to suggest that teachers working in multi-grade situation need serious, ongoing teacher training and a commitment to hard work. Tsolakidis, et. al., (2005), had the following specific needs:

i. They often felt isolated from other teachers.

ii. They noticed that their work was professionally very demanding.

iii. When new nationwide curriculum was introduced, they wanted to support to understand it and to introduce this curriculum into their multi-grade schools.

iv. Computers were already utilized in the classroom, teachers wanted to learn about it and to make use of these computers.

v. They felt that one of the greatest pedagogic challenges in multi-grade classroom was differentiation and individualization of teaching.

Tsolakidis, et. al., (2005) focused that in Greece, data was collected from 900 multi-grade schools through MUSE Questionnaire. The survey revealed the
following specific needs:

i. Teachers felt that the curriculum taught in multi-grade school was neither differentiated nor adjusted to the needs of multi-grade classroom.

ii. They faced problems with the distribution of time and with the volume of work.

iii. The main teaching methods utilized were collaborative learning and silent assignment. They realized that they needed good example of implementing these methods in real and not ideal conditions.

iv. The teachers had not sufficient time to complete the teaching of main subjects, which had negative effects on the less important subjects to which they gave less time or did teach at all.

v. Teachers were of the opinion that multi-grade teaching caused inability to cope with extra work and extra pressure.

Tsolakidis, et. al., (2005) explained that in Spain, the teachers had a number of needs. Most of the needs were non-professional and criticized the situation in which they work. These needs and concerns were as follow:

i. Physical and cultural isolation.

ii. Unification of methodological criteria in classes.

iii. The need for a more positive evaluation of their work by local community.
iv. More training, introduction of cross-curricular or transverse subjects including academic content values, personal development etc.

v. Lack of resources.

vi. Ways of grouping of children of different levels.

vii. Physically and psychologically demanding work for the teachers.

viii. Poor infrastructure and lack of equipment.

ix. Temporary nature of staff, due to the high level of mobility that make continuity in the work with the students and the development of a curricular plan.

x. Teachers not prepared for the rural schools.

xi. Difficulty in completing the official curriculum need for flexible approach to educational inspection.

xii. The need for continuous professional development in particular for new teachers. Difficulty in team work in grouped rural schools.

xiii. There is a diversity reflected in the needs of multi-grade teachers above. Multi-grade teacher needs analysis is paramount in the design of training programs to support teaching in multi-grade contexts (Tsolakides, et. al., 2005).

Multi-grade teachers need to understand and have to their disposal the basic principles classroom layouts, instructional strategies, and teaching material for multi-grade teaching (Miller, 1991).
2.12 EFFECTIVE PRACTICE FOR MULTI-GRADE TEACHING

The literature suggests that there are five key aspects of which generally focus training packages for multi-grade teachers. These aspects contain:

2.12.1 Classroom Management Techniques

Multi-grade classrooms comprise more than one grades, therefore, it is difficult for a single teacher to manage it (Juvane, 2005). This suggests that the class teacher must be skilled in managing instruction to reduce the amount of 'dead time' during which children are not productively engaged on task. Kyne (2005) states that teacher must be aware of different ways in which the children are grouped together, the importance of independent study areas where students can go when they have finished their work, and approaches to record keeping which are more flexible as compared to the single-graded classroom. Keeping in view the above, Berry (2004) is of the opinion that students also have a responsibility in the process of multi-grade classrooms management. Students need to be taught the value of independence and cooperation, and this can be done by involving the students in classroom decision-making. This suggests that in national culture and education systems where little or no value is given to values such as independence or cooperation, achieving effective multi-grade teaching could be a challenge, regardless of the subject area and students involved.

2.12.2 Instructional Strategies

Kyne (2005) highlighted that instructional strategy plays an important role for the improvement of the quality of instruction in multi-grade teaching. The promotion of strategies that increase the level of student independence and
cooperative group-work tend to be suggested. Little (2001) explains that these involve a change in the role of the teacher from 'giver of information' to 'facilitator'. This suggests that the widely practiced approach of the teacher being a transmitter of knowledge requires reconsideration. Kyne (2005) is of the view that facilitator role ensures that time spent away from the teachers is spent productively.

According to Kyne (2005), teachers can adopt following strategies to make their teaching effective and these practices will also enhance the abilities among students, like, role of students as an educator is also important for other learners; combine the learners in small groups for their learning and an opportunity provide to the learner for personalized learning.

The above mentioned perspectives suggest that effective multi-grade teaching need new and different strategies as compared to mono-grade teaching. In multi-grade teaching these strategies can change the scenario.

2.12.3 Planning for Curriculum

As per Little (2001), in most of developing countries, mono-graded curriculum is followed. Teachers make use of materials that are oriented for mono-grade classrooms, which put severe pressure teachers in multi-graded schools. Juvane (2005) and Little (2005) are of the opinion that each set of grade-level materials are typically placed in a separate booklet, which may include specific content to be taught, as well as guidelines on how to teach it. Such curricula are difficult for multi-grade teacher to teach because; they tend to require plans to be written for each grade-level separately. Raj (2014) states that there is no time for teachers to design such curricula and to re-design national
requirements to fit local contexts. Ames (2002) highlighted that using multi-grade curricula in multi-grade situation is not only time consuming but also results in ineffective teaching and learning process.

Brown (2008) also described that the application of mono-grade curricula in multi-grade classes creates problems for the teachers. Such curriculum is generally not structured for multi-grade classroom; it places a heavier workload on multi-grade teachers as compared to mono-grade teachers; impedes the capacity of multi-grade teacher; given the lack of facilities and problems of management at the local level and it does not provide opportunity of time for the required preparation of teachers and to address students' needs. Multi-grade teaching classes need to be developed a specific syllabus.

Joubert (2007) is of the opinion that the adjustment/adaptation of the curriculum should recognize the following:

i. Pupils may develop at different rates.

ii. More flexible approaches to student retention and promotion are needed.

iii. There should be a focus on learning outcomes rather than content. Learner-focused rather than teacher-directed methods are beneficial.

iv. Teachers must be trained to become facilitators rather than keepers of knowledge.

2.12.4. Instructional Materials

Instructional materials also tend to be written for single-graded classroom. Consequently, they are produced as grade-level textbooks and are
designed to be delivered by the teacher to the students (Kyne. 2005). Little (2005) describes that materials being used in multi-grade teaching are ineffective. According to Little and Pridmore (2004) materials found to be more suitable include a self-instructional package, which might be in the form of workbooks with self-correction key, or a small classroom library that can be assessed independently by the students. Furthermore, the literature implies that teachers need to be shown how to produce such self-study materials in a cost effective way. But materials relevant for one country may not be appropriate for the other. Birch and Lally (1995) highlight several examples of materials developed in Asia and the Pacific. The knowledge base on the nature of the learning materials used in, or how they are developed for multi-grade classes.

2.12.5 School and Community

Community is an informal and active agency of education. It can play many roles in the promotion of education. These roles include: (i) increasing attendance in schools (ii) financing of education (iii) maintaining good atmosphere in the schools (iv) Catering physical facilities, and (v) providing media of informal education. Mkhabela (2011) is of the view that all communities value education in their children. Education is one of the public good; therefore, a community must protect and preserve it. It should be used as a tool for social development. Juvane (2005) is of the view that multi-grade schools are mostly situated in remote and difficult to reach areas. They are often far from the educational centers and receive little pedagogical support. Titus (2004) targeted that the communities in which multi-grade schools are located often do not see the value of education and often speak different language from
the" official" one of the school. Therefore, Titus (2004) proposes the involvement of community in the life of the school as a strategy to build tie with the school, and implies that parents can be asked to visit schools as a resource or the school might extent the curriculum out into the community. The teachers are needed to be trained in approaches that would help them to develop relationship between the school and community.

2.13 PERFORMANCE OF STUDENTS

Performance means students’ active generation of response that is observable either directly or indirectly via a permanent product. Performance assessment can be defined as ‘testing methods that require students to create an answer or product that demonstrates their knowledge and skill. Performance assessment got importance when there originated a significant dissatisfaction with objectively scored test was not valid measures of important learning outcomes. Because these tests (multiple choice, completion, short answer) only emphasize the acquisition and memorization of information and cannot be appropriately used to measure many higher-level thinking abilities.

To deal with this reality, educators began to develop and use “more authentic” (Authentic means the nature of the task and context in which the assessment occurs is relevant and represents “real world” problems or issues) measures of student learning. These measures in fact were to assess higher-level thinking and other skills and abilities, which students were supposed to use throughout their lives. Performance assessment is viable alternative to norm-referenced tests. Teachers can use performance assessment to obtain a much richer and more complete picture of what students know and are able to do.
Performance assessment, also known as alternative assessment, is a form of testing that requires students to perform a task rather than select an answer from a ready-made list. For example, a scientific hypothesis solves Math problems, converse in a foreign language, or conduct research on an assigned topic. Experienced raters, either teachers or other trained staff, then judge the quality of the student’s work based on an agreed-upon set of criteria. This new form of assessment is more widely used to directly assess writing ability based on text produced by students under test instructions (Shahid, 2004).

2.13.1 Characteristics of Performance of Students

The performance assessment is a continuum of assessment formats ranging from the simplest student-constructed response to comprehensive demonstrations or collections of work over time. Whatever format, common features of performance assessment involve:

i. Student’s thinking rather than selection of a response.

ii. Direct observation of student behavior on tasks resembling those commonly required for functioning in the world outside school.

iii. Imagination of student’s learning and thinking processes along with their answers.

