CHAPTER - I
INTRODUCTION

1.1.0 CREATIVITY IN THE PRESENT DAY

Creativity is the genesis of all most all the developments of the world. Recent theories of creativity in psychiatry and psychology in United States and other Western Countries support the concept of creativity as a higher mental process as compared to the earlier explanations of creative thinking that creativity is a regressive thought process and lower than rational and logical thought process (Torrance, 1979, p-4). These earlier explanations of creativity as the regressive process are losing their importance day by day. Rollo May (1975) has maintained that creative processes aren't irrational but are 'super rational', bringing the intellectual, volitional and emotional functions into play together. He believes that the creative thinking represents the highest degree of emotional health and is the expression of normal people in the process of actualising themselves. He sees it as a process of involving a realistic encounter with a problem, intense absorption and involvement, heightened consciousness or awareness, and interrelating. Albert Rothenberg (1976, a, b) a Yale University psychiatrist, has introduced two concepts that are definitely non-regressive in nature to explain creativity. One of these, Janusian thinking (Rothenberg, 1976a), consists of actively conceiving two or more opposite, contradictory and antithetical concepts, images or ideas simultaneously. He sees this, not as a primary process mode of thought but as an advanced type of abstract thinking. The second of these, homospatial thinking (Rothenberg 1976b), consists of actively conceiving two or more discrete entities occupying the same space, a conception leading to the articulation of new identities. Neither Janusian thinking nor homospatial thinking is primitive or regressive. They are forms of thought that transcend logic and ordinary rational modes of thought. Both of them are important in creative thinking.

Individual and corporate creativity / imagination have now become a topic of study by cognitive psychologists, philosophers, educationists and management
experts alike (Stern, 1992). Anna Craft (2000) in her book “Creativity Across the Primary Curriculum” argued that the end of the twentieth century is witnessing a massive shift in attitude to and importance of creativity and imagination in every lives and domains of knowledge. We need transformation at both personal and system level (p-144). Further more, the study of the inventive and innovative aspects of human intellect is so important today that it has been described by Bruner (1962) as restoring dignity to the human being in a computer dominated age and by Toynbee (1962) as a vital aspect of nation’s resources.

Moreover in the light of ‘knowledge explosion’ which is taking place now a days and the consequent need for ever wider use of human, scientific and technological ingenuity, it has become essential that a nation must make the best possible use of all it’s creative resources if it is even to maintain its position in the modern world. The present world has become the world of competitions. Each country is competing with others in order to reach at the climax of development. It is an unarguable and unchallengeable fact that only those countries will be the nearer to the peak of developmental pillars, which will use their creative talents in best possible manners. We are living in a world of brain race in which creativity / imagination plays the major roles.

1.1.1 ANTI-CREATIVE ASPECTS OF CONVENTIONAL / TRADITIONAL CLASSROOM

The conventional classroom is oriented towards successful solution of clearly defined problems through finding the correct / right answers. The teacher is assumed to be in a position to provide an authoritative ‘correct’ solution if s/he chooses to do so, and it is implicit in the interaction between teacher, pupil and subject matter that logic, facts and laws will provide answers to all problems. In fact, the usual task with which the student finds himself faced is of ‘zeroing in’ on a uniquely determined, lawful ‘answer’ to a fully defined, clearly presented problem. The role of teacher in such a classroom is to provide the student with the correct technique on the first occasion that a new problem is encountered, and then to see to it that the child reproduces the recently demonstrated
technique when s/he comes across a similar problem. In such type of teaching-learning process emphasis is given more on the discrete facts for their own sake, excessive concern with the importance of memorization, repeated drill of the pin pointed learning materials, mechanical learning outcomes and learning procedures, accuracy in problem solving and on the rote learning procedure as the strategy for acquiring the readymade knowledge and skills.

In this traditional kind of classroom, marked difference is found between the presented problem and the discovered problem, between the presented solution and the discovered solution, between the produced product and merely the reproduced product etc. The learning acquired in this type of conventional classroom seems to be discrete, compartmental and unrelated to the other areas of knowledge. That type of class room is based on supposition that no knowledge other than that which is embodied in accepted facts and laws is valid, and that it is impossible for the student to benefit from what s/he does not know in the same way as s/he benefits from what s/he is able to regurgitate at will.

1.1.2 PRESENT SYSTEM OF CLASS ROOMS ARE GENERALLY ANTI-CREATIVE: RESEARCH AND LITERARY EVIDENCES

Much of the researches have been conducted in the area of creativity in classrooms and the results of such researches reveal that mostly the present day classrooms are anti-creative. The researchers like Necka (1994), Tolliver (1985), Alencar (1999a), Paulovich (1993), and Cole, Sugioka and Yamagata – Lynch (1999) criticized the contemporary educational systems for several practices, which are detrimental to the development of the creative potential. Necka (1994) recalled that the typical school is anti-creative, being a place, which is not likely to develop students' natural resources of imagination, ingenuity and productivity. Tolliver (1985) suggested that educators inhibit creative students through the regulatory function of education, which seeks to standardize and socialize students towards specific goals. Paulovich (1993) criticized graduate education for not encouraging creative and independent thought and for not allowing students to be creative. MacKinnon (1978) as well as Cole, Sugioka and Yamagata – Lynch (1999) acknowledged that most school environments don't support creative development and many even suppress creative expression.
Alencar (1999a) described several inhibiting practices to creativity in the educational setting including among others:

a) emphasis on the correct response, reinforcing students' fear of making errors and their fear of failure,

b) exaggerated emphasis on the reproduction of knowledge overloading the students' memory with irrelevant or out of context information,

c) low expectations of the teachers regarding the students' creative potentials, and

d) lack of consideration of fantasy and imagination as an important aspect to be taken into account.

