

**REVIEW OF RELATED
LITERATURE**

CHAPTER 2

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2.0 INTRODUCTION

Before we get to start, let's remind ourselves that a Literature Review is the systematic identification, location, analysis and report of documents containing information related to the research topic. In short, one reviews Articles, Abstracts, Books, Dissertation/Thesis Dissertation and Document in electronic media to strengthen one's research.

Thus, Review of Related Literature is a very important aspect of research process. It helps the researcher by providing some information about the status of knowledge in the area intended to study. Research work done in past serves as a solid foundation on which any new investigation firmly rests. For any researcher, review forms the basis for the problem under investigation and helps to arrive at the proper perspective of the present study.

Sukhia (1966) states, "For any worth while study in any period of knowledge, the research worker needs an adequate familiarity with the library and its many resources only than will an effective search for specialised knowledge be possible."

Thus, in this chapter a brief review of the related studies have been presented.

2.1 BRIEF ANALYSIS OF THE RESEARCH IN PRIMARY EDUCATION DURING DIFFERENT PHASES

2.1.1 Brief Analysis of the Research in Primary Education during the Phase from 1974 – 1983

During this phase that is from 1974 to 1983 categorized into seventeen/eighteen sections. But primary education/elementary education was not separately highlighted in the content. The studies related to primary education/Elementary Education was basically merged in the section of teacher education, teaching and teacher behaviour, correlates of Achievement, and Educational Administration and social and adult education or Non-formal Education.

The studies conducted in primary education/Elementary Education in the first survey of Research in Education emphasized on :

- Surveys were conducted on educationally backward children and municipal corporation schools.
- Wastage and stagnation
- Problems of women primary teachers
- Physical facilities and condition of primary schools.
- Diagnostic tests in Gujarati spellings, Arithmetic and Geometrical instruments usage.
- Achievement in Mathematics.
- Backwardness in Mathematics
- General Backwardness at the Elementary stage.
- Academic cause of Backwardness in Social Studies.
- Problems of Education Administration such as Admission and withdrawals, single teacher schools, securing necessary teaching personnel for rural areas and the problems of supervisors.
- A single study by **Chikermane (1964)** focused on single teacher school.

In the first survey, the dissatisfaction has been shown in the section of teacher training. The trainers are not satisfied the consumers are not satisfied and more than this, even the trainees are not satisfied. With training programmes yet this dissatisfaction has not lead to significant research in the area of teacher education.

As far as studies related to primary education/Elementary Education conducted during the phase 1978 second survey of Research in Education, the emphasis was on :

- History of primary education and the problems
- Job satisfaction among teachers
- Shift system in primary schools
- Mid-day meal, nutrition education programmes.
- Libraries in primary schools.
- Relationship patterns of teacher class room behaviour and pupil attainment.
- Standardization of teacher efficiency, inventory, teaching aptitude test, achievement test for Vth, VIIth and VIIIth class

- Battery of tests for measuring some of the basic skills of students.
- Developed a workbook on science teaching.
- Studies conducted in various skills.
- Factors affecting teacher efficiency their implications too teacher training programme.
- Self concept of teacher of difference categories and the relationship of their self concept with profession attainment.
- Teaching patterns and pupil attainment.
- Studied the weakness of teacher

Under the section of non-formal education not a single study focused at Primary level / Elementary level. During this phase studies conducted by Joshi (1973), Gupta (1974) focused on ungraded / single teacher school.

In the third survey of Research in Education (1978-83) the studies conducted can be highlighted into :

- Enrolment and attendance
- Wastage and stagnation
- Problems of teachers and their expectations
- Pre-service training programme
- Standardization of reading test, teaching competency.
- Affective tone in the primary classroom
- Correlation study between ability and academic achievement
- Nutritional studies

During this phase also not much attention has been given to in-service training and single teacher schools.

2.1.2 Brief Analysis of the Research in Primary Education During the Phase from 1983 – 1988

Brief Analysis of the Phase 1983 – 1988

It was during this phase (1983-88) that is fourth survey of Research in Education highlighted elementary education as a separate section in the content.

Further, the research studies conducted in the area of elementary education falls in various sub themes of which curriculum development was emphasized maximally that is total forty three studies followed by the universalization twenty nine studies have been studied. As far as the sub-theme of teachers and teacher training was concerned, eleven studies have been conducted till 1980. So this area needs more extensive research.

Only one study by **Dunakhe (1984)** identified research needs in primary education through documentary analysis of research surveys and encyclopedia of educational research. Further, it can be analysed that most of the studies are status study conducted through survey there is a need for more intervention study.

The sub areas to be highlighted for further researches showed centre on :

- Barriers in the education of women.
- Minorities, SCs, STs and disabled children
- Learner centred strategies.
- Minimum learning outcomes – scholastic and non-scholastic
- Continuous evaluation and diagnostic testing,
- School readiness for universalization
- Remedial programmes
- Effectiveness of voluntary bodies and centrally sponsored projects, and
- District, village and taluka level studies.