2.13.2 Methods of Performance Assessment of Students

Some frequently used methods of performance assessment are as follows:

i. Open-ended or extended response exercises or questions or other prompts that require students to explore a topic orally or in writing.

ii. Students must be asked to describe their observations from
a science experiment, or present arguments. An historic character would make concerning a particular proposition. For example, what would Quaid-e-Azam Muhammad Ali Jinnah argue about the creation of Pakistan?

iii. Assignments based upon extended tasks that require sustained attention in a single work area and are carried out over several hours or longer. Such tasks could include drafting, reviewing and revising a poem; conducting and explaining the results of some science experiment, making some model.

iv. Portfolios are selected collections of a variety of performance-based work. A portfolio might include a student’s “best pieces” and the student’s evaluation of the strengths and weaknesses of several pieces. The portfolio may also contain some “works in progress” that illustrate the improvements the student has made over time. These methods, like all types of performance assessments, require that students actively develop their approaches to the task under defined conditions, known in that their work will be evaluated according to agreed-upon standards. This requirement distinguishes performance assessment from other forms of testing (Gondal, 2004).

2.13.3 Role of Teacher Performance

Performance assessment is a promising method that is achievable in the classroom. In classrooms, teachers can use data gathered from performance assessment to guide instruction. Performance assessment should interact with
instruction that precedes and follows an assessment task. When using performance assessments, student’s performances can be positively influenced by:

i. Identifying assessment tasks that are clearly aligned or connected to what has been taught.

ii. Sharing the scoring criteria for the assessment task with students prior to working on the task.

iii. Providing students with clear statements of standards and several models of acceptable performances before they attempt a task.

iv. Encouraging students to complete self-assessments of their performances.

v. Interpreting student’s performances by comparing them to standards that are developmentally appropriate, as well as to other student’s performances (Gondal, 2004).

2.13.4 Developing Classroom Performance

According to Gondal (2004), there are five stages in the development of performance assessment.

i. Write goals and Objectives.

ii. Develop Performance Assessments.

iii. Develop Scoring Rubrics.


v. Score, interpret and use results.

2.13.5 Goals and Objectives of Students’ Performance

In case of any assessment, clear statement of goals and objectives should
be written to guide the development of both the performance assessment and the scoring rubric. “Goals” are broad statements of expected student outcomes and “objectives” divide the goals into observable behaviors. Questions such as “What do I hope to learn about my student’s knowledge or skills?” “What content, skills and knowledge the activity is designed to assess?” and “What evidence do I need to evaluate the appropriate skills and knowledge?” can help in the identification of specific goals and objectives.

2.13.6 Assessment of Students’ Performance

There are different assumptions about assessment of the students’ performance like:

i. Does it relate the concept or issue to real life?

ii. Does it enable students to deal with the concept or issue instead of just memorizing it?

iii. Does it help students use it, understand it, explain it to others, or otherwise take some ownership of it?

iv. Can the task be structured to include a group activity?

v. Imagine what a teacher will need to know to administer the test.

vi. Does this test fit into the curriculum?

vii. What should first taught before this test is administered?

viii. What materials and equipment are needed?

ix. What problems or difficulties are expected to occur?

x. What kinds of assistance or intervention expected of a teacher to provide?

xi. What kinds of assistance should the teacher avoid?
xii. How should such interventions be treated in scoring?

xiii. Develop necessary points to the Teacher to include all the above.

xiv. Design a scoring approach to the problem. (Review “the development of scoring guides” in the lesson).

2.13.7 Validity in Performance

The validity of an assessment depends on the degree to which the interpretations and usage of assessment results are supported by empirical evidence and logical analysis.

Gay (1993) described five internal characteristics that valid performance assessments should exhibit which have meaning for students and teachers and motivate high performance:

i. Necessitate the demonstration of complex cognition, applicable to important problem areas.

ii. Current standards of content or subject matter quality be exemplified.

iii. The effects of ancillary skills that are irrelevant to the focus of assessment should be minimized.

iv. Explicit standards for rating or judgment must be processed.

When considering the validity of a performance test, it is important to first consider how the test or instrument “behaves” given the content covered. The questions should be asked such as:

i. How does this test relate to other measures of a similar construct?

ii. Can the measure predict future performances?

iii. Does the assessment adequately cover the content domain?
It is also important to review the intended effects of using the assessment instrument. Questions about the use of a test typically focus on the test’s ability to reliably differentiate individuals into groups and guide the methods teachers use to teach the subject matter covered by the test (Gondal, 2004).

2.14 REVIEW OF RELATED RESEARCHES

Review of literature indicates that few researches have been conducted about the multi-grade teaching. However, review of previous researches has been given in the following lines.

Anya (2013), a researcher at Agha Khan University, summaries in the article that in Pakistan where multi-grade teaching is a must because there are no other option, teachers require training on how to adopt their teaching for the multi-grade setting. In addition, government officials play a critical role in supporting teachers and schools, and thus should have strong grasp of multi-grade teaching and its constituent management strategies and resources for resource utilization.

Little (2001) collected a variety of data from different sources on multi-grade teaching. The data indicate the presence of such schools the world over such as in Europe, North America, Asia, Pacific region, Latin America and Africa. The number of multi-grade schools and number of students in such schools have significantly increased over the last fifteen years (UNESCO. 1996). The prevalence of multi-grade teaching is very high in Europe for instance; the available data shows that 53% primary school teachers in Nether Land teach in multi-grade settings. Pridemore (2004) is of the views that in England more than 25% of primary schools and in Scotland 26-28% of all primary schools operate in
multi-grade environment. In the public of Ireland, more than 40% of the primary schools are multi-graded.

Little (2001) has reviewed many studies on multi-grade experience over the last 15 years, including Pratt (1986), Miller (1991), Veenman (1995), Mason and Burns (1997) and Esueda Nueva Program in Colombia. The results of these studies show an interesting insight into teaching in multi-grade setting. These studies mostly compare cognitive and Non-cognitive achievements of students in multi-grade setting with the performance of students in mono-grade teaching. These studies indicate that there is no main difference between the achievements of multi-grade teaching and mono-grade teaching. However, the non-cognitive achievements show that students in multi-grade classroom attain higher outcomes than those of mono-grade classrooms. For example, students from the Esuela Nueva schools attained higher scores in creativity and Self-esteem.

Miller (1991) reviewed 13 quantitative studies, to find out achievements differences of students in multi-grade and mono-grade teaching, most of them indicated little or more achievements differences.

Berry (2006) is of the view that in Togo and Burkina Faso on multi-grade teaching found that students in both countries outperformed students in mono-grade teaching. He found that students performance in multi-grade setting. Parents, teachers, and administrators have no need to worry about the academic progress or socio-emotional adjustment of students in multi-grade or multi-age classes. These classes are no simply worse, nor simply better than mono-grade classes.

Veenman (1995) suggested four factors to explain the findings of no
difference in students’ achievement between multi-grade and mono-grade teaching. These factors are described as under:

i. Teachers of multi-grade teaching are not fully prepared for teaching in such classes and do not have relevant teaching materials available for their teaching.

ii. Grouping alone is unlikely to have an effect; learning is more dependent on the quality of teaching than an organizational structure.

iii. Bias in selecting more capable students into multi-grade classes, if it occurs, would lessen the proportion of these students in mono-grade classes, producing nonequivalent sample for comparison.

iv. Multi-grade setting is demanding and leaves teachers with little energy to pursue potentially more effective grouping strategies in their teaching, resulting in the use of the same practices as in mono-grade setting.

The strength of the quality of the research reviewed by Veenman was not consistent, the justification for inclusion of some of his analysis was doubtful. Mason and Burns (1996) reviewed the research on effectiveness of multi-grade and mono-grade teaching, they agreed Veenman's findings of non significant differences in achievement, and a little more positive though no significant socio-emotional effects of multi-grade teaching. However, their conclusion was different; they claimed that multi-grade classes have slightly negative effect. Mason and Burns (1996) were confident that the reason must lie in the more complex and difficult teaching conditions of multi-grade situation, for example,
overload of work, better management skills, and need for more preparation, time, results increase in teachers mental pressure. Russell, Rowe, and Hill (1998) are of the view that less effective teaching is characterized by less instruction time per grade level group, lower quality, less time to assist individual students and meet their needs, and reduce curriculum coverage, particularly, in areas beyond basic skills, that is why, Mason and Burns expected differences in multi-game and mono-grade students achievement. Russell, Rowe, and Hill (1998) further investigated possible explanation for the occurrence of effects or no effects, and the process involved in creating these effects and no effects of students' achievement in both types of classes. They assumed following three areas of investigation would help in providing such insight and understanding:

i. The formulation of multi-grade classes.

ii. Teaching practices in multi-grade classrooms.

iii. Parents, teachers, and school leaders' attitude toward multi-grade classes. However, these assumptions were never tested.

Some studies specially focused on performance in literacy in multi-grade contexts. These studies focused multi-age and same age in Kindergarten and effect on their literacy achievement.

Brown (2008) is of the opinion that a comparative study of students on multi-grade and mono-grade in eight-new (a city). The multi-grade students were not significantly different from mono-grade students in grade points or total achievement test. According to Thomas and Shaw (1992) the World Bank report shows that students in multi-grade setting, in Pakistan performed 30% worse on achievement tests than mono-grade students and multi-grade schools indicated
higher rate of repetition. Veenman (1995) collected evidence of 45 studies concerning cognitive and non-cognitive effects of multi-grade teaching, drawn from different nations and countries worldwide, both developed and developing countries, according to Veenman, there was no significant difference in students' performance between multi-grade and mono-grade classes. The overall medium effect size for cognitive outcomes was zero, while the overall median effect size for non-cognitive outcomes was +0.10.

Pratt (1986) reviewed 15 studies that children's friendship, attitude, self-concept and altruism to school. He stated that overall, socio-emotional development of students in multi-grade classes are either accelerated or showed no difference, when it is compared with mono-grade classes. Little (2005) also identified in her review of studies from UK and USA reports positive and negative findings on the maturity of friendship patterns, on personal and social adjustment- reduction of anxiety level, and positive findings on self-esteem, self-concept and attitudes to school. Little (2005) is of the opinion that in developing countries, the social effects of learning in multi-grade teaching are very few indeed.

A UNESCO (2003) study from 12 countries in the Asia and Pacific region describes four advantages of multi-grade teaching, which are not concerned cognitive learning. They are: (1) Students tend to develop self-study skills and independent work habits; (2) Cooperation between different age groups is more common, resulting in collective ethics, concern and responsibility; (3) Students develop positive attitude by helping each other; and (4) Remediation and enrichment activities can be more discreetly arranged than in normal classes.
The above mentioned advantages are not graded in systematic study, yet they suggest a kind of non-cognitive effects that can promote a well-organized multi-grade classroom and may be the evidence to justify multi-grade teaching in schools.