Guilford (1959) observed that “Our creative powers are developed through the exercise of our divergent thinking abilities and this component of intellect has been grossly neglected in our elementary schools”.

The enormous waste of creative talent due to the lack of opportunities for developing and expressing this creative potential has also been discussed by many authors (Alencar, 1995, 1996; Alencar, Fleith & Virgolim, 1995; Montuory & Purser, 1995). It has been noted by them that schools emphasize knowledge acquisition; on the other hand, little attention has been placed on the development of strategies and techniques that can foster students' creative potential. The results of the study conducted by Alencar, Fleith and Martinez (2003) suggested that in Brazilian and Mexican societies, University students have not enough opportunities to express new ideas and have not sufficiently stimulated or recognized for their creative expression. Also, Alencar and et.al. (2003) support the views that schools emphasize knowledge acquisition; on the other hand, little attention has been placed on the development of strategies and techniques that can foster students' creative potential.

Challenge of Education – A Policy perspective (1985), also expressed its concern on the creativity of school students in the following way:

“It has been noticed that the vast majority of students are not exposed to the challenge which would develop their potential for creativity and innovation
because the whole system of education is characterized by class works and examinations which emphasize rote learning and repetitive exercises. Undoubtedly, this will require the overhaul of pedagogic methodology as well as the curricula and textual materials. These, however, will not be enough. Something will have to be done to change the orientation, work ethics, knowledge and skills of the teacher, who will have to function much more creatively in a learning rather than a teaching environment, in which they will have to struggle continuously with new ideas as well as new technologies (p.11)".

1.1.3 ANTI-CREATIVE NATURE OF THE CONVENTIONAL TEST ITEMS AND TEACHING – LEARNING STRATEGIES

Nature of the conventional test items: -

The most commonly used tests of conventional kind call for finding a single correct response to a clearly defined test item. The main task facing the person taking such tests is to 'converge' upon that response which best fits the item – s/he may even be penalized and marked wrong for responding in an uncommon way, even though his/her response can be shown to be equally valid as the answer which the test manual labels the correct one. Basically, the responses to the conventional test require the subject to recall the previously learned materials and recognize the new examples of things, which s/he has seen before. Items in such tests are regarded as complete units in themselves, need no alternation or 'improvement' by the subject and are solvable by the application of logic.

These conventional test items have much similarity with the traditional kind of intelligence tests. The intelligence test items of traditional kind usually emphasize on only one correct answer to each problem and the tests can be scored simply counting the number of correct responses. Just like the traditional intelligence tests, the traditional class room tests require the subject to apply what he has learned in the past to a new problem or which require him/her to abstract some rules from examples and then reapply them. In both the cases the
correctness is decided on the basis of logic, laws, principles and the like. Both types of tests are primarily convergent in content and the child's job is to sort out the single correct answer for the each test item.

Examples of Conventional tests: In the area of "social studies" the examples of some conventional test items are given below:

- Who was the father of emperor Ashoka?
- Which of the following gases found in highest degree in the atmosphere. (Oxygen, Nitrogen, Carbon dioxide).
- Orderly write the name of the following states from bigger to smaller.
  Name of the States – Maharashtra, Goa, Kerala and West Bengal.

Nature of the Conventional teaching – learning Strategies: Most of the teachings learning strategies of conventional kind are primarily teacher centred. In this kind of teaching learning process, the teacher acts as the authoritarian authority. These conventional teaching learning strategies are more called teaching strategies than the learning strategies. Here, the teacher remains at the centre of teaching – learning. In conventional teaching – learning process the sayings of the teacher act as the Veda (the only truth) or unchallenged truth for the students. In such classrooms, those students will act as meritorious students, who will memorize the despatches of the teacher by hook or crook and reproduce those when needed. The most commonly conventional teaching – learning strategies follow the methods like memorization method, lecture method, chalk and talk method etc.

1.1.4 WHAT SHOULD AN IDEAL CLASSROOM PROVIDE IN PRESENT AGE

The preceding paragraphs clearly stated that most of the conventional classrooms are stereotype, one-dimensional, convergent type and logistic in nature. For the present rapid and first changing world such classes seem to be inappropriate and inadequate agencies of learning. In this ‘media race’, ‘brain race’ and ‘knowledge race’ society, these types of classrooms act as the soundless drum or water less vessel or meaningless matter.
An ideal classroom ought to lay great emphasis on the importance of discovering both problems and solutions. It should emphasize on the point that skills acquired in one situation may be transferred until they are suitable for use in different situations. It should emphasize on the point that – there are many ways of reaching a solution to one given problem, so the child should be made capable of responding one situation in a variety of ways. In this type of classroom, the child must be encouraged always to seek an alternative approach of reaction to a given problem / situation which differs from that given in the textbook. In this type of classroom, the teacher should be willing to introduce new and unknown elements in to curriculum and to entertain ideas, which may ever be unknown either to himself/herself or to the textbook. Here the teacher shouldn’t be an omniscient provider of knowledge or skills, rather his/her aim should be wider one. He should provide a conducive atmosphere and much scope to the students, so that the students can be imaginative and cognitively flexible.