Thus, overall analysis of the period from 1951 – 1988 goes, in all 208 researches on this subject has been located of these nine belong to 50s, twenty five to the 60s, 68 to the 70s and 106 to the 80s . It can be interpreted that slowly the area of elementary education is getting geared up.

During the phase (1983 – 1988), the research on teaching strategies was a part of the chapter on research in training and less than twenty studies were reviewed under this section. So this is a green area for further research.

2.1.3 Brief Analysis of the Research in Primary Education during the Phase from 1988 – 1992

During this period the number of studies carried out in the area of primary education is fifty four that amounts to around three percent of the total research conducted during 1988 – 92. Although primary education being priority area in the Indian education system, it looks quite small. All the same, there is no denying the fact that this priority sector of education has not received the attention that it should have, particularly when the country has not been able to achieve the goal of universalization of elementary education (UEE) or Education for All (EFA).

In this fifth survey of educational Research in Primary Education has been classified into eleven cohesive categories.

Trend in the area of primary education shows that a very limited number of studies are at hand. Even during this phase (1988-1992) overall analysis is that the infrastructure facilities are woefully inadequate in our primary schools. This survey suggests that so far as the provision of infrastructure facilities is concerned, the situation has hardly changed since a constitution pledge (Article 45) was made to provide for free and compulsory education for all children until they complete fourteen years of age. The knowledge that provisioning in the urban schools of Gujarat as no better than that in rural schools comes as a rude shock, thereby showing how the situation regarding access to primary education has been deteriorating inspite of various inputs of government and non-government organization. Further, the studies on the implementation of the operational blackboard (OB) scheme clearly indicate that the provisions of educational facilities is welcomed by the teachers as these facilities would help in attracting, retaining and raising the achievement level of children. A one time intervention like the OB scheme may not bring permanent benefits to primary schools. But the continuity of assistance, and is more important, the efficient management of the assistance is the need of the hour. This is the green area for further research.

The reviewed studies on teaching strategies have, by and large, been of the process product type that is simply measuring the outcome of an instructional process. Further, in the present survey, there is a separate section on teaching strategies. This is undoubtedly a potent indicator of the momentum gained by the research on teaching strategies. It is now being increasingly realised that teaching processes do form the core of the process as a whole.

Further, there is a scope for studying the efficacy of teaching strategies at primary level for the learners. Added, one or two studies have been conducted on tribal children, which is an enlightening move on the part of researchers. Thus, the innovative element in teaching strategies holds a lot of promise in future. Hence, there is a need for designing and conducting research to study the effectiveness of using more and more techniques, methods in teaching in an integrated manner in a classroom lesson in different subjects.

Since, the research on teaching strategies would have direct implications for teachers and teacher educators in the actual field situation, there is a need to make the research design more flexible and composite.

2.2 STUDIES RELATED TO ENVIRONMENTAL EDUCATION AT PRIMARY SCHOOL LEVEL

Before the Stockholm conference on "Human Environment" by the UNO (1972), even in developed countries very few attempts were made to develop suitable curriculum for environmental education in schools, among these attempts, the national board of education in Sweden in 1968 had appointed a special committee to examine and revise the national curriculum with a view to increase the scope of environmental studies in schools. This resulted in development of an environmental curriculum which initiated students activities in environmental problem.

Welsar (1973) had prepared a resource guide for teachers in environmental education and found that resource guide was very helpful for teachers in teaching environmental studies.

Richmond (1977) made a survey of environmental knowledge and attitudes of school students. He reported that students appeared to have a poor command of factorial environmental knowledge, demonstrated a greater understanding of environmental concepts and also expressed positive attitude towards the environment.

Jone (1977) made a comparative study of EE, competencies of third grade students and their teachers. The findings revealed that third grade level teacher's overall environmental education competencies were low.

Peyton (1978) made an attempt to find teacher's abilities to identify, teach and implement environmental action skills and found that most of the pre-service teacher trainees had little competency in the action skills and little experience in environmental talking.

Joshi (1981) developed a science for upper primary classes based on the environmental approach. Findings revealed that environmental education at the upper primary level was essential and vital to develop insight and skills needed to influence not only the environmental attitudes and behaviour in the students, but also to stimulate then reorientation of values regarding the importance of environmental studies. Children at the primary stage were interested in and learnt from experience with real things that they could manipulate in some way.

Gupta, Grewal and Rajput (1987) have identified the components of environment in which children from urban and rural areas are deficient. They have suggested areas for developing environment-based curriculum at the primary school level and reported that urban and rural students of formal stream different significantly in performance and rural students scored higher. Difference in performance between formal and non-formal students from rural areas was not significant.

Manual (1987) attempted to analyse some worthwhile environmental education models in India and abroad and other relevant materials from the point of view of developing a functional theory in environmental education. He reported that very few genuine environmental education type activities, as

understood in the modern developed systems seemed to have been undertaken in primary education / schools.