White and Reid (2008) explain in their research paper that the training of the teachers should be in accordance with the place and realities of the situation where the teacher has to teach. About 80% of the primary schools in Chitral are working in multi-grade setting, where two or three teachers are teaching to six classes. These teachers have obtained primary teachers certificate (PTC) from Elementary Colleges or Allama Iqbal Open University (AIOU). Islamabad but they are not trained to teach in multi-grade situation. Khan & Khan (2004) also highlighted that it is strange that these teachers are trained only for single grade classes but they are compelled to teach in multi-grade situation, where the teacher divides 35-40 minute time for two or three different grades. The teacher is busy with one grade while the other grades are sitting idle or busy in their own work/activities (Memorizing, writing etc.). The curriculum is distributed month wise or the whole year.

In developing countries, studies show negative perception of teachers about multi-grade teaching and multi-grade classes (Little, 2005). Suzuki (2004) points out that in the Nuwakor and Kavre districts of Nepal, 50 out of 56 teachers with experience of multi-grade teaching faced more difficulties than mono-grade teaching. Little (2005) says that teachers like to teach in mono-grade setting as compared to multi-grade setting. They are not ready to teach in multi-grade classrooms because the children do not "get the same" as in mono-grade, classes
and they are of the opinion that they have not enough teaching materials to support their learning in multi-grade setting (Little, 2005). In rural areas and poor communities, teachers serving in multi-grade schools have negative attitude toward multi-grade teaching (Ames, 2002).

Pratt (1986) explains that more time is needed for preparation, making of tests, and programming, for teaching. Enough time is not given to individual attention of students and activities the whole day. The teachers in multi-grade classes have to teach the curriculum of mono-grade, thus, the teacher in mono-grade setting feel relaxed as compared to multi-grade because the teachers in multi-grade have three times more burden than that of mono-grade teaching.

In this research work, mono-grade teaching plays an important role in control group where the teacher taught through this technique. Teachers of mono-grade teaching group should also be professionally developed/trained.

Tsolakidis, et. al., (2005) found the common needs among multi-grade teachers in Europe. Newly appointed teachers in multi-grade school seldom get nationally organized Orientation seminars on this special type of schools. There is a lack of effective implementation of methodology. As a result, the curricular requirements in multi-grade schools suffer; teachers have no theoretical background on how to teach multi-grade classrooms; in most of the subject classed multi-grade teaching is taught; there is a lack of methodological approach concerning the use of new technologies assist teaching in multi-grade schools; there is lack of continuous training and support for teachers; there is a lack of communication between multi-grade schools and community. The needs analysis produced by Tsolakidis, et. al., (2005) paying attention on a determination of the
skills required of the multi-grade teacher. The need analysis survey was conducted across four European countries; Finland, Greece, Spain, and UK.

The main aims of the studies were to present the existing situation with respect to multi-grade schools, their problems and weaknesses, the needs of teachers and to identify whether these needs are common for four countries or differ reflecting a specific situation in each country independently. On the basis of the report of the study, these needs were further subdivided and grouped in categories as under: (1) General issues; (2) Curriculum issues; (3) Preparation for multi-grade school teaching; (4) Methodological didactical issues; (5) Student's grouping issues; (6) Cooperation with local and educational authorities; (7) Working issues; (8) Social and cultural issues; (9) Training program issues; (10) Admonition/time management; and (11) Multi-grade teachers have professional needs in each of the above mentioned areas. Twelve teachers from eight multi-grade schools in rural areas in Northern Finland, where each school had 2-3 teachers and the number of students was between 30-70.

There are very few studies about the analysis of the professional development needs among multi-grade teachers in developing countries. Joubert (2007) is of the opinion that national government in Africa requires all teaching to follow the national curriculum but the application of a mono-grade teaching national curriculum in multi-grade teaching situations creating problems for multi-grade teachers. This finding suggests that multi-grade teachers need to be supported in ways to implement the program. Daniel (2004) is of the view that in Africa, multi-grade teachers need to know how to structure mono-grade syllabi to suit in multi-grade situation. They also need to know issues of time management and
work load planning (Cope; Juvane; 2005). Miller (1989) stated that multi-grade teachers have specific needs and their training must be conducted according to these needs. Miller (1989) identified the following issues faced by the teachers in multi-grade classrooms:

i. The training needed to teach in a multi-grade classroom.

ii. The effect of multi-grade instruction on students; performance.

iii. Classroom management and discipline. Classroom organization.

iv. Instructional organization and curricular.


vi. Planning and using peer tutoring.

Studies conducted on multi-grade teaching, generally report the lack of preparation of teachers for multi-grade teaching (Kyne, 2005; Lingam, 2007; Little, 2005). Little (2006) is of the opinion that in many countries, teachers training programs continue only to train teachers for mono-grade classroom. The evidence suggests that teachers are not trained in multi-grade teaching, but merely oriented (Vithanapathirana, 2006). Issues related to epistemology, which provide conceptual tools to guide teachers to navigate the new pedagogy, have been under-emphasized. This has hindered the practice, as well as, teachers' conceptual development. Creative thinking, innovation, and imagination. Little (2005) observed that pre-service and in-service teacher training on the needs of the multi-grade teaching is vital. Lingam (2007) and Mason & Burn (1997) find out that for effective teaching in multi-grade classrooms, the teacher must be trained.

Multi-grade teaching is directed towards quality improvement.
APEID/UNESCO (1989) has rightly mentioned that “Multi-grade teaching is not an answer to meeting teacher shortage in the educational systems but is a strategy to improve the quality of education in rural communities.”

Existing practice of school teaching under the above instructional arrangement places the teacher in a situation where he/she has to teach more than one grade at the same time either in one room or in separate rooms by dividing his/her time between the grades and/or in classrooms.

When children of more than one grade are taught together by a single teacher in a classroom, it is called multi-grade class. Multi-grade classes differ from regular classes where each class has its distinct grade with its own teacher and classroom.

In the case of multi-grade teaching, it is referred to as the arrangement of a setting in which students of at least two grades are taught together by a teacher in one classroom. One of the pertinent reasons is the inadequate number of teachers in the primary schools. Moreover, inadequate physical facilities of primary school, lack of financial resources, unwillingness of teachers to work in rural/remote areas and lack of trained teachers in multi-grade/multi-class teaching are also the other reasons behind the obligatory use of multi-grade/multi-class teaching in the country.

Multi-grade teaching has been a practice in both developed and developing countries of the world. Multi-grade teaching is usually considered as an issue or a problem in developing countries where as many developed countries accept it as an effective strategy (Sibli, 2003).

Internationally, it has been referred to variously in the literature as ‘multi
level', ‘multiple class’, ‘composite class’, ‘vertical group’, ‘family class’, and, in the case of one teacher schools, ‘unitary schools.’ Thus multi-grade teaching is referred to as the teaching of students of different ages, grades and abilities in the same group (Little, 1995).

Multi-grade teaching is an instructional arrangement demanding a situation where a school requires that children from more than one grade are taught together providing learning activities at an appropriate level for each grade, allowing all children to gain equal benefit from their learning experiences (Little, 2003).

Different practices in multi-grade teaching have been identified in the international context. Little (1995) identified five examples of such practices pertaining to multi-grade teaching:

“A teacher education and support programme for multi-grade schools in rural areas in Zambia; the Esucuela Nueva (new school) in Colombia; NGO programmes for training indigenous and bilingual intercultural teachers in Peru; teacher-education-led developments at the school level in Sri Lanka; and the Instructional Management by Parents, Community and Teachers (IMPACT) system of mass primary education in Philippines, Indonesia, Malaysia, Zambia, Liberia and Bangladesh”.

These programmes use the strategies of multi-grade settings (cited in Little, 2001).

Multi-grade classrooms take a variety of organizational forms and instructional settings in different countries. Different countries have their own national context for making efforts to achieve the goal of Education for All. The
following two EFA goals have their implications in creating situation for multi-grade teaching in different countries:

**Goal 1**: Ensure that by 2015 all children, particularly girls, children in difficult circumstances and those belonging to ethnic minorities, have access to and are able to complete primary education that is free, compulsory and of good quality.

**Goal 2**: Improve all aspects of the quality of education and ensure excellence of all so that recognized and measurable learning outcome are achieved by all especially in literacy, numeracy and life skills.

In order to fulfill the above goals, countries that have made commitment towards these goals, have increased access to primary education so as to address the educational needs of all the primary school age children. This situation may lead to the opening of greater schools that demand more number of teachers, which the country cannot afford. This reality has created the situation of multi-grade and multi-class teaching in the country.

In order to meet this goal, Nepal has made attempts to open schools in remote and rural areas of the country, which has resulted in the proliferation of grades in those areas in the excess of teachers supplied. In this context, an alternative arrangement of teaching has been unavoidable in view of the reality in our country. This reality has generated needs to be addressed with respect to clear-cut concept, strategy and approaches of multi-grade and multi-class teaching. In recent days, appropriate alternative has also been in practice as a pedagogic choice. How to make a multi-grade school an important instructional organization? How can it be possible to train the teachers in MGT techniques where mono-grade system has been deep-rooted in their practice? These and
other similar questions are to be addressed to make multi-grade teaching a successful programme.

Multi-grade classroom system has received new attention and importance these days all over the world. In the 1960s and 1970s, open education and individualized instruction had influenced curriculum and instructional models with the implementation of multi-grade classrooms in the United States (Miller, 1991). Multi-grade teaching has emerged as an alternative instructional organization as a means to provide access to primary education to the children of rural and under-served areas of developing countries. Multi-grade teaching has been developed as a means of solving problems not addressed by graded setting of classroom teaching. It has been regarded not only as a proper means of saving money by combining the grades but also as a choice for better achievement in students’ intellectual and social performance.