Therefore, developing the divergent thinking ability should be an important aim of our classroom teaching. The task of the teacher is to provide the students the sufficient scope in his/her all the activities like teaching strategies, school atmosphere, testing process etc. for many ways of thinking. S/he should provide the children such type of test items which would yield many answers and s/he should encourage the students to meet the same situation / problem from varied perspectives.

1.1.5 WHY SHOULD WE MAKE OUR CLASSROOMS CREATIVITY CENTRED OR

NEED AND IMPORTANCE OF DEVELOPING CREATIVITY AMONG SCHOOL STUDENTS

Creativity is a universal ability. This ability is found in each and every individual in more or less degree. We neither can consider each student in the class as creative like Shakespeare and Einstein nor we can say a student as not creative. Creativity is an important behavioural characteristic of each individual and it is reflected in individual's behaviour in many ways. We find degree
differences (some individuals possess creativity in higher degree whereas others possess in lower degree), dimensional differences (some individuals possess creativity in one dimension whereas others possess indifferent dimensions) and area differences (some individuals possess creativity in one area whereas some other individuals possess creativity in many areas) in creativity. Jain (2000) also supported this view and stated, like intelligence, creativity is also a normally distributed attribute in a population.

A creative classroom based on the rationale that “All children are capable of asking and wondering, of guessing and supposing, and of questioning and speculating, and so a curriculum which can foster all these abilities must be included / followed in our school.” A creative centred classroom will help all the children of the class to develop their creative abilities in to the higher level.

IEC (1964-66), NPE (1986,92) and NCERT Curriculum Framework (1987) have all along emphasized the need to develop in the child spontaneity, curiosity, independence in thinking, originality, courage to ask questions, scientific temper and, in short, creative thinking skills and abilities.

Creativity is the essence of human perfection. It ensures the development of child in the right direction. The development of creativity goes beyond the achievement of imitative knowledge. Therefore, for the creative child, education should aim at something more than mechanical growth. It (education) must cater to the inherent creative cravings of the child for beyonding of consciousness. In fact, the growth for beyonding of consciousness is one of the fundamental characteristics of creativity for which the education of the child striving for creative poignancy should be sincerely geared to perfection (Chakrabarti, 1994, p.33).

It is wrong notion among many of the intelligentsia, that, creative children are neurotic patients. Rather, it is a true fact that to disallow the children in schools for creative activity is to be non-conformists and is to push them to be neurotic patients. If the creative talents of the children don’t enjoy sufficient freedom and nourishment in their environment, then, there is a definite viability of loss of insight, which affects the creative abilities of the children as follows:

(i) They suffer from terrible indecision. Creativity in them becomes crushingly crippled.
(ii) Children lacking freedom in creativity can't be honest within themselves. This self-deception is a positive factor that greatly contributes to their neurotic behaviour in creative deficiencies.

(iii) The difference between decision and committed action grows higher and higher. Ultimately, the creative child becomes a neurotic patient. The self-ignorance in him/her infects his/her creativity.

All children must be provided all the necessary conditions for developing their own creativity. Modern psychotherapy also gives a positive signal for neurotic patients frantically craving for positive self-image in freedom and creativity. In the words of Allport (1958):

"Psycho-therapy gives hope that a corrected self image, a more rational assessment of one's behaviour, will reduce compulsions, induce order, and free channels of development to accord with chosen aims".

The studies conducted by Tisdall (1962), Rouse (1965), and Cawley and Chase (1967) suggest that even mentally retarded children are capable of thinking creatively.

Croplay (1970) rightly argued in favour of making the class rooms creativity centred and told, "in case of a student with marked creative potential a creativity centred classroom will help him to develop his creative talents to the full while, in case of non-creative, approaching knowledge through creativity will help him to understand the way in which knowledge is organized and will make him a more efficient finder of adaptive solutions". Croplay also told that creative skills are of vital importance these days and it is extremely important that teachers encourage their development to the fullest possible degree.

1.1.6 CAN CREATIVITY BE TAUGHT

Can creativity be taught? - Was a challenging problem on the part of the researchers and scholars in the field of education and psychology for a longer period of time in the past. Many of the people of the past were thinking that creativity is an inherited quality and the environment has a little to do for it. But gone are those days when the people were making the roaring sound that creative persons are born but not made. Now all most all the educationists,
psychologists and other scholars in the field of creativity are agreed on the point that teaching — learning plays a vital role in developing creative abilities in individual students.

Realizing the importance of developing creativity among the students, the planners, teachers as well as the other competent personnel in the school / education should try their level best to extend the present traditional classrooms to the creativity centred classrooms in order to utilize the children’s enquiry, inventive and innovative abilities.

In the area of creativity in school education, a number of studies have investigated the relationship between the teaching methods and the fostering of creative skills; and the results found in such studies are encouraging. The studies of Parnes and Meadow (1959, 1960), Osborn (1957), Sullivan and Tylor (1967) and Maltzman et.al. (1958, 60) have shown that creative abilities of the individuals can be enhanced.