Rajput, (1988) identified teaching skills and training strategies for implementing the environmental approach at primary level. Findings revealed that the mean scores of environmental awareness for the experimental and the control groups at pre-test and post-test level indicated that out of 14 comparison group in seven schools nine groups had no significant difference and the remaining five groups had a significant difference as a result of the treatment.

Christiane (1990) made a study on environmental education in the primary school curriculum and how the teacher's views are translated in practice and the study revealed that most teachers involved in the survey, acknowledged the importance of developing in children an awareness of the environment and related problems, and a sense of responsibility for its conservation and improvement. However, for many teachers, the difficulty layed in the implementation of these affective and moral aims within practical realities of schools.

Gilbertson (1990) studied the relationship between change in environmental literacy to type of environmental learning received and found that sixth class students were more literate towards environmental issues than ecological principles. Further no significant differences between the control groups and those who attended a field trip type experience finally, students did not understand that decomposers are a part of the food chain.

Derman (1992) designed a docu-drama to raise environmental awareness for primary school children aged 5-9 years old. The play is a narrated account of seven environmental problems and solutions that is acted in mime rhyme and song and could be adapted as a dramatic environmental awareness exercise. The problems addressed include acid rain, air, pollution, disappearing animals, the greenhouse effect, the ozone hole, water pollution and waste disposal.

Gopalakrishnan, (1992) studied the problems of environmental education and its impact on primary school children of standard V and found that studying

environmental education had a very good impact on the children. Further, study showed that the participating learning approach could bring about a better impact.

Shih, (1993) studied the status of environmental education (EE) in elementary schools and the findings revealed that teachers perceived outdoor education, audio visual presentation and inquiry (discovery) approaches to be the most important instructional strategies for effective elementary education teaching. From the major difficulty which teachers perceived concerning the implementation of elementary education is the lack of appropriate instructional materials, appropriate indoor facilities, in-service opportunities, preparation time, funding and out door facilities and learning sites and also suggested the conservation of natural resources and ways of preserving the environment as the interesting topic to teach for EE.

Surkar (1996) studied rural children not going to school and taught about he immediate environment. The main objective was to provide a basic education opportunity and infrastructure for children who otherwise cannot attend formal school and developing in children a healthy outlook for forest that they interact with. Moreover, chanalizing the creative energies of young children which in an ordinary rural context get otherwise suppressed.

Dufour Courter, Linda et al (1997) developed curriculum activity guide, grades K-1 – The project Park-I represents a unique partnership between a public elementary school and a city park in which students and teachers utilize a small naturalized area of the park as a Land laboratory, and in return become its Stewards. The guide begins with an explanation of the importance of a land laboratory, guidelines for taking students outside, and preliminary activities to prepare for going to the site. Activities are grouped by such area as soil, water, plants and animals.

Lalitha (1997) developed competency based activity oriented teaching learning modules in environmental science in the classroom. To develop teaching learning strategies using locally available resources to transact environmental science Ii in the classroom. Environmental science II of class III. A training

package was developed to train the teachers to overcome the hard spots. Findings of the study revealed that the teachers lacked subject competence. The identified hard spots were discussed during the sessions using the modules like quiz, field trips, nature walk, role play, group activities, co-operative learning, project method, etc. to transact environmental science II in the class room.

Chutani and Lal (1998) identified the training needs of primary school teachers in environmental studies and the topics suggested to be included in the training package were remedial exercises for weak students, organisation of enrichment programme for brilliant student, techniques of putting oral questions in classroom, use of globe, maps and charts, knowledge of essential teaching aids, pedagogical and teaching techniques and minimum level's of learning in EVS. Further teachers should be encouraged to prepare teaching aids and use them in the classroom.

Joseph (1998) studied applicability, constraints and opportunities for the effective implementation of environmental education in Uganda's primary schools. The study argues that the greatest constraints to the effective implementation of environmental education include the elitist nature of the education system, teacher preparation, materials development, and curricula with little relevance to local communities. Added there is a need to strengthen teacher training and methods that encourage experimental learning.

2.3 STUDIES RELATED TO INTERVENTION PROGRAMME AT PRIMARY SCHOOL LEVEL

According to UNESCO children learn more readily when they are interested in it, when they can see that it makes some difference to them, when it is graphic, involve some manipulation on their part, is not too hard but hard enough to make them think, and when it gives them the satisfaction of having found something that they wanted to know. Some researchers have been done on the existing methods of teaching at the elementary level.

Popham (1960), Newman and Highland (1956) compared the effectiveness of tape recorded lectures with conventional lecture discussion method and an

instructors teaching respectively. In both the studies the difference were not revealed.

Twyford et al (1964) demonstrated that sound films were twice as effective as filmstrips in providing learning in a general science course. **Travers and his associates (1970)** concluded that the two sensory modalities had no advantages over the use of a single modality when both the channels present the same words. When the visual channel consists of pictorial material the effect of two channel communication is more complex.