Since not much research work has been conducted in the field of multi-grade teaching, the extent of MGT in different countries is difficult to explore. The other reason for this is that there is a narration in the practices of MGT in different countries. Little (2001), regarding the prevalence of multi-grade teaching, has mentioned: “Neither Ministries of Education nor international agencies such as UNESCO collect information about the number of teachers and students learning and teaching in multi-grade settings routinely. Information on its prevalence is scant.” However, some attempts have been made to identify the status based on the definition of the respective countries.

Developed countries like France and Sweden have considerable percentage of multi-grade teaching scenario in primary grades whereas
developing countries like India and Sri Lanka have MGT situation to a considerable extent (84% and 63% respectively). In developing countries, the situation may be that teachers were only teaching some grades and neglecting students in other grades for a large portion of the school day. Review of MGT in Peru also revealed that the vast majority of the multi-grade schools were located in rural areas. Similarly, 69 percent of the rural teaching force was involved in teaching rural primary schools with multi-grade classrooms. A research on multi-grade teaching in Belize revealed that 35.3 percent of the schools were fully multi-grade. This situation indicates that the use of MGT is in practice because of the adjustment problem, on one hand and providing pedagogical choice, on the other.

In India in 1996, 84 percent of primary schools had three teachers or less of whom 95 percent were in rural areas (Gupta et al., cited in Little, 2001). Similarly, in Sri Lanka 63 percent of all schools have four or less teachers (Ministry of Education and Higher Education, Sri Lanka, 1999). It was also identified that due to the less number of teachers than the grades, teachers used to teach some grades and consequently neglect students in other grades for large portions of the school day. In Peru some 78 percent schools are multi-grade; of which 41 percent have only one teacher and 59 percent have more than one teacher (Hargreaves et al., 2001 cited in Little, 2001). In Peru the vast majority (89%) of multi-grade schools are located in rural areas (Ministerio de Educacion, 1998, cited in Little, 2001).

In Vietnam in 1999 schools with at least one multi-grade class found 17 percent and the percentage of students receiving instruction in multi-grade
classes was 1.9 percent of the total primary school enrolment (Vietnam MOET, 1999, cited in Little, 2001).

Industrialized countries were also found with the practice of multi-grade teaching. Little (2001) has cited some of such examples: in the northern territories of Australia in 1988, 40 percent of schools had multi-grade classes. Nearly at the same time Sweden and France had 35 percent and 22 percent of the classes in schools with multi-grade teaching (Little, 1995). In rural areas with scattered population in the United Kingdom the incidence of small schools was found. In the UK in 1997/98 6.3 percent of the schools enrolled less than 50 children that gave rise to multi-grade teaching. The incidence of small schools is greater in areas in the UK with more rural and scatter populations.

Multi-grade teaching in these countries has been used to overcome the problems of graded teaching and with the belief that MGT can have the following positive outcomes:

• It can enhance independent learning.
• It encourages teachers to adopt pupil-centered approaches to teaching.
• It facilitates revision of materials covered in earlier grades.
• It increases pupil interaction.
• It provides opportunity to slow learners to make progress in his/her learning in his/her own pace of growth.
• It utilizes the concept of monitoring and peer tutoring to assist the teachers.
• It also promotes group learning.

In spite of the above positive outcomes and pedagogical benefits, some drawbacks
are also observed as the following:

• There is the possibility of low student achievement in MGT schools if MGT programmes are not supported with required resources and properly trained teachers.

• These programmes demand teachers’ more time and organizational capabilities.

• Teachers need intensive training with special focus on instructional materials.

• Students may receive less individual attention, and must often work independently.

The multi-grade classroom can be more of a challenge than the single-grade classroom. Teachers teaching in a multi-grade situation need skills and behavior different from regular classroom teaching. Miller (1991) has identified six instructional dimensions affecting successful multi-grade teaching. They are, classroom organization, classroom management and discipline, instructional organization and curriculum, instructional delivery and grouping, self-directed learning and peer tutoring. Multi-grade and multi-class teaching needs careful planning for appropriate management of teaching and learning. The main purpose of planning is the improvement of classroom teaching.

Delivery of instruction in the classroom depends on the extent the teachers and students are involved in different instructional activities. In multi-grade situation, the teacher has to manage two or more than two grades in such a way that all the grades should have equal opportunity to learn. Generally it happens that students learn better in teacher present class than in teacher absent class. The role of teacher in this context in MGT situation is to manage activities
for continuous learning of the students even if he has to be involved with the
other grades at the same time. With regard to instructional activities in multi-
grade situation, factors like room setting’ combination of classes, same or
different teaching subjects and time management are the influential contributors.

A study on multi-grade teaching conducted by Aryal (2003) proved the
following:

1. Among the primary schools of the sample districts, about 73 percent were
found to have a less number of teachers than the grades and the rest 27 percent
were found to be complete teacher schools. Nearly 82 percent schools in both
Dhading and Rasuwa had such situation whereas it was 53 percent in Rupandehi
district. Considered from the perspective of supply of teachers, is greater
possibility of having multi-grade or multi-class teaching is noticed in hilly and
mountain regions than in the Terai region.

2. With respect to the teachers’ involvement in different instructional
arrangements multi-grade, multi-class and mono-grade (subject) teaching in the
sample schools was found about 23 percent, 36 percent and 41 percent
respectively. Comparatively, a greater number of teachers were involved in
multi-grade teaching in Rupandehi than in Rasuwa and Dhading districts.

3. For 68 grades, there were only 60 rooms of which 8 rooms were used for
office and store purpose in the 15 observed schools. With respect to availability
and use of rooms for teaching learning purpose, only 13.3 percent rooms were
found to have been used for multi-grade (combined class) teaching and nearly 12
percent classes were run in the open ground outside the building which can also
be used for multi-grade teaching. Considering such situation, multi-grade
teaching seems to be practiced in 24 percent classes.

4. Most of the classrooms were found to have inadequate space as specified by the Education Regulations (7th Amendment), i.e, 0.75 square metre or 8.12 sq.ft. space per student. Only 31.7 percent classrooms were found to have adequate size and only one classroom was found to have been used for multi-grade teaching. It further indicates that the size of the available rooms in primary schools is not adequate for having multi-grade teaching.

5. The teacher student ratio was found to be 1:40 in average, Rupandehi having higher ratio (1:56) than Dhading (1:40) and Rasuwa (1:26). The average number of students in the sample schools was found to be 26, Rupandehi having the highest (35) followed by Dhading (26) and Rasuwa (17). Both the teacher student ratio and the average number of students per grade were found comparatively less in Rasuwa district. It is, therefore, indicative that multi-grade teaching seems to be viable practice in Rasuwa district.

6. Classrooms were not managed in such a way as to make them conducive for students learning in multi-grade and multi-class situation. Most of the classrooms were found not clean and a considerable number of them were found with inadequate light and ventilation, poor facility and inadequate number and inappropriate size of desks and benches in the classrooms.
Chapter 3

METHOD AND PROCEDURE

Method and procedure is a structure or plan of investigation to collect information to answer the research questions. It describes in detail what will be done, how it will be done, what data will be needed, and what data gathering instruments will be used (Farooq, 2001). The study was conducted to compare multi-grade teaching with mono-grade teaching at primary level.

3.1 POPULATION

The population of the study included all 17,037,700 students studying in primary classes in Pakistan.

3.2 SAMPLE

Thirty students of grade-IV and thirty students of grade-V of Army Public School Nowshera were included in the sample for this study. These students were divided into two groups, i.e. the experimental group (Multi-grade teaching) and control group (mono-grade teaching). Both groups were equated on the basis of pre-tests (separate for class IV and V) scores. The distribution of students was made by applying pair random sampling technique.

3.3 RESEARCH INSTRUMENTS

Following research instruments were used for study

i. Two teacher made pre-tests (one each for class IV and V)

ii. Two teacher made post-tests (one each for class IV and V)

To meet the prerequisite of the selected research design and to compare the multi-grade teaching group with mono-grade teaching group on the variable
of their earlier understanding in English teacher-made pre-tests (Appendix-A) were developed. The purpose of pre-tests was to find out the level of previous knowledge. The pre-tests were based on class IV and V textbooks of English. The pre-tests consisted of more than 75% of contents already taught in IV and V class.

The post-tests consisted of 100% from the components of units taught during the experiment. The pre-tests and the post-tests were prepared by the researcher after an intensive audit of the methods of test construction and related units of English for fourth and fifth classes. The tests were approved by the supervisory committee in consultation with subject experts.

### 3.3.1 Validity

All items included in the tests were on the basis of text of the units taught to the students of class IV and V. The pre-tests and post-tests were approved by doctoral research committee.

### 3.3.2 Reliability

The reliability of the tests was found to be 0.85 and 0.85. The reliability was determined by applying split half method.

### 3.4 RESEARCH DESIGN

As it was experimental research and the purpose of the study was to compare the multi-grade teaching with mono-grade teaching at primary level, it was necessary to look into numerous designs frequently embraced in experimental studies.

Tabassam (2004) describes numeral issues that interrupt the internal and external validity of experimental designs. Relevant to internal validity, there are
such problems (as history, maturing, testing, instrumentation, statistical regression, differential selection, experimental mortality and selection maturation interaction). If these issues are not measured in the design, they may make contrasting effects, which complicate the effect of the independent variables as exposed by the last scores on dependent variables.

“The pre-test post-test equivalent group design” was considered to be the greatest valued design for this research. Gay (2008), describes that this design contains at least two groups, both of which are formed by pair random sampling. One group takes a new or unusual treatment and both groups are post-tested. Post-test scores are matched to define the usefulness of the treatment. This design controls all-out sources of internal and external validity as compare to other designs (Farooq, 2001).

3.5 TREATMENT

To deliver suitable training about teaching approaches to be used during the experiment, the researcher had three meetings with both teachers of control group (grade-IV and grade-V) on three nonstop days and made them familiar with the method to be followed during the treatment. The teacher who was deputed to teach experimental group was familiarized with different techniques to be utilized during teaching to multi-grade teaching group, i.e. experimental group. Such essential training also covered the following aspects for administering pre-tests and post-tests:

i. Have decent discipline.

ii. Control fine.

iii. Do not permit copying and cheating.
iv. Collect replies and scripts promptly when the time will be over.