Maltzman, Bogartz and Breger (1958), for example, demonstrated an increase in the originality of responses to the ‘Unusual uses’ test with appropriate training and Maltzman & others also demonstrated in a second study (Maltzman, Simon, Raskin and Licht, 1960) that this effect persisted over time and didn’t just apply to immediate re administration of the test. Parnes and Meadow (1959) showed that training in ‘brain storming’ increased in scores on creative problem solving, and also (Parnes and Meadow, 1960) showed that the improvement persisted even as much as four years after the training had been given. Torrance (1961) reported the result of a study, which has been conducted by him with the primary school children. He set out to show whether children in first three grades could be taught to produce ideas by the use of appropriate teaching methods, and he found that in the second and third grades, trained children consistently surpassed untrained on all the measures of creativity which he employed. He concluded that school children ‘...can in a short time be taught a set of principles that will enable them to produce more and better ideas then they would have without training’? Crawford (1954) maintains that it is a foolish to say that the process of creative thought cann’t be taught as to say that medicine or engineering cann’t be taught. Lazarowitz and Huppert (1980) in their study aimed
at developing creative thinking in the secondary school biology students and found that short term treatment of two lessons produced difference in fluency and flexibility scores of the students.

1.1.7 TEACHING OF CREATIVITY AS THE GOOD TEACHING

Many of the researches support the statement that 'Teaching of creativity as the good teaching'. Craft (2000) told, "I would argue, as others have done, that creative teaching is 'good teaching'. Quite simply, teaching is a job which requires and involves fostering creativity." Those who have written on creativity in education talk about 'creativity as a part of normality, as a part of every day actions and ideas' (Halliwell, 1993, p-69). Halliwell describes creativity in teaching as being 'inventive flexibility' because no two groups of learners are identical, and because no two days are the same. Flexibility, she suggests, is underpinned by anticipation and imagination, backed up by strong organization and judgement (control over ideas). Creative teaching is, she suggests, consciously monitored. It depends then, on the following qualities:

- a clear sense of need;
- the ability to read a situation;
- the willingness to take risk;
- the ability to monitor and evaluate events.

Jeffrey and Woods' (1997, p-31) study draws attention to the need for trust in a creative classroom. The emotional climate of the classroom needs to offer each child personal confidence and security; as Shallcross writes, 'the ground rules are personal guarantees that allow [children] to grow at their own rate, retain the privacy of their work until they are ready to share it, and prize their possible differences (1981, p-19)'.

In this respect Craft (2000, p-126) stated 'I want to suggest that giving the fostering of creativity a higher priority in classroom may mean reframing practice at the level of individual as well as collective (School, LEA, educational system)'.

Moore (1981) and Orstein (1961) have shown, creative learning is more economical than mere rote learning, and it is even true to say that some children who learn poorly by conventional methods are effective learners when their
teachers utilize their creative thinking abilities. Thus it can be concluded from their views that teaching techniques, which utilize students’ creative thinking abilities, promote more effective and efficient learning than those methods which ignore them.

1.1.8 AIMS AND OBJECTIVES OF THE TEACHING IN OUR SCHOOLS – RELATING TO CREATIVITY OF OUR STUDENTS

Development of creativity has been regarded as one of the most significant aims of present educational system. For this purpose, each and every classroom should be creativity centred and all most all the teaching – learning strategies should be directed towards it. The aims and objectives of teaching in our schools relating to creativity bring the following changes among the students/pupils:

- It helps the learners to ventilate their creative talents at a higher degree.
- It helps the learners to manifest their divergent and distinctive qualities properly.
- It encourages the learners for critical and constructive thinking.
- It helps the learners to do each and every work creatively.
- It develops a sense of appreciation among the learners towards all the creative, innovative and new avenues available.
- It brings each and every child / learner to the mainstream of creative excellence.
- It discourages the rote and rudimentary knowledge and skills among the learners.
- It helps the learners to enjoy numerous facilities for the enrichment of their divergent thinking abilities. These may include the use of papers, charts, models, folders, pamphlets, pictures etc. along with textbooks. Besides these, the child may be engaged in numerous practical activities like dramatic functions, role playing music, dance, song, drawing, painting etc.
- It warns the creative child against exploitations of creative genius (evolving new ideas and innovations on creativity) by being a pray to temptations, vague ideas, liable suggestions etc. which either directly or indirectly, or which either partially or fully crush the creative abilities.
It encourages each learner to reach at certain standard of creativity without falling in the traditional lines of creativity.

It encourages the learners to achieve the minimum levels of divergent thinking both in curricular and co-curricular areas of the school learning.

These above stated aims and objectives are some of the specific aims and objectives of teaching in our school relating to creative abilities. Here is given below some of the general aims and objectives of teaching in our schools relating to creativity.

- It helps the learners to learn at their own pace and own rate.
- It gives respect to the psychology of the learners.
- It shows the ways of self-adjustment, self-maintenance and self-guidance.
- It makes the life of the learner meaningful and cheerful.
- It helps the learners to use and understand their environment in best possible manners.
- It helps the learners to reach at the excellence level in their every aspects of life.
- It allows the learners to enjoy maximum freedom and enjoy a conducive atmosphere in their learning process.

The creativity centred teaching-learning approach can help the learners to achieve all these aims and objectives in a well-balanced manner. Therefore, our educational institutions, specifically schools must be directed towards the development of creativity among the learners.

1.1.9 CAN WE FOSTER CREATIVE ABILITIES THROUGH OUR SCHOOL SUBJECTS OR CHALLENGE FOR INFUSING CREATIVE ABILITY ALONG WITH OTHER ABILITIES IN OUR SCHOOL CURRICULUM

"Teaching for development of creative abilities" has been facing long-term debates since the beginning years of the second part of twentieth century to till now. Some of such debatable questions are:-

a) Whether creativity can be taught formally as a subject in our school curriculum or creative ability can be infused along with other abilities and it can be achieved / developed through different
formal school subjects / content areas (i.e. social studies, mathematics, science languages etc.) taught in our schools.

b) Whether creative ability can be developed through all the school subjects (i.e., social studies, mathematics, languages etc.) or it can be developed through some specific school subjects.