Research attempts made in the sixties in respect of visuals are mostly on the use of pictures and the utilisation of these in the teaching of language and paired associate learning (**Rohwer et. al (1968)** **Pairvio et. al (1968)**. **Allen (1967)** and **Baker and Popham (1965)** found that use of pictures increased the interest and enjoyment in learning only when subject matter content consisted of materials can be as effective as other classroom activities.

Gropper (1966) concluded that visual verbal order of presentation is appropriate for concept learning tasks. Comparison of motion pictures with parallel static forms of pictorial materials usually show no difference in learning except when the concept to be learnt deals with motion and change in which case the motion version is superior (**Silverman, 1958**). **Allen and Weintraub (1968)** reported the superiority of motion picture as compared to equivalent still picture over a range of subject matter content and instructional objectives.

The review by **Travers (1970)** suggest that instructional situations call for the selective case of audio, visual and audio visual media. While selecting the appropriate medium, criteria such as abstraction and complexity of concepts, prior knowledge of the learners, etc, have to be considered. If an audio or a visual presentation alone would suffice, it may conveniently be employed.

Swan (1971) noted that adequate tools for evaluating the effectiveness of environmental education programmes and material do not exist. It is essential that before the effects of any environmental education programmes can be evaluated, one must have valid and reliable out comes.

Howie (1973) studied the effectiveness of outdoor experiences v/s classroom experiences in learning the cognitive dimension of Environment education showed that 'classroom only' set of experiences is more beneficial than the 'outdoor only' set of experiences in developing conceptualisation but in developing application aspects the 'classroom only' is not superior.

Johnoton (1974) had made an statistical analysis of opinions, attitudes, scope and selected content areas of Environmental Education. As per his findings, teachers believe that environmental crisis exists, and hence school should teach environmental education. The teachers believed water and air pollution as best topics for teaching EE and also suggested.

Childress (1978) observed that small group projects, class discussions and field trips, visits of community resources were the most frequently used instructional strategies to teach environment.

Swarnamma (1978) found that most teachers resorted to lecture demonstration method in teaching science. **Muddu (1978)** found teachers use lecture – demonstration method for teaching science at the primary level. **Dev (1979)** found teachers are more interested in teaching with the help of lecture method than any other instructional method. **Santosh (1996)** found "Teachers of primary schools do not take interest in their jobs neither they attend their duties regularly nor do they pay heed to the difficulties and problems of the children.

Techniques involving group interactions help a participant in strengthening his views as well as gradually developing in him higher cognitive abilities and affect attributes. (**Yadav et al 1979, Menon and Bhat 1983**). The component of discussion has been used profitably along with other components in various research and development studies (**Yadav and Govinda 1977, Sansanwal 1977, Shah 1981, Joseph 1983, Bhat 1983, Ravindranath 1982, Vardhini 1983**).

Baer (1980) felt that the process of value clarification should be thoroughly researched by environmental educator. **Doran and Sarnowski (1978)** developed environmental value inventory to produce a profile of an individuals environmental values further they suggest that the environmental value

inventory be used as a tool to aid the teacher in determining the dominant values of a class, in monitoring the effects of instructional material and in assessing changes in students values after instruction.

Adinarayan (1984) studied Science teaching in primary schools – a training programme. Two units of the syllabus of standard IV & V were selected for teaching. Instructional packages were prepared for teaching through the experimental and the customary methods. Findings revealed that the significant difference in the development of skills among students was seen in the experimental group. However, the experimental group greatly favoured science activities.

Veeraswami (1985) studied the effect of play festival programme on Elementary School children and the findings of the study revealed that participated schools (play festival) improved academic achievement, physical fitness irrespective sex.

Biswas, (1986) studied the curriculum for primary education in Bangladesh. The focus was to study the problem involved in implementing the curriculum and the major findings of the study were that schools did not implement the curriculum appropriately further, the problems were related to lack of physical facilities time – table, non-availability of appropriate teaching aids and materials. Moreover, the workload was very high as perceived by teachers.

Dave, et al (1988) conducted a comprehensive evaluation of the project primary Education curriculum Renewal (PECR), The major findings of the study were the impact of the project was positive as it significantly enhanced the level of pupil achievements in language, mathematics and environmental studies (EVS) at the primary stage. Further, the pupil's achievement was excellent in language, good in mathematics and average in EVS in class III and minimum in class IV.

Harrison (1989) studied about Ability Grouping : practices and perceptions of elementary school teachers findings of the study revealed that teachers defend similar – ability groups on instructional grounds, usually to maintain appropriate context and pace in reading and mathematics. Further, defended

mixed – ability groups because of social benefits to children, usually in science and social studies. Teachers' perceptions of groupings' effects on students' personal development are mixed. The study concluded that grouping decisions are also influenced by forces outside of teachers' control, including mandates, norms, and requirements.