The researcher asked learners to assemble in hall and specified the initiative of research and pre-test were administered. The answer scripts were collected and marked accordingly. After marking the scores were kept in record file.

The lesson plans of each area of units were given to the teachers of the mono-grade teaching group. Every lesson plan was based on following parts.

1\textsuperscript{st} part:

It included initial information such as subject, duration of period, name of school, topic to be taught.

2\textsuperscript{nd} Part:

It included the general objectives and specific objectives.

3\textsuperscript{rd} part:

It comprised creating affiliation with earlier knowledge, overview and statement of the objectives.

4\textsuperscript{th} part: Class work

5\textsuperscript{th} part: Homework

The mono-grade group was taught by traditional method. A sample of lesson plan about expository strategy is given in (Appendix C). A traditional teacher explains the questions and answers on black board. The teacher makes a maximum verbal presentation of information to which a student reacts by silently taking notes.

Treatment of study involved the following steps:
1. The researcher visited the selected Army Public High School for explaining the significance of study to the principal and requested his approval to conduct the experiment. With the co-operation of principal of the school, a committee was constituted with following membership:

   i. Principal, (Chairman)
   ii. Section Head of Primary Section (Member)
   iii. Three English teachers and the researcher (Members)

   The function of the committee was to appropriately conduct the experiment and co-ordinate during the experimentation.

2. Teacher-made pre-tests, duly approved by the supervisory committee, were administered on the sample of 60 students. Based on the achievement scores of the pre-tests, students were allotted to multi-grade teaching group and mono-grade teaching group through pair random sampling. Each group had 30 students. After the grouping of subjects, two teachers of equal qualification, teaching experience, and nearly equal potential were designated for mono-grade teaching and one teacher for multi-grade teaching. During experiment, two diverse treatment techniques were utilized. One group was taught through mono-grade teaching in class, while the second group was taught through the multi-grade teaching system. The experiment lasted for six weeks. The researcher continuously observed the teaching activities of both experimental and control groups during the experiment:
i. Every one item of the tests was subject based, related to the abilities of the students. The exploration was led in a comfortable and normal situation.

iii. It was confirmed that themes or substance of treatment had not been earlier imparted to the students.

iv. Teaching time of 40 minutes was used completely for treatment and time was not wasted during experiment.

3.6 DATA COLLECTION

The data was collected in two ways. Teacher-made pre-tests, dully approved by the supervisory committee, were administered to the sample of 60 students before the treatment was started. On the basis of achievement scores of pre-tests, students were distributed into multi-grade teaching group and mono-grade teaching group. Each group comprised 30 students (class iv =15; class v = 15). On the termination of treatment the post-tests were administered on both experimental and control groups to collect data for achievement scores of students for comparing both groups on the basis of achievement scores on teacher-made post-tests.

3.7 ANALYSIS OF DATA

Scores obtained through pre-tests and post-tests were tabulated, analyzed and interpreted by applying t-test and ANOVA. Results obtained by statistical analysis were tested on 0.05 level of significance:

Independent samples “t-test” means that there are two sections, and we
are comparing the means of the sections. The pooled (i.e., "equal variances") method was used because the standard deviations were found similar (the larger sample standard deviation is not more than twice of the smaller standard deviation). Two independent samples are extracted from population with similar population differences (variances), the test statistic $t$ was computed as:

$H_0: \mu_1 - \mu_2 = 0 \rightarrow \text{No difference between groups.}$

$H_A: \mu_1 - \mu_2 \neq 0 \rightarrow \text{Difference between groups.}$

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{s_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

With ($df = n_1 + n_2 - 2$)

Here $x_1 - x_2$ sample mean difference

$\mu_1 - \mu_2$ population means difference.

With

$$s_p = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$$

Where

$s_p = \text{Pooled standard deviation}$
\( s_1 = \text{SD of sample I} \)
\( s_2 = \text{SD of sample II} \)

\( n_1 = \text{Sample size of sample I} \)
\( n_2 = \text{Sample size of sample II} \)

\( \bar{x}_1 = \text{Mean score of sample I} \)
\( \bar{x}_2 = \text{Mean score of sample II} \)

The manipulated “\( t \) value” was computed to the table value with degrees of freedom \((df = n_1 + n_2 - 2)\) and choose level of confidence. Null hypothesis \((H_0)\) was rejected if the “\( t \) value” was found more than the critical value. The data were analyzed and then the findings, conclusions and recommendations were extracted.

**ANOVA**

\[
SS_t = \sum X_t^2 - \frac{(\sum X_t)^2}{N}
\]

where

- \( SS_t = \text{sum of squares total} \)
- \( \Sigma X_t^2 = \text{each score squared, then summed} \)
- \( (\sum X_t)^2 = \text{all the scores summed first, then this sum squared} \)
- \( N = \text{number of scores} \)

\[
SS_b = \sum x_b^2 = \frac{(\sum X_1)^2}{n_1} + \frac{(\sum X_2)^2}{n_2} \cdots - \frac{(\sum X_2)^2}{N}
\]

\[
SS_w = SS_t - SS_b
\]

\[
F = \frac{MS_b}{MS_w} = \frac{SS_b/df_b}{SS_w/df_w}
\]
Chapter 4

ANALYSIS AND INTERPRETATION OF DATA

This chapter deals with analysis and interpretation of data. The data gathered through pre-tests and post-tests was tabulated and analyzed by applying suitable statistical techniques. In the following pages analysis of data is presented.

4.1 ANALYSIS AND INTERPRETATION OF DATA OF GRADE-IV

H₀ 1: No significant difference is there between the mean score of experimental and control groups of grade-IV on pre-test.

Table 1: Significance of difference between the mean scores of experimental and control groups of grade-IV on pre-test

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S D</th>
<th>SED</th>
<th>t-value</th>
<th>d</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>15</td>
<td>33.33</td>
<td>3.69</td>
<td>1.23</td>
<td>0.54</td>
<td>0.22</td>
<td>Very Small</td>
</tr>
<tr>
<td>Control</td>
<td>15</td>
<td>34.00</td>
<td>3.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table value of $t$ at 0.05 = 2.145

Table 1 makes it clear that the calculated value of $t$ was found to be 0.54. Being below the table value at 0.05 level of significance, the null hypothesis is accepted. Hence, both the groups of grade IV were found equal in achievement level on pre-test.

H₀ 2: No significant difference is there between the mean scores of low achievers of experimental and control groups of grade-IV on pre-test.
Table 2: Significance of difference between the mean scores of low achievers of experimental group and control group of grade-IV on pre-test

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S D</th>
<th>SE_D</th>
<th>t-value</th>
<th>d</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>7</td>
<td>30.14</td>
<td>0.89</td>
<td>0.61</td>
<td>3.24</td>
<td>1.25</td>
<td>Very Large</td>
</tr>
<tr>
<td>Control</td>
<td>7</td>
<td>31.57</td>
<td>1.39</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table value = 2.447

Table 2 reflects that the calculated value of \( t \) was found to be 3.24 which is greater than the table value at 0.05 level, hence, the null hypothesis is rejected. It means low achievers of grade- IV in control group was found to be greater than experimental group.

\( H_03: \) No significant difference is there between the mean scores of high achievers of experimental and control groups; of grade-IV on pre-test.

Table 3: Significance of difference between the mean scores of high achievers of experimental and control groups of grade-IV on pre-test

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S D</th>
<th>SE_D</th>
<th>t-value</th>
<th>d</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>8</td>
<td>36.12</td>
<td>2.74</td>
<td>1.31</td>
<td>00</td>
<td>00</td>
<td>Nil</td>
</tr>
<tr>
<td>Control</td>
<td>8</td>
<td>36.12</td>
<td>2.53</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table value of \( t \) at 0.05 = 2.365

Table 3 shows that the calculated value of \( t \) was found to be 1.31 which is less than table value at 0.05 level and is termed as insignificant. Hence, null hypothesis is accepted. It means high achievers of grade- IV in both experimental group and control group found equal in ability.
H₀₄: No significant difference is there between the mean scores of experimental group and control group of grade-IV on post-test.

Table 4: Significance of difference between the mean scores of experimental and control groups of grade-IV on post-test

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S D</th>
<th>SEₜ</th>
<th>t-value</th>
<th>D</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>15</td>
<td>36.93</td>
<td>4.00</td>
<td>1.45</td>
<td>3.31</td>
<td>1.20</td>
<td>Very Large</td>
</tr>
<tr>
<td>Control</td>
<td>15</td>
<td>41.73</td>
<td>3.97</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It appears from Table 4 that the calculated value was found to be 3.31 which is greater than the table value at 0.05 level and is labeled as significant. Hence, null hypothesis is rejected. It is obvious from above table that significance of difference is found in favour of control (mono-grade) group. It means that the students of grade-IV taught by Mono-grade teaching (control group) showed better achievement as compared to those in experimental group.

H₀₅: No significant difference is there between the mean scores of low achievers of experimental and control groups on post-test.

Table 5: Significance of difference between mean scores of low achievers of experimental and control groups of grade-IV on post-test

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S D</th>
<th>SEₜ</th>
<th>t-value</th>
<th>D</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>7</td>
<td>33.57</td>
<td>0.97</td>
<td>0.46</td>
<td>11.07</td>
<td>5.97</td>
<td>Very Large</td>
</tr>
<tr>
<td>Control</td>
<td>7</td>
<td>38.71</td>
<td>0.75</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table value of $t$ at 0.05 = 2.447
It is evident from Table 5 that the $t$ value (11.07) was found to be greater than table value (2.306) and the difference between the two means was found to be significant at 0.05 level. Hence, the null hypothesis is rejected and the control group of grade-IV was found to be better than experimental group on post-test.

$H_0 \; 6$: No significant difference is there between the mean scores of high achievers of experimental group and control group on post-test.