**Regarding the first question**, it would be easier, better and meaningful, if one accepts the second bit, i.e. – challenge must be taken to infuse creative ability along with other abilities and to achieve this creative ability through the teaching of different school subjects. Croplay (1970, p-83) supported this statement and told, “attempts to teach creativity formally as a subject in the school curriculum are unlikely to meet with much success”. Croplay tried to prove his statement showing two reasons. In first place, the exact nature of creativity is still unknown (just as the exact nature of intelligence is unknown, for that matter). Secondly, creativity is best thought of as a complex process, which involves a cluster of techniques and a characteristic approach to problems; rather than as a thing or quantity. Teaching for creativity, then, involves emphasis on the findings of solutions to new problems through reappraisal of the known, the extending of thinking in to 'illogical' and divergent areas, the deducing of previously unseen relationships between apparently separate domains of experience, and so on, rather than the transmission of known corpus of knowledge about creativity, or teaching of a definable creative skill. Therefore, the challenges have been taken by many scholars / researchers / teachers / experts in order to infuse creativity ability along with many other abilities and to develop creative ability along with many other abilities through the teaching of different school subjects like social studies, sciences, mathematics, languages etc. The studies of Torrence (1961), Lazarowitz and Huppert (1980) and many other studies provide successful evidences that creativity can be developed through teaching of different school subjects.

From the above analysis one can be clear that, a teacher in a class should make little effort for teaching creativity as a formal school subject in the school. And, therefore, from the above discussion it has become apparent that
creative abilities must be developed among our school children through the teaching of different school subjects / content areas.

If it becomes true that, creative ability can be developed through different school subjects, then further question arises, whether separate groups of contents / subject matters would be developed by our curriculum planners for teaching of creative ability or creative ability would be developed among our school children / students through the existing school subjects like languages, sciences, social sciences, art and craft etc. which are traditionally taught in the classroom. In order to answer this question the following discussions will be more helpful.

It is a commonly observed fact that creative ability is one aspect of human behaviour just like many other aspects of human behaviour like cognitive aspects (knowledge, understanding, application etc.), affective aspects (feeling, attitudes, values etc.) and so on. But the speciality of this creative ability is that, it is a type of ability, which is reflected in each domain of human behaviour (both in cognitive & non-cognitive domain) but in a differential or special form. This form is nothing but the divergent thinking form. For this reason, the meaning of creativity is very much closer to divergent thinking ability and this view is supported by Guilford (1967) and Torrance (1963). This is a ability which not only affects all most all areas of human behaviour but this ability touches all most all applicability areas of human life, all most all the fields of study as well as all the areas of knowledge. It will be easier, better, feasible and economical if the teacher will teach / develop the creative abilities among our school students through the existing school subjects i.e., language, literature, science, mathematics, social sciences etc. The researchers / thinkers / curriculum planners / experts in many cases have taken challenges to include creative ability along with many other cognitive and non-cognitive abilities and to develop creative ability along with many other cognitive and non-cognitive abilities through the teaching of existing school subjects / content matters / topics like social studies, general sciences, mathematics etc. in the schools due to the following reasons:-

(i) We know that creativity is one important aspect of our behaviour like the other aspects of behaviour. And, since, the same school
subjects / content materials (i.e., social studies, mathematics, sciences, languages, literatures, arts and crafts etc.) are used for the development of different aspects of human behaviour, so it would be psychologically viable to use the same content materials / subject matters for the development of the creative abilities.

(ii) It is true that each and every school subject / content have some areas which can facilitate divergent thinking along with convergent thinking. And, we know creativity is very much related with divergent thinking. So, that teaching would be effective / psychological / meaningful / broad based which facilitate convergent as well as divergent thinking simultaneously.

(iii) Further question arises, if separate subject matters / contents will be developed for the teaching of creative ability, then, why not the separate subject matters / contents will be taught for the development of the each and every ability.

It is true that if the teacher would teach separate contents for the development of the creative ability of the individuals, then, it would create the following problems in the teaching learning process.

* Excess fragmentation of the subject matters or development of the separate content matters for the teaching of separate abilities creates unsound development in the children's mind or mental buzzing among them.
* It goes against the integrated development of the learners.
* It helps the learner to achieve fragmented development of his / her abilities but not the holistic development of his / her abilities.
* It may go against the achievement of broad based and integrated knowledge and skills among the students.
* Emphasis on specialized subject matters for the development of the specialized abilities many a times paralyses our educational system. This type of emphasis
makes our students unable to recognize and use our knowledge at newer and different situations.

* It goes against the broad based approach to curriculum framing and implementations.

(iv) Preparing separate content materials / subject matters for the teaching of creative ability may suffer from the following technical difficulties / problems.

* Development of creative ability through the teaching of separate contents has the less feasibility for our school system. Because, the development of creative ability through the teaching of separate contents requires more time / more periods in the schools and more number of teachers. But in our school the number of teachers are very less and at present the teacher-pupil ratio is 1:60 approximately; and it is also a fact that there are many primary schools of our country where the requirements of OB scheme aren't fulfilled. In modern day, the schooling hour in a day is very less also and within this short period of time it is very difficult to provide specific periods for the development of creative ability through teaching of separate school subjects.