Mistra A. (1989) studied the teacher education program at the primary level and the findings revealed that aims and objectives of the teacher education program have not been specified in the curriculum, on the other hand, the objectives of the different content areas have been specified. The curriculum did not suggest learning experiences for the realisation of the proposed objectives. The majority of the schools reported that the syllabus of heavy. Heavy work load, lack of expertise, inadequacy of equipment, non-availability of adequate number of books and paucity of funds were some of the problems.

Misra, N (1989) developed a program of the Primary Education and the findings revealed that in-service training, provision of suitable aids and equipment, different incentives to encourage the teacher to adopt a suitable methods of teaching, the right type of practical examination and internal assessment and mid-term evaluation during training and post training period were the some of the steps suggested by the respondents. Further, they suggested that common central examination in class III, IV and VIIth in order to improve the standard of the students. Better-qualified and training primary teacher should be appointed.

Prasad, S (1990) assessed the impact of the PMOST on the teachers for effective transaction in the classroom. The major outcome of the PMOST was considered to be related to the professional growth of the teachers and improvement in the teaching – learning strategies for improvement in quality of education and attainment of educational standards by students for their all round development. Next, the usefulness of instructional modules and related audio-visual support provided during the PMOST was explicitly accepted and appreciated by the teachers. However, they felt that activity – based and curricular – based modules were more useful.

Roka, Rastogi and Verma, Savita (1990) studied comprehensive Access to primary Education (CAPE), UNICEF – Assisted project. The main objectives of the project were : to evolve an alternative approach of education for out of School children under part-time, non-formal arrangement and secondly, to develop flexible, problem centred, work based decentralised curricular and learning materials relevant to the needs of diverse groups of learners and comparable approximately to the primary stage of the formal education and to establish learning centres and develop a scheme of evaluation and accreditation of the learners. Findings of the study revealed that a complete set of learning, training and evaluation package for the primary stage of education was developed. Further, the learning material used in the learning centres was not only helpful in attracting the children to school but also in increasing their achievement levels and improving the quality of education.

Bhattacharya, (1991) studied the relationship of several variables to pupil achievement in nutrition, health and environmental sanitation. The major findings were : the intervention was significantly positive in enhancing the level of pupil achievement in all the components viz., knowledge (k), Understanding (U), Application (A), and skills (s).

Kulkarni, P. (1991) studied the use of drama in improving the teaching learning process and the findings revealed that the children under the study (7 – 12 years) had been able to express their ideas through various creative activities and also found that the Learning had been a pleasant experience for the children. Further a large majority (95 percent) of children felt that they could now develop other textual themes through drama. Moreover, all the children responded that they would like to study subjects in the classroom through drama.

Murlidharan and Saini (1991) studied child to child approach. The main objectives of the study were to improve the levels of health, nutrition and development of school going children through child to child activities and to improve the school and the neighbourhood environment through organised activities. Findings revealed that children of the schools were taking pride in

being clean, being able to take care of the younger children, showing improved attendance, etc. Further, children enjoyed learning through child to child teaching methods.

Dange et. al. (1993) conducted a clean up campaign at Kodagu a public campaign which had a very good media mix. There were lectures, demonstration, songs, drama, distribution of educational and promotional material and action programmes. The main objective of the programme was to create awareness about various environmental issues. Street theatre, folk songs, personal communication and video shows have been the main media of the instruction in the campaign.

Das (1996) formulated intervention strategies for effective management of large size classes at elementary level and the findings of the study revealed that there was an overall improvement in pupils' achievement after the administration of intervening strategies. Further, with regard to sustainability and reliability of these strategies. It was found from the field experience by judging the pupils', as well as teachers' participation in the process, that five strategies, namely

- (a) alteration of learners' location
- (b) Partner suffering
- (c) Monitorial assistance
- (d) Co-operative learning and
- (e) Self-learning were the most effective intervening strategies to promote low achieving schools of large size classes.

Gupta (1998) studied the learning achievement of primary teachers in relation to the inservice programme. The main purpose of the study was to study the effectiveness of the intervention strategy designed by SOPT. The tool and the findings revealed that the SOPT was found to be effective and the efficacy of the programme was established. The in service education programme SOPT improved the achievement of primary teachers mainly due to intervention provided.

Padhi and Khamari (1998) studied the use of operational Blackboard and other teaching-learning materials for adopting joyful and activity – centred learning science in class III. Findings of the study revealed that about 15 percent of the teachers failed to recognise equipment in the science kit box and could not develop TLM for teaching the subject. Further, appropriate use of TLM enhanced the teaching process and improved the understanding of students to great extent. Finally, effective use of OB and Other TLM promoted resourcefulness among teachers and they seemed to make efforts to prepare low – cost aids for teaching.