Table 6: Significance of difference between mean scores of high achievers of experimental and control groups of grade-IV on post-test

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S D</th>
<th>SE D</th>
<th>t-value</th>
<th>d</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>8</td>
<td>39.87</td>
<td>3.18</td>
<td>1.72</td>
<td>3.10</td>
<td>1.30</td>
<td>Very Large</td>
</tr>
<tr>
<td>Control</td>
<td>8</td>
<td>44.37</td>
<td>3.73</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table value of $t$ at 0.05 = 2.365

Table 6 indicates that the calculated $t$ value (3.10) was found to be greater than the table value and the difference between the two means was found to be significant at 0.05 level. Hence, null hypothesis is rejected. This significant difference was found in favour of control (mono-grade) group. It means that the high achievers of grade-IV taught through mono-grade strategy demonstrated better achievement as compared to those of grade-IV taught through multi-grade strategy.
**H₀7:** No significant difference is there between the pre-test and post-test mean scores of experimental group and control group of grade-IV.

Table 7: Significance of difference between pre-test and post-test achievement scores of control group of grade-IV

<table>
<thead>
<tr>
<th>Control Group</th>
<th>N</th>
<th>Mean</th>
<th>S D</th>
<th>SE</th>
<th>t-value</th>
<th>d</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>15</td>
<td>34.00</td>
<td>3.09</td>
<td>1.29</td>
<td>4.39</td>
<td>2.18</td>
<td>Very Large</td>
</tr>
<tr>
<td>Post-test</td>
<td>15</td>
<td>41.73</td>
<td>3.97</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table value of \( t \) at 0.05 = 2.145

Table 7 shows that the \( t \) value (4.39) being greater than the table value was found to be statistically significant at 0.05 level. Therefore, the null hypothesis is rejected. This significant difference between mean scores of grade-IV of control group on pre-test and post-test found in favour of post-test. It means that the students of grade-IV performed significantly better on post-test as compared to score of pre-test.

**H₀8:** No significant difference is there between the pre-test and post-test mean scores of experimental group of grade-IV.

Table 8: Significance of difference between pre-test and post-test mean scores of experimental group of grade-IV

<table>
<thead>
<tr>
<th>Experimental Group</th>
<th>N</th>
<th>Mean</th>
<th>S D</th>
<th>SE</th>
<th>t-value</th>
<th>D</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>15</td>
<td>33.33</td>
<td>3.69</td>
<td>1.4</td>
<td>2.57</td>
<td>0.94</td>
<td>Very Large</td>
</tr>
<tr>
<td>Post-test</td>
<td>15</td>
<td>36.93</td>
<td>4.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table value of \( t \) at 0.05 = 2.145

Table 8 reflects that the difference between the two means was found to
be statistically significant at 0.05 level. Hence, null hypothesis is rejected. It means that students of grade-IV experimental group show significant move from pre-test to post-test.

$H_0$ 9: No significant difference is there among the mean scores of control & experimental groups on pre-test and post-test of grade-IV

Table: 9 There is no significance of difference among the mean scores of control & experimental groups on pre-test & post-test of grade-IV

| Mean scores of Mono grade & Multi grade on pre-test and post-test (Grade-IV) |
|---------------------------------|-----------------|------------------|
| **Group** | **Mean score of Pre-test** | **Mean score of Post-test** |
| Mono grade (Control) | 34 | 41.73 |
| Multi grade (Experimental) | 33.33 | 36.93 |

ANOVA

<table>
<thead>
<tr>
<th></th>
<th>Sum of Variance</th>
<th>Sum of Square</th>
<th>$df$</th>
<th>Mean Square</th>
<th>F</th>
<th>$\eta^2$</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>657</td>
<td>3</td>
<td>219</td>
<td></td>
<td></td>
<td>0.46</td>
<td>Large</td>
</tr>
<tr>
<td>Within Groups</td>
<td>772</td>
<td>56</td>
<td>13.78</td>
<td>15.89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1429</td>
<td>59</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 9 reflects that the difference among the four means was found to be statistically significant at 0.05 level. Hence, null hypothesis is rejected. It means
that students of grade-IV control group show significant move from pre-test to post-test.

4.2 ANALYSIS AND INTERPRETATION OF DATA OF GRADE-V

H₀₁₀: No significant difference is there between the mean score of experimental and control groups of grade-V on pre-test.

Table 10: Significance of difference between the mean scores of experimental and control groups of grade-V on pre-test

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S D</th>
<th>SE_D</th>
<th>t-value</th>
<th>D</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>15</td>
<td>33.60</td>
<td>3.43</td>
<td>1.32</td>
<td>0.26</td>
<td>0.093</td>
<td>Very Small</td>
</tr>
<tr>
<td>Control</td>
<td>15</td>
<td>33.26</td>
<td>3.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table value of t at 0.05 = 2.145

It appears from table 10 that the t value (0.26), being less than table value (2.101), was found to be non-significant at 0.05. Hence, null hypothesis is accepted. Both the groups of grade-V were found equal in ability on pre-test.

H₀₁₁: No significant difference is there between mean scores of low achievers of Experimental and Control groups of grade-V on pre-test.

Table 11: Significance of difference between the mean scores of low achievers of experimental and control groups of grade-V on pre-test

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S D</th>
<th>SE_D</th>
<th>t-value</th>
<th>D</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>7</td>
<td>30.57</td>
<td>0.78</td>
<td>0.42</td>
<td>1.89</td>
<td>0.71</td>
<td>Medium</td>
</tr>
<tr>
<td>Control</td>
<td>7</td>
<td>30.00</td>
<td>0.81</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table value of t at 0.05 = 2.447

It is evident from table 11 that the t value is 1.89 which makes it clear that
difference between the two means was found to be non-significant at 0.05 level. Hence, null hypothesis is accepted. Low achievers of grade-V of both the groups were found equal in ability on pre-test.

\[ H_0^{12} \]: No significant difference is there between the mean score of high achievers of experimental and control groups on pre-test.

Table 12: Significance of difference between the scores of high achievers of experimental and control groups of grade-V on pre-test

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S D</th>
<th>SE_D</th>
<th>t-value</th>
<th>d</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>8</td>
<td>36.25</td>
<td>2.43</td>
<td>1.35</td>
<td>0.14</td>
<td>0.048</td>
<td>Very Small</td>
</tr>
<tr>
<td>Control</td>
<td>8</td>
<td>36.12</td>
<td>2.99</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table value of \( t \) at 0.05 = 2.365

Table 12 shows the \( t \) value as 0.14 which is less than the table value (at 0.05). Therefore, the difference between the two means was found to be non-significant and the null hypothesis is accepted. High achievers of grade-V of both the groups were found equal in academic achievement on pre-test.

\[ H_0^{13} \]: No significant difference is there between the mean score of experimental and control groups on post-test.

Table 13: Significance of difference between the mean score of experimental and control groups of grade-V on post-test

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S D</th>
<th>SE_D</th>
<th>t-value</th>
<th>D</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>15</td>
<td>37.60</td>
<td>3.94</td>
<td>1.41</td>
<td>2.82</td>
<td>1.02</td>
<td>Very Large</td>
</tr>
<tr>
<td>Control</td>
<td>15</td>
<td>41.60</td>
<td>3.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table value of \( t \) at 0.05 = 2.145
Table 13 shows that the calculated t value was found to be 2.82 which is greater than the table value and the difference between the mean scores of experimental and control groups was found significant at 0.05 level. Hence, null hypothesis is rejected. This significant difference was in favour of control group. It means that the students of control (mono-grade) group of grade-V demonstrated better than those of experimental (multi-grade) group of grade-V on post-test.

H₀₁₄: No significant difference is there between the mean score of low achievers of experimental and control groups of grade-V on post-test.

Table 14: Significance of difference between the mean scores of low achievers of experimental and control groups of grade-V on post-test

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S D</th>
<th>SEₐ</th>
<th>t-value</th>
<th>d</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>7</td>
<td>35.57</td>
<td>0.81</td>
<td>0.45</td>
<td>12.85</td>
<td>3.02</td>
<td>Very Large</td>
</tr>
<tr>
<td>Control</td>
<td>7</td>
<td>38.14</td>
<td>0.89</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table value of t at 0.05 = 2.447

It is evident from table 14 that the t value (12.85) was found greater than the table value (2.306) and the difference between the two means was found significant at 0.05 level. Hence, the null hypothesis is rejected. This difference was in favour of control group which means that the low achievers of grade-V of control (mono-grade) group showed better achievement on post-test than low achievers of experimental (multi-grade) group of grade V.
H₀ 15: No significant difference is there between the mean score of high achievers of experimental and control groups of grade-V on post-test.

Table 15: Significance of difference between the mean score of high achievers of experimental and control groups of grade-V on post-test

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S D</th>
<th>SEₓ</th>
<th>t-value</th>
<th>D</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>8</td>
<td>40.75</td>
<td>2.49</td>
<td>1.25</td>
<td>4.34</td>
<td>1.54</td>
<td>Very Large</td>
</tr>
<tr>
<td>Control</td>
<td>8</td>
<td>44.62</td>
<td>2.55</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table value of \( t \) at 0.05 = 2.365

Table 15 depicts that the calculated \( t \) value (4.34) is greater than the table value, therefore, difference between the two means was found to be significant at 0.05 level and the null hypothesis is rejected. This significant difference is found in favour of high achievers of control (mono-grade) group of grade-V. It means that performance of high achievers of control (mono-grade) group of class V was much better than those of experimental (multi-grade) group of same class. mono-grade teaching led to better achievement of high achievers than the high achievers of multi-grade teaching group.

H₀ 16: No significant difference is there between pre-test and post-test mean scores of control group of grade-V

Table 16: Significance of difference between pre-test and post-test achievement scores of control group of grade-V

<table>
<thead>
<tr>
<th>Control Group</th>
<th>N</th>
<th>Mean</th>
<th>S D</th>
<th>SEₓ</th>
<th>t-value</th>
<th>d</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>15</td>
<td>33.26</td>
<td>3.84</td>
<td>1.40</td>
<td>5.96</td>
<td>2.03</td>
<td>Very Large</td>
</tr>
<tr>
<td>post-test</td>
<td>15</td>
<td>41.06</td>
<td>3.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 16 shows that the performance of students of grade-V was found significantly different from pre-test to post-test as the calculated *t* value (5.96) was found to be greater than the table value (2.101) at 0.05 level of significance. Hence, null hypothesis is rejected. It means that the teaching during the experiment made difference in the performance of control (mono-grade) group.