* Since the school children aren't mature enough, so, it is not so good to teach separate subjects for the development of creative abilities, rather, it will be good to develop creative ability along with other abilities through the teaching of same school subjects.

* Providing the additional contents for the development of creative abilities becomes a burden for the young students / learners.

To sum up, one can say it would better if the existing school subjects will be used for the development of the creative ability of the children instead of providing separate contents for (other than the existing school subjects) the development of the creative ability.
Regarding the second question, it is a general accepted fact that creativity can be developed through all the existing school subjects. All the school subjects starting from language, literature to science, art and craft have their own divergent / creative thinking area but the ranges of scope for divergent thinking vary from subject to subject. The subjects like language, literature, social studies, art and craft etc. provide greater scope to the students to develop their creative abilities than the subjects like science, mathematics etc. Supporting this view, back in 1970s, Hudson (1973) suggested that the children who excel in science, mathematics, and technology also do well on traditional I.Q. test, where there is only one right answer. Put another way, they are good at convergent thinking, which involves just one solution to the problem. In contrast, those children who are divergent thinkers find several possibilities for each question; tend to excel in the arts. Hudson's thesis was that the arts and sciences demand different kind of thinking. One implication of his view is that science, math, technology etc. provide less scope for divergent thinking than the arts subjects like literature, modern language, history etc.

1.1.10 WHY AND HOW DIVERGENT THINKING ABILITY AND CREATIVE THINKING ABILITY ARE USED INTERCHANGEABLY

In the field of psychological and educational measurement, the term "creativity" has been widely used as similar with "divergent thinking" by most of the researchers, experts, psychologists etc. This creative thinking has also many other kindred concepts like free thinking, open thinking, flexible thinking etc. Bartlett (1958) describes creativity as “open thinking” and Guilford (1967) describes creativity as “divergent production ability”.

There are many reasons for which creative thinking ability is used interchangeably with divergent thinking ability and all most all the creative ability tests consist the questions, which require the divergent answers. Some of the reasons for which creativity is used interchangeably with divergent thinking are described in the following ways:
Like intelligence, creativity is a psychological construct. A little is known to us about creativity. The meaning of creativity differs from culture to culture, person to person and time to time. There is not exact nature of creativity or not exact criterion for selecting highly creative and low creative individuals. Therefore, different authors have employed different criteria to differentiate between highly creative individuals and less creative individuals. Elduson (1950) identified creative individuals by their pursuit of acknowledged ‘creative activities’ while Rossman (1931), Clifford (1958), and Drevdahl and Cattel (1958) as a criterion of creativity, the extent to which their subjects have published works like books or piece of sculpture. Hence, there is no consensus concerning just how creativity is to be recognized. However, most of the scholars, researchers and experts define creativity in terms of divergent thinking ability. Further more, nobody knows whether this divergent thinking tests predict creative behaviour in later life, in the same way as I.Q. tests predict academic achievement and ‘doing well’ in life, and until an investigation like Terman’s (1925) study of intelligence is carried out, this point will remains unclear.

Although, the concept of creativity is difficult one to employ with precision because of it’s impreciseness, but the term creativity is widely accepted by the most of the psychologists and educators as the divergent thinking ability, which is mostly characterized by fluency, flexibility, originality and elaboration. Torrance (1963, p-72) defined creativity in terms of divergent thinking, which involves fluency, flexibility, originality and production of many new ideas. Fluency, flexibility and originality are considered as important divergent production abilities, which contribute, to the more complex construction of creativity (Guilford 1967) Guilford & Hoepfner (1971) told that divergent thinking abilities are related to creativity. A large number of skills and abilities are associated with creativity. Some of such skills / abilities are:

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<tr>
<th>Fluency</th>
<th>Sensitivity</th>
<th>Tolerance to ambiguity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexibility</td>
<td>Curiosity</td>
<td>Independence</td>
</tr>
<tr>
<td>Originality</td>
<td>Improvisation</td>
<td>Imagination etc.</td>
</tr>
<tr>
<td>Elaboration</td>
<td>Risk taking</td>
<td></td>
</tr>
</tbody>
</table>

Though many abilities / skills are associated with creativity, among them fluency, flexibility, originality and elaboration are important.
Fluency: Fluency refers to the ability to produce many number of unrepeated ideas for a given task. The more number of ideas a person produces, the higher is his/her fluency ability.

Flexibility: Flexibility refers to the ability of the individual to produce different categories or varieties of ideas. That means, a person's movement of thinking from one category to other categories regarding a particular task. It indicates the varieties of thinking.

Originality: Originality is the ability to produce new or unusual ideas. That means, originality is the ability to produce ideas that are many people can't think of. Originality means statistically infrequent responses made regarding a stimulus or object.

Elaboration: Elaboration is the ability that enables a person to go in to the details of a matter. It is the ability to expand or colour an idea.

It is obvious that the meaning of creativity is very much tied with originality. But the question arises, why should we consider fluency, flexibility and elaboration as the creative abilities. In order to answer this question, the following discussions will be more beneficial.

Why fluency is considered creative ability: When an individual has fluency over his / her task, s/he can generate many solutions / ideas for his / her task and s/he chooses the best solution / idea to his / her task. And, this best solution / idea is called a creative solution / idea. When one's fluency is more s/he can generate many new / novel solutions. All these new solutions / ideas are called the creative ideas. For example, when a child is asked to tell the name of black animals and if that child is able to tell the name of a large number of black animals, then one or more than one new / unique animal(s) can be chosen from them. This one or more than one new / unique animal's name can be treated as the product of his creative ability. If the child is able to tell the name of only a few black animals, then, there might not have chance to find out the new / unique black animals. Because s/he has to choose only from the few.