Tomar (1998) developed an intervention to improve the quality of instruction in Environmental Science for primary level school children and the findings of the study revealed that intervention was found to be effective further, Learning through intervention programme enabled the students to get acquainted with self learning process and an improvement was found in their academic performance and also helped them to develop higher cognitive abilities, metacognitive abilities, Psychomotor skill and some aspects related to affective domain.

Mehta (1999) made a critical study of working of DIETs in Gujarat. The study focussed on the opinions of the teachers regarding the training programmes and the infrastructure facilities of DIETs. It was found that most of the teachers believed that training programme are useful for them.

Lakshmannan and William Dharma Raja (June 2003) studied the impact of video-tape in learning science among primary students and the study indicated that the learning by video tape was found to be better. Both control and experimental groups showed better performance in the post – test than in the pre-list.

Singh, J. (2004) conducted an evaluative study on Minimum Levels of Learning and the finding of the study revealed that not even a single student studying in Government Primary School was able to learn minimum competencies in the subjects of Punjabi, Mathematics and Environmental studies. He further suggested there is a need for development of awareness of

competency base teaching and learning among teachers, students and parents. He also suggested that there is a need to be taken care of inter and intra state variations while fixing MLL competencies.

2.4 STUDIES RELATED TO MULTIGRADE /SINGLE TEACHER SCHOOL

Knight (1938) showed that most teachers preferred a single grade class over a multigrade class because the later was felt to entail more planning, preparation and work. Teachers in multigrade classes were generally found to teach the grades separately for mathematics and reading, and most of the teachers and principals felt, when considering students educational progress, that multigrade classes were undesirable.

Chikermane (1964) conducted an experimental study of teaching in single teacher schools. The experimental group was divided the entire academic work into two parts classes and houses-classes for instruction and houses for activities. In the control group the classes were run on the usual and traditional lines and the study showed that the new experimental method achieved better results than the usual method.

Joshi (1978) made a comparative study of scholastic achievement of students upto class four after learning through traditional teaching methods and an ungraded unit teaching system. Findings of the study revealed that the ungraded unit method was more effective in teaching social studies and mathematics. Secondly, the use of the new method had practically no effect in solving the problem of wastage and stagnation irrespective of the area (rural and urban) schools.

Furch Kraffi (1978) studied the influence of multigrade grouping and single grade grouping on general scholastic achievement for fourth grade students in rural areas and the findings revealed that no significant differences was found in the overall achievement between the students in the multigrade classes and the students in the single grade classes.

Mali, (1984) studied the organizational pattern and teaching methods in single teacher schools and to study the difficulties encountered in organizing their instructional programmes in such schools. The findings revealed that out of 98 single teacher schools in the taluka, only six had independent building, two schools had play ground and only nine teachers had copy of the syllabus. Further, teachers were not able to prepare a common time table, supervision was not existing, and teachers were not willing to work in such schools. Despite training, teachers were not adequately equipped to manage such schools efficiently; they were not aware of suitable teaching methods, also were unable to give appropriate assignments or keep others gainfully occupied while handling one group.

Pratt and Tracy (1986), teachers and principals in western Australia pointed out following disadvantages : increased work load, more time required for the programming and preparation of materials, more time required for marking tests, not enough time for providing attention to individual students, and no opportunity to reflect on the teaching activities during the day. Further, teachers were generally critical of teacher training courses and claimed that the courses did not prepare them for teaching in multigrade classes.

Mishra (1989) reported that a large percentage of single teacher schools did not have the required physical facilities. Further, there were no fixed criteria for selecting and posting of teachers in single teacher. Schools and also reported that the majority of schools found the syllabus heavy due to the problems like heavy work load, lack or expertise, inadequacy of equipment, inadequate number of paucity of funds and teacher educators reported the need for more in service training in all the areas of the syllabus.

Walsh (1989) studied attitudes towards multigrade classes among students, parents, and teachers and found that participants agreed on three points. First, they felt the greatest advantage of multigrade grouping was the opportunity for students at the lower level to advance academically due to exposure to the curriculum of students at the upper level. Second, they felt the major liability of multigrade grouping was lack of teacher time. And, third, no group of

participants (students, teachers, or parents) would choose the multigrade structure again. The components of the “preferred model” for multigrade grouping that emerged from these suggestions included well trained teachers, mature and independent students of average to high ability and limited class size. The respondents also recommended only Grade 3 and 4; grade 4 and 5 combination classes for future multigrade grouping.

Lungwangwa, (1990) assessed the effectiveness of the multigrade system in providing primary education in rural areas of Zambia and the results of the study indicated that the system provided an opportunity for rural children to complete a full primary education at a low cost to the child’s family and the government. The system helped schools gain increased community support.

Miller (1991) reviewed selected research studies of multigrade classrooms in Canada, Finland and eight developing nations and United States. The following issues were emphasized by the principals and teachers regarding multigrade instruction viz.,

- 1) teachers need special methods and must be well organized to teach;
- 2) teachers should be trained to teach multigrade classrooms;
- 3) teachers should be prepared to use cross age tutoring;
- 4) social studies and science instruction need special adaptations;
- 5) there is a need for teaching materials;
- 6) there is a need for individualized teaching;
- 7) incentive should be provided for multigrade teachers.