**H₀ 17:** No significant difference is there between pre-test and post-test mean scores of experimental group of grade-V

Table 17: Significance of difference between pre-test and post-test achievement scores of experimental group of grade-V

<table>
<thead>
<tr>
<th>Experimental Group</th>
<th>N</th>
<th>Mean</th>
<th>S D</th>
<th>SE</th>
<th>t-value</th>
<th>D</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>15</td>
<td>33.60</td>
<td>3.43</td>
<td>1.34</td>
<td>2.96</td>
<td>1.08</td>
<td>Very Large</td>
</tr>
<tr>
<td>post-test</td>
<td>15</td>
<td>37.60</td>
<td>3.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 17 shows that the performance of students of grade-V was found significantly different from pre-test to post-test as the calculated *t* value (2.96) was found to be greater than the table value (2.101) at 0.05 level of significance. Hence, null hypothesis is rejected. It means that the teaching during the experiment made difference in the performance of experimental (multi-grade) group.

**H₀ 18:** No significant difference is there among the mean scores of control & experimental groups on pre-test and post-test of grade-V
Table 18 There is no significance of difference among the mean scores of control & experimental groups on pre-test & post-test of grade-V

<table>
<thead>
<tr>
<th></th>
<th>Mean score of Pre-test</th>
<th>Mean score of Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mono grade (Control)</td>
<td>33.26</td>
<td>41.6</td>
</tr>
<tr>
<td>Multi grade (Experimental)</td>
<td>33.60</td>
<td>37.60</td>
</tr>
</tbody>
</table>

ANOVA

<table>
<thead>
<tr>
<th></th>
<th>Sum of Variance</th>
<th>Sum of Square</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>( \eta^2 )</th>
<th>Effect Size Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>690</td>
<td>3</td>
<td>230</td>
<td></td>
<td>16.12</td>
<td>0.46</td>
<td>Large</td>
</tr>
<tr>
<td>Within Groups</td>
<td>799</td>
<td>56</td>
<td>14.26</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1489</td>
<td>59</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 18 reflects that the difference among the four means was found to be statistically significant at 0.05 level. Hence, null hypothesis is rejected. It means that students of grade-V control group show significant move from pre-test to post-test.
DISCUSSION

According to Farooq (1996), teacher should be able to plan, prepare and present the lesson to his/her class effectively. Teacher should apply and practice teaching skills according to the principles of education. He or she has learned and employed various forms of communication effectively to motivate students to learn. The researcher found that in multi-grade teaching there was difficulty/deficiency to organize the lesson plans in logical manners by giving daily life examples. In mono-grade, teaching teachers demonstrated and presented subject matter attractively and effectively. Researcher observed that control group teachers’ presence in classroom was satisfactory and teachers came to the class and left the class well in time. Teachers were friendly in the classroom.

Brown and Brown (1990) say that every supervisor has his/her idea of what makes a good teacher as well as what constitutes a successful lesson? Some of things most supervisors will expect from student teachers when evaluating them; punctuality, to arrive in participating school before the supervisor; a student teacher should have a file or a notebook containing all the lesson plans; high standard in dress and behavior; dress appropriately, smart without being overdressed. During the research work, the researcher found that principals of the schools supervise the teachers and monitor their performance with respect to the all aspects, to make them a successful teacher. The researcher observed that principals regularly watch the presence of the teachers in the multi-grade/mono-grade classrooms.
There were no proper awareness about the multi-grade teaching among the principal of school and teachers. It required refresher courses regarding multi-grade teaching to utilize this method to improve the shortage of teachers.

Tillema (1994) proposes that in a program of teachers’ education, teachers thinking have more importance as teachers view new concepts by their obtainable thinking and they only activate those concepts that are matching with their thinking. In this study, it was observed that teachers had command over their subject in mono-grade teaching group; they provided sufficient time to the students for discussion; they respected opposing viewpoints of students; they used appropriate teaching aids effectively.

Under the present circumstances, it can fully be apprehend that there was a dire need to target the multi-grade teaching. As the teachers of mono-grade, teaching group monitored the performance of the students regularly. Weekly tests were regularly managed. The study reflected that assessment system in both the groups was satisfactory. The results of mono-grade teaching were better than the multi-grade teaching. Teachers covered courses in time in both set up. Teachers assessed student’s level of understanding and re-taught if needed. It was also observed that students of the mono-grade teaching competed well with the students of multi-grade teaching.

Siddiqui (1991) explained that so far we have looked at the visible aspect of the quality, e.g., number of schools, physical facilities, and number of teachers present in a school. The key factor that contributes to second factor of quality of education, i.e. what goes on in classroom, include curriculum, textbooks, assessment system and teaching in the classroom. There is a dire need to prepare
a separate syllabus for multi-grade classes, which should be interesting / sufficient, and the syllabus should be properly distributed to the teachers for completion well in time. During the experiment the student assessment procedure was found to be fair. Merit was strictly followed in all matters. During the discussion conducted with the management of the educational institution it was pointed out that separate class room would be required for multi-grade teaching to maintain the quality of education and to apply the multi-grade teaching techniques properly.

The researcher observed that teachers of the Mono-grade group prepared their lesson plan before taking classes. They were satisfied with the content and subject taught in the classrooms. They used A.V aids in the classrooms and teaching learning process was better in mono-grade teaching as compared to multi-grade teaching. Teachers of mono-grade teaching were found more aware of the content/course/subject being taught in the classrooms and were more aware of the factors that make learning effective in the classroom. They were sensitive to the student’s emotions, thoughts and attitudes as they affect their learning. They were able to present and create situations for the effective learning. They were able to identify one’s own areas of weakness in the teaching situation and they think critically and creatively about one’s own lessons. Talyzina (1993) observes that theory is not connected with the practice. Due to this reason, fresh teacher did not understand the importance of the theory.

It was further explored that teachers of the multi-grade teaching and mono-grade teaching were experienced but there was a need to conduct training session for the teacher of multi-grade class. Therefore, it was optional that
teachers of multi-grade group should be given chance of regular teachers training program so that they can minimize their weakness/problems. Misra (1993) has also describes problems of practice teaching similarly shortage of adequate theoretical comprehension and teaching materials related to imaginative training methods; lacking of faith in the usefulness and value of techniques of teaching; lack of self-assurance, inclination and capability among teacher educators to use particular teaching approach; lack of training programmers; deficiency of willingness on the part of teacher educators to experiment; lack of administrative support and exploited assignment; non enforcement of attendance rules and dishonest or prescribed acceptance of advanced training approaches. The curriculum of teacher education should be improved from time to time and the outcome should remain positive. For utilization of existing teaching staff, a school may organize training activities/programmes to improve the professional skills/techniques on annual basis from the reputed training institutions.

Based on discussion it was concluded that the performance of multi-grade teaching was not satisfactory, as revealed by the results of this study. Therefore, it was emphasized that government to initiative to minimize the deficiencies in multi-grade teaching. For that multi-grade teaching should be made an essential programmes.
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 SUMMARY

The purpose of the study was to compare multi-grade teaching with mono-grade teaching at primary level. The study was conducted to achieve the following objectives: (1) To investigate the effect of multi-grade teaching on the performance of students at primary level in the subject of English; (2) To find out effectiveness of multi-grade teaching at primary level; and (3) To give recommendations for improvement of suitable strategy of teaching English at primary level. In order to achieve the afore-mentioned objectives, following null hypotheses were tested: (1) No significant difference is there between mean scores of the experimental and control groups on pre-test; (2) No significant difference is there between the mean scores of low achievers of experimental and control groups on pre-test; (3) No significant difference is there between the mean scores of high achievers of experimental and control groups on pre-test; (4) No significant difference is there between the mean scores of the experimental and control groups on post-test; (5) No significant difference is there between the mean scores of low achievers of experimental and control groups on post-test; and (6) No significant difference is there between the mean scores of high achievers of experimental and control groups on post-test.

Sample of the study included 60 students of classes 4 and 5 of Army public School Nowshera (grade-IV=30; grade-V=30). These students were divided into two groups i.e. experimental (multi-grade teaching) and control group (mono-grade teaching). Each group had 30 students (grade-IV=15; grade-
V=15). The sample students were divided into experimental and control groups on the basis of pre-tests (separate for class IV and V) scores through pair random sampling. “Pre-test Post-test Equivalent Group Design” was used for this study. Experimental group was taught by multi-grade teaching strategy whereas mono-grade teaching approach was in control group. Treatment continued for six weeks. Data were collected by administering post-tests (separate for class IV and V) at the end of treatment. Data obtained through pre-tests and post-tests were tabulated, analyzed and interpreted by applying t-test.

5.2 CONCLUSIONS

On the basis of findings of the study following conclusions were drawn:

1. Findings of the study revealed that there was significant difference in favor of mono-grade teaching group on post-test scores. It was concluded that the practice of multi-grade was not successful in Pakistan prevalent rural areas.

2. High achievers of control group (mono-grade teaching) performed better than the high achievers of experimental group (multi-grade teaching) at primary level in the subject of English.

3. Similar results were witnessed when the low achievers of control group were compared with those of experimental group on post-test scores.

4. Students of control group of 4th and 5th class performed better than the students of experimental group on post-test.

5. It was concluded that in a mono-grade teaching set up, organization of multi-grade class was more difficult for a teacher to teach more than one grade in the allotted time of period and complete the course in given time.
In spite of lack of teachers training in multi-grade teaching, the teacher was making efforts to provide opportunity to students for individual learning, group learning and collaborative learning.

5.3. **RECOMMENDATIONS**

Based on conclusions following recommendations were suggested:

1. The first and foremost step should be to minimize multi-grade teaching by provision of teachers for every class by selection of new teachers.