Why flexibility is considered as creative ability: An individual who can think of a number of ideas, which have the variety (flexibility), is more likely to come forward with something that may be original. For example, while a director
of a drama is directing for stage playing of the drama, s/he directs in different ways / or varieties of ways, and out of these varieties of ways s/he chooses the best way of playing that drama. This best way of playing the drama is considered as new or unique one. If more number of ways of playing the drama are shown, then the more innovative way / ways of playing drama can be chosen from them and vice-versa. In this way flexibility is co-related with creativity.

**Why elaboration is considered as creative ability:** Elaboration means going to the details of a matter. That means, describing a thing / matter bit by bit or exactly pointing a matter / thing as it happened. The same thing / matter can be elaborated by different persons. But the basic difference is that, some people may describe the matter more carefully / exactly or as usually it happened / novel ways than the others. The person who describes more nicely or in novel ways than the others can be treated as more creative than his/her counter parts, because, more uniqueness / novel ness / exactness is found in the description of the former case than the later.

1.2.0 **DEFINING THE COGNITIVE DOMAIN OF HUMAN BEHAVIOUR**

Human behaviour is understood under three important domains, i.e. cognitive domain, affective domain and psychomotor domain. Cognitive domain is directly related to the knowing (relating to mind) aspect of human behaviour where as affective domain is directly related to feeling / emotion (relating to heart) aspect of human behaviour and the psychomotor domain is related to doing (relating to motor & bodily function) aspect of human behaviour.

Cognition is a troublesome term in psychology because it has no clear referent (Murray, 1990). Though it is a troublesome term, yet most of the psychologists define it as an important domain of human behaviour, which includes all the mental processes / activities of an individual starting from lower to higher. Murray (1990) describes that, it (cognition) has been defined so narrowly as to refer only to ‘awareness’ (Guilford 1967), and so broadly by others as to include “all higher mental processes (perception, thinking, attention, language, reasoning, problem solving, creativity, memory and intelligence)”. In order to study cognition, William James (1890) proposed a new discipline of psychology,
i.e., “Science of Mental Life”. Piaget conceived, human cognition as a network of mental structures created by an active organism constantly striving to make sense of experience. According to Piaget (1952), “Cognitive development is a continuous process of unfolding. If unfolds in stages like sequence, whose stages are in order and uniform for all children. It refers to the interpretation of sensory events, their registration and efficient recovery from memory, the ability to manipulate images, acquisition of language, symbols and concepts of thinking, reasoning and problem solving”.

The cognitive development of the individual is a continuous and long-term process that results from an interaction between the subject and his / her environment. In psychology, cognitive development is defined as a broad term, which includes all most all the activities, which are directly or indirectly related to mind. The broad areas considered under cognition include attention, perception, thinking, reasoning, memory, language formation and development, reading and writing, problem solving, intelligence, creative imagination, intention etc.

Vigotsky also believed that children are active seekers of knowledge but he did not view them as solitary agents. In his theory Vigotsky has stated, ‘the child and the social environment collaborate to mould cognition in culturally adoptive ways’. According to Vigotsky (1978), human cognition is inherently social and language based. All the higher cognitive processes develop out of social interaction, says Vigotsky. With the help of mature and experienced members of the society, the children come to master activities and think in ways that have meaning in their culture. This means, the ranges of tasks the child handles with the help of adults and skilled peers. As the children are engaged in cooperative dialogues with their mature partners, they receive / take the language of these dialogue, make it parts of their private speech, and use this speech to organize their independent efforts in the same way.

Vigotsky’s vision of teaching – learning puts more emphasis on social context and collaboration. Assisted discovery in the form of verbal guidance from the teacher and the peer collaboration are important aspects of Vigotskyian theory of learning. Therefore, Vigotsky puts more emphasis on cooperative learning, collaborative learning, guided learning, peer-to-peer learning etc.
1.2.1 COGNITIVE DEVELOPMENT OF THE CHILDREN: THE PRIME TASK OF OUR SCHOOL EDUCATION

Since cognitive domain is the most important domain of human behaviour, so the development of the cognitive abilities is the prime task of our education system. In order to develop the mental faculties of our school children, different subjects are included in our school curriculum. These subjects (languages, social sciences, mathematics, sciences etc.) are directly as well as indirectly bring necessary changes in the cognitive behaviour of school children. However, Fisher & Pipp (1984), Case and Griffin (1990), Elkind & Flavell (1969), Piaget (1959), Bloom and et. al. (1956) and the others made significant contribution to the field of cognitive development or cognitive behaviour of the children.

Bloom and et.al (1956) brought a revolution in the field of cognitive behaviour. In order to develop the abilities of the learners more specifically, quantitatively, systematically and meaningfully in cognitive area he prepared a taxonomy for the learning objectives in cognitive area.

Bloom and et.al (1956, p-9) in the Handbook entitled “Taxonomy of Educational objective – Handbook-I - Cognitive domain” stated – “The cognitive domain, which is the concern of this hand book, includes those objectives which deal with recall and recognition of knowledge and the development of intellectual abilities and skills. This is the domain, which is most central to the work of much current test development. It is the domain in which most of the work in curriculum development has taken place and where the clearest definitions of the objectives are to be found phrased as description of student behaviour. For these reasons we started our work here, and this is the first of our work to be published.”