Studies of instruction in multigrade classrooms across rural America reveal that teachers use various methods to juggle the wide level of student needs. Further, key variables were identified which are affecting multigrade teaching were :

- 1) Classroom organization
- 2) Classroom management
- 3) Instructional and curriculum organization.
- 4) Instructional delivery and grouping
- 5) Self directed learning strategies
- 6) Peer tutoring

Stimson (1991) investigated the effects of multigrade classes on student achievement and also investigated whether achievement was greater in the upper or lower level of multigrade classes. Results indicated a significant difference in the reading, mathematics and language achievement of student in two groups (single grade or multi grade). Students in single grade classes achieve significantly higher in reading, mathematics and language than their counterparts in multigrade classes. Finally, the study found that students in the upper level of a multigrade class achieved greater academic gains than students in the lower level of a multigrade class.

Dennis (1993) developed a “Distinctive Approach” for multi grade classrooms with the purpose to develop curricular and pedagogical solutions to the problems identified with multigrade classrooms and concluded that multigrade classrooms are (1) a prevalent and permanent feature of education in New Foundland; (2) a unique form of educational organisation; and (3) potentially feasible sites for high quality education.

Das (1997) assessed the management of learning situation in one/two teacher primary schools and to find out the effectiveness of the strategy. Findings revealed that peer tutoring and senior tutoring could be effectively practiced in multi grade schools. Further, peer tutoring was preferable and could be practiced more conveniently because of the following reasons : (a) senior tutors may not be always able to give time to their juniors, and (b) peer tutors found tutoring more comfortable and enjoyable than senior tutors.

Sharma (1997) studied the impact of interventional strategies on attainment of MLL competencies in multigrade schools. Findings of the study revealed that teaching and learning materials helped multi grade students to learn MLL competencies better in school subjects. Further teachers’ academic background and interest was more influencing factor in helping them attain MLL competencies. Finally, weekly timetable planning and selective setting arrangement of the students also contributed towards better learning.

Bhattacharjee (1998) studied on MLL based pedagogic interventions for implementation in multi grade school situations and suggested content related

interventions, management related interventions; group management strategies and strategies for operationalisation of multi grade teaching.

Rao and Reddy (1998) conducted a study on multi grade teaching with the objectives to observe how multi grade teaching is performed in primary schools to study the problems involved in multigrade teaching. Major findings of the study revealed that pupils were given more of writing and less of reading and oral work in order to avoid disturbance. Time-tables were not framed as per the multigrade requirements. Further, pupils were made to mechanically write down answers to various questions from the text-books. Next in most of the schools, materials supplied under schemes such as Operational Blackboard.

Malathi (1999) conducted a descriptive study to investigate the conditions of one-teacher schools in the state of Tamil Nadu, India and found that one-teacher primary schools are in poor condition. They lack basic facilities such as toilets, water and electricity. Additionally, these schools need basic educational materials and play ground equipment.

Schatmeyer (2001) examined the factors that promote or impede change efforts in one school's attempt to change from a traditional single grade structure to a non graded multiage structure and the study revealed that there was no significant difference in student achievement between non-graded multiage and single grade classes. Data were also collected relative to affective measures showing children in multiage classrooms with higher mean scores than children in single grade classrooms.

Vacca and Kasten (2001) studied to examine factors that promote or impede change efforts in one school attempt to change from a traditional single grade structure to a non-graded multiage structure. Further, academic achievement and self-esteem of students in the multiage classrooms was compared with student in single grade classrooms. Findings revealed that no significant difference in student achievement was found between multiage and single grade classes. Further, the mean score of children in non-graded multiage classroom was higher than that of their counterpart.

Parasnis and Deshpande (2003) presented a paper on “Study of the impact of the Multigrade Teaching Project” With the objectives to compare the effectiveness of alternative strategies under multigrade teaching and non multigrade teaching schools. Findings of the study revealed that before getting multigrade teaching training, teachers teaching strategies were not at all cost effective in terms of time allotted to each grade and in keeping the students engaged in a constructive way. Three important strategies were being practiced they were peer instruction, co-operative group ware and individualized self learning programmes. Finally, multigrade teaching is demanding more planning than monograde teaching in certain areas planning was more difficult because of the way in which curriculum is structured. Classroom management was more complicated because of the necessity of having more than one group on task at the same time, teachers are required to write multiple lesson plans to be implemented simultaneously.

Mehta S. (2003) made a comprehensive study of multi-graded primary school of Gujarat State and the finding revealed that most of the schools were class III and IV was combine and gave priority to mathematics teaching followed by Gujarati teaching. Further, 88.48 percent of the schools teachers do not follow time-table. 92.80 percent of the teachers followed grouping method. 91.52 percent of the respondents believe that there is a need to change the syllabus.