2. Government should encourage multi-grade teachers with awards; incentives for students of elementary level with well-equipped material provided for teaching of multi-grade teaching. In the context of Pakistan majority of primary and elementary schools have shortage of trained teachers. The obvious reason is lack of allocation sufficient funds for education. The government should increase the budget for education so that the shortage of teachers, especially in the rural areas, be eliminated.

3. If the multi-grade teaching is need of the day then strategies to be adopted should be included in the curriculum of future teacher education programmes and the teachers already concerned with multi-grade teaching should be given ample opportunities for in-service teacher education.

4. The sample of the study was taken from the province of Khyber Pakhtunkhwa. Further studies may be conducted in other provinces. The study was conducted on 4th and 5th grade students. Further studies may be conducted on other classes of elementary level.
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Appendix-A

COMPARISON OF MULTI GRADE TEACHING WITH MONO GRADE TEACHING AT PRIMARY LEVEL

PRE TEST

Name of Student:______________  Father Name:________________________

GRADE –V  Date:  ________________

Attempt all questions. Each Question has 10 Marks.

Q-1. Write a letter to your friend about your new bicycle.

Q-2. Write singular of the following nouns.

a. Men _____   c. Benches _____   d. Papers ______
b. hens _______ e. Sheep _______

Q-3. Read the sentences below. Fill in the hyphens where appropriate.

1. My great grandfather was a famous cricketer.
2. It is over thirty three degree temperature outside. Please turn on the air condition unit.
3. His ex wife made him pay for the children new clothes.
4. He will leave for an excavation in china by mid December.
5. make sure you remember to put the self addressed envelope in the box.

Q-4. Write an essay on My Best Teacher or MY School

Q-5 Mark the sentences True-√ or False -×

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Sentence</th>
<th>True-√</th>
<th>False-×</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Camel is flying</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Moon is shining in the day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Water is boiling</td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td>Jawad and waseem are playing cricket.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I eat bread and butter</td>
<td></td>
<td></td>
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</tbody>
</table>
Appendix -B

COMPARISON OF MULTI GRADE TEACHING WITH MONO GRADE TEACHING AT PRIMARY LEVEL
PRE TEST

Name of Student:________________ Father Name:__________________________

GRADE–IV Date: __________

Attempt all questions. Each Question has 10 Marks.

Q-1. Use the following words in sentences of your own.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Word</th>
<th>Sentence</th>
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</thead>
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<tr>
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<td>Lion</td>
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<td>3</td>
<td>School</td>
<td></td>
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<tr>
<td>4</td>
<td>Home</td>
<td></td>
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<tr>
<td>5</td>
<td>Drink</td>
<td></td>
</tr>
</tbody>
</table>

Q.2 Write the antonym of the following words.

e. Hot_________

Q.3. Write five sentences about your sweet home.

Q.4. Fill in the blanks with correct words.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>My younger brother is very ________ to me (Dear- Deer).</td>
</tr>
<tr>
<td>2</td>
<td>___ is standing on the roadside (Men-Man).</td>
</tr>
<tr>
<td>3</td>
<td>I was absent from the class since last_______ (Week-Weak).</td>
</tr>
<tr>
<td>4</td>
<td>Your _________ are dirty (Cloth- clothes).</td>
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<tr>
<td>5</td>
<td>Ali is my _______ friend (Nice- Niece).</td>
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</table>

Q.5 Write an essay on My Favorite Game.
Appendix - C

COMPARISON OF MULTI GRADE TEACHING WITH MONO GRADE TEACHING AT PRIMARY LEVEL

POST TEST

Name of Student: ____________________  Father Name: __________

GRADE –V  Date:  __________________

Attempt all questions. Each Question has 10 Marks.

Q-1. Write a story “Thirsty Crow”.

Q-2. You have learnt that the comma can be used to separate the items in a list. Insert the comma where necessary.

His roar was the loudest his mane was the more majestic and he was the only creature that could command so much popular support awe and respect.

Q-3. Write three sentences of Past Perfect Tense.

Q.4. Write a Narrative story.

Q.5 Mark the sentences True √ or False ×

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Sentence</th>
<th>True √</th>
<th>False ×</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flying horse and monster are the imaginary characters in the story.</td>
<td></td>
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</tr>
<tr>
<td>2</td>
<td>Amna had a smile as sweet as sugar.</td>
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<tr>
<td>3</td>
<td>Rice is our staple diet.</td>
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<tr>
<td>4</td>
<td>The lion is the junior king of animal.</td>
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<td>5</td>
<td>Unconscious means senseless.</td>
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</table>
Appendix -D

COMPARISON OF MULTI GRADE TEACHING WITH MONO GRADE TEACHING AT PRIMARY LEVEL

POST TEST

Name of Student: ___________________ Father Name: ______________

GRADE –IV Date: ________________

Attempt all questions. Each Question has 10 Marks.

Q-1. Write a story “Greedy Dog”.

Q-2. Write Synonyms of the following words.
   a. Useful________  b. Sick________  c. Sections________  d. Heavy________  e. Small _________

Q. 3. Write five sentences which show Noun Phrases.

Q.4. Write an essay on My Best Teacher or on My Best Friend.

Q.5 Underline the Subject and circle the Verb of each sentence.

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<thead>
<tr>
<th>S.No.</th>
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<tbody>
<tr>
<td>1</td>
<td>They are going to visit Ali</td>
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<td>It is donkey at the corner.</td>
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<tr>
<td>3</td>
<td>Yes his friends are excited to see his goblins.</td>
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<tr>
<td>4</td>
<td>Breakfast is at eight o’ clock.</td>
</tr>
<tr>
<td>5</td>
<td>They had fried eggs for breakfast.</td>
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Appendix -E

COMPARISON OF MULTI-GRADE TEACHING WITH MONO-GRADE TEACHING AT PRIMARY LEVEL

DAILY LESSON PLAN FOR MONO-GRADE TEACHING GROUP

Week: 3  Developed by: GulamNasir ul Haq
Date: 21-04-16
Subject: English  Class: 5th
Period: 2nd  Topic: Journey back in

Objectives:
Students will be able to read comprehension and answer the questions.

Skills focused on:
Recalling and comprehension.

Resources: Activity book page # 14/18.

Methodology:
P.k will be checked.
The teacher will share learning objectives.
Students will take turns to read the passage along paragraph from the A-book page # 14, 15 and 16.
Explain the new and difficult words.
Draw tables containing headings. Orientation.

Activity: Board work.

Success Criteria: remember to:
Scan the text to find the answers.
Show your understanding of narrative text.

Assessment plan:
C.W= Question 4, 5, 6.10 and 11 in A-book page# 16/17.
H.W= Question 1, 2, 3,7,8,9 in A book Question -17
COMPARISON OF MULTI-GRADE TEACHING WITH MONO-GRADE TEACHING AT PRIMARY LEVEL

DAILY LESSON PLAN FOR MONO-GRADE TEACHING GROUP

Week: 4
Date: 27-04-16
Subject: English
Class: 4th
Period: 2nd
Topic: Imaginary Creatures

Objectives: Students will be able to recall a story or film, write about the story reader a film seen in a graphic organizer.

Skills focused on: Recalling, describing and drawing.

Resources: Textbook page 2.

Methodology:

P.k will be checked.
The teacher will share the objectives and introduce the topic.
Ask them to name some fantasy stories they have read as books or viewed as film.
Take their feedback and list them on the board.
Ask them students to fill the details of the story in the graphic organizer in the textbook page 2 in pairs.
Draw an imaginary creature in notebook.
Activity: sharing information written in graphic organizer.
Discussion in pairs.

Success Criteria: remember to:
Describe the imaginary settings and actions under different headings.

Assessment plan:
C.W= Draw the graphic organizer.
H.W= Draw imaginary creature in notebook.

Sign: Subject Coordinator:_________________
Appendix -G

COMPARISON OF MULTI-GRADE TEACHING WITH MONO-GRADE TEACHING AT PRIMARY LEVEL

DAILY LESSON PLAN FOR MULTI-GRADE CLASS

Week: 1  Subject: English  Developed by: Gulam Nasir ul Haq
Date: 21-04-16 Period: 2nd

Class: 5th

Topic: Imaginary writing
Objectives: students will be able to brainstorm the topic by answering questions, write a short story about encounter with their guest.

Skills focused on: Group work, organizing ideas, board

Resources: Board.
Methodology:
P.k will be checked.
The teacher will introduce the topic.
Imagine a work in which humans and cartoons character interact, invite your favorite character for a tea party. Describe your experience.
Group work, let student imagine and discuss the situation with the help of following questions:
1) Why did you invite?
2) Why did you choose this character?
3) What happened during tea?
Activity: Group work.

Success Criteria: remember to answer all questions in past tense.
Assessment plan:
Choose a suitable title for your story.
C.W= Write down a short story in Notebook.
H.W= Find meaning of difficult words.

Class: 4  Topic: Comma (Punctuation)

Objectives: Students will be able to put commas at the appropriate place in a sentence.

Skills focused on: Punctuating.

Methodology:
P.k will be checked.
Students will be able to do worksheet independent.
Teachers will share objectives and introduce the topic of class.
Explain functions of comma with example on board.
Separate items in a list.
Separate dependent clause from main clause.

Activity: Board work.
Class discussion.

Success Criteria:
Insert comma in sentence where necessary.
Assessment plan:
C.W= work sheet no 5.
H.W= None.

Sign: Subject Coordinator:_________
### RESULTS

**MONO-GRADE TEACHING GROUP**  
**OF GRADE-IV**

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## MULTI-GRADE TEACHING GROUP
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### PRE-TEST OF GRADE-IV
#### HIGH ACHIEVERS

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### PRE-TEST OF GRADE-IV
#### LOW ACHIEVERS

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POST TEST OF GRADE-IV
HIGH ACHIEVERS

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POST TEST OF GRADE-IV
LOW ACHIEVERS

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# MONO-GRADE TEACHING GROUP

## GRADE-V

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