2.5 AN OVERVIEW OF THE REVIEWED LITERATURE

Studies reviewed were sub-divided into three main themes (i) studies related to environmental education at primary level (ii) studies related to intervention programme at primary level (iii) studies related to multi-grade teaching.

Studies conducted by **UNO (1972)**, **Johnston (1974)**, **Richmond (1977)**, **Joshi (1981)**, **Christane (1990)**, **Gilbertson (1990)**, **Gopalkrishnan (1992)**, and **Surkar (1996)**, emphasized the need and importance of environmental education at primary school level which will develop insight and skills needed to influence not only the environmental attitudes and behaviour in the students but also re-orient the values regarding the importance of environmental studies.

Further, **Howie (1973), Manuel (1987), Rajput (1988), Derman (1992), Gopalkrishnan (1992), Shih (1992), Dufour, Courter, Linda et al (1997), Lalitha (1997), Tomar (1998)** emphasized on Intervention programme in environmental education either in the form of modules or strategies or methods and medias and the studies revealed that Intervention in Instruction leads to better learning. Further, also emphasized on child-child approach through which children enjoy learning. A study conducted by **Prasad (1990)** also emphasized on the effective transaction in the classroom improved Teaching Learning strategies and quality of learning and concluded that activity based and curricular based modules were more useful and effective.

Harrison (1989) emphasized on ability grouping and teachers reflected that intervention strategies are found to be more effective in mixed ability and large size class. **Jone (1978), Peyton (1978), Shih (1993), Chutani and Lal (1998)** and **Joseph (1998)** identified the training needs for the teachers further emphasized on need and importance of pre-service or in-service training to the primary school teachers in order to make teaching-learning process effective. **Selim (1977)** through UNESCO paper described status of teacher training for environmental education that national and international attention has been focussed on the need to train teacher who are competent environmental educators.

Studies conducted by **Mali (1984), Miller (1991), Stimson Rao and Reddy (1998)** emphasized on need for intervention programme and identified variables affecting multigrade teaching. **Chikermane (1964)** also concluded that new experimental method achieved better result in single teacher schools. Further, **Mishra (1989), Bhattacharjee (1998)** also stressed on need for content related interventions, management related intervention and strategies for operationalisation of multigrade teaching and identified the need for more in-service training in all the areas of the syllabus. **Furch-Kraffi (1978), Schatmeyer (2001) and Vacca and Kasten (2001)** found that achievement was same in single grade structure and non-graded multi age structure. Further,

Deshpande (2003) emphasized on need for special training for multigrade teaching.

In order to sum up investigator would like to quote the study conducted by **Dunakhe (1984)** which emphasized on research needs in primary education and located the areas of research such as absenteeism, administration, classifications or students according to ability, curriculum development and practices, preparation of quality educational materials, teacher training textbooks and school timings.

2.6 IMPLICATIONS OF THE REVIEWED STUDIES

From the above studies it can be implied that :

Since environmental education is assuming a greater importance in Indian school curricula and it is yet to take a strong root, the perceptions of teachers regarding the area need to be explored. Researches conducted on academic achievement of students in different subjects at primary educational level in India have clearly shown the positive impact of project intervention on learners achievement. Whereas, those schools where no such conscious deliberate interventions have taken place the learners' achievement has been reflected adversely. Moreover, the number of studies carried out to see achievement in language and mathematics as that in environment is very negligible (**Tomar, 1998**).

Thus, there is a need for a balanced curriculum with varied activities and experiences providing the depth for developing sensitivity towards environment as environmental crisis exists.

Environmental education as an approach and a new thrust has its own content and methodological characteristics. Teachers have to understand and internalise these characteristics to bring in the required focus in their teaching. Teachers, should be sensitized to environmental education and motivated to innovate and experiment with different strategies for incorporation of environmental education. Thus, the challenge before the teachers are therefore immense, considering the over expectations and poor resources at their disposal to deliver

the good. Thus, to help teachers to know their teaching learning problems and to solve them by pooling their resources, wisdom and to help teachers to employ more effective methods of teaching present study is an attempt.

There is a need for developing adequate strategies and methods in environmental education as the strategies employed in imparting environmental education is the same as those used in teaching other subject although, environmental education require special adaptation of strategy. Thus, here is the need for training the teachers from time to time as the responsibility of the teacher to impart environmental education effectively is important.

The studies reviewed also implies that whenever, the subject of environmental science has been taught through environmental approach it has proved better. Whenever, the subject has been taught through media/methods or activity based approach it has not only improved the academic achievement of students but has positively affected other aspects of the development too.

There are negligible studies conducted in multi-grade teaching/single teacher schools which has been seen as one of the issue in primary education. Although UNESCO, 1998 quoted that seventy percent of the schools in India are following multigrade system and teachers in this type of system faced problem in handling two or more than two grades together. Thus, there is a need for in-service training. Considering the above implied aspects, the present study is formulated.