“The Taxonomy of Educational Objectives” mainly contain six categories of objectives in cognitive area, such objectives are:

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehension</td>
<td>Synthesis</td>
</tr>
<tr>
<td>Application</td>
<td>Evaluation</td>
</tr>
</tbody>
</table>

These educational objectives in the cognitive area are arranged from simple to complex and were based on the idea that a particular simple behaviour may be integrated with other simple behaviour in order to form complex behaviour. Among these six, ‘knowledge’ is regarded as lower orders of cognitive
ability where as 'evaluation' is a higher order of cognitive functioning. The hierarchy of cognitive objectives starts from 'knowledge' and ends in 'evaluation' through comprehension, application, analysis and synthesis respectively.

**Knowledge** — Knowledge is nothing but acquisition of facts and information. By knowledge we mean that student can give evidence that s/he remembers either by recalling or by recognizing some idea or phenomenon with which s/he has had experience in the educational process.

**Comprehension** — Comprehension refers to the meaningful and proper understanding of an idea / matter / material. Perhaps the largest intellectual skills or abilities, which are emphasized in our educational institutions, are related with comprehension.

**Application** — Application refers to the use of learning materials in many other situations meaningfully. Application is the post step of comprehension. If a student can really comprehend something, then s/he can apply it.

**Analysis** — In comprehension, emphasis is given on the grasp of the meaning and intent of the materials. In application, it is on remembering or bringing to bear upon given material appropriate for generalizations or principles. But, analysis emphasizes the break down of the material in to its constituent parts and detection of the relationships of the parts and of the way they are organized.

**Synthesis** — Synthesis is defined as the putting together the elements or parts of a thing / matter, so as to form a whole. This is a process of working with elements or parts and combining them in such a way as to constitute a pattern or structure, which was not clearly there before. Generally, synthesis would involve a recombination of parts of previous experiences with new materials, reconstructed in to a new and more or less well integrated whole.

**Evaluation** — Evaluation is defined as making of judgements about the value of ideas, works, solutions, methods, materials etc. It involves the use of the criteria as well as standards for appraising the extent to which the particulars are accurate, effective, economical and satisfying. The judgements may be qualitative or quantitative. Evaluation is a complex process which involves some / all combinations of other behavioural objectives according to the demand of the situation. Evaluation represents not only an end process in dealing with cognitive behaviour, but also a major link with the affective behaviours where values, liking and enjoying are the central processes involved. However, emphasis here is still largely cognitive rather than emotive (Bloom and et. al, 1956).
1.2.2 SKILL DEVELOPMENT AND COGNITIVE AREA

Though the word 'skill' is widely associated with the psychomotor aspect of human behaviour, but its (skills) importance also quite significant for the cognitive area of human behaviour. Many a time we use the word 'intellectual skill' 'thinking skill', 'judging skill' etc. which are directly tied with the cognitive area of human behaviour.

When the learners are taught different skill subjects, they meet different skill objectives. Some of the skill areas of behavioural objectives in biological science, as stated by Granlund (1981) are:

(i) Skill in critical thinking.
   (a) Distinguish between facts and opinion.
   (b) Draw valid conclusion from the given data.
   (c) Identify assumptions underlying conclusion.
   (d) Identify limitations of given data.

(ii) Laboratory skills.
   (a) Use the microscope skillfully.
   (b) Perform basic operations of dissection skillfully.

(iii) Study skills.
   (a) Locate the biological information
   (b) Interpret diagrams, charts, graphs etc.

(iv) Communication skill.
   (a) Write clear and accurate reports of laboratory experiences.

Besides the above stated skill areas of objective as stated by Granlund (1981, p-39), the students came in contact with many other skill areas of objectives while they are taught different school subjects. Some of such skills are social skills, computational skills, performance skills etc.

All these skill areas of objectives are basic to the both cognitive areas of behaviour as well as non-cognitive areas of behaviour. While an individual / learner performs all the above stated skill related activities meaningfully, s/he requires a lot of intellectual / mental exercises. Therefore, skill area of learning objectives has direct relationship with cognitive area of behaviour.
1.2.3 CURRICULAR AREA AND COGNITIVE DEVELOPMENT

The curriculum of our educational institutions has two broad parts, i.e., curricular area and co-curricular area. And, it is a knowing fact that the prime aim of curricular area is to bring the cognitive development of the learners whereas the prime aim of co-curricular area is to bring development of the non-cognitive (affective and psycho-motor) abilities of the learners. But we cannot say that the curricular area are not meant for developing the non-cognitive (affective and motor) abilities. It is true that curricular area has also contribution towards the development of non-cognitive (affective and motor) skills / abilities but in a lesser scale. Co-curricular area has wide contribution towards the development of non-cognitive (affective and motor related aspects like attitudes, values, interests, skills etc.) abilities but less contribution towards the development of the cognitive abilities. Therefore, the different subjects in curricular area like social studies, language, literature, mathematics, general sciences etc. are primarily meant for cognitive development of the learners. Such subjects are included in our school curriculum keeping in view certain general as well as specific aims and objectives in mind in the area of cognitive behaviour. For example, science is included in our school curriculum for the development of objective ways of thinking, systematic ways of thinking, practical knowledge etc. Social studies is included in our school curriculum in order to help the students to develop knowledge about social environment, to develop understanding regarding the relationship between the man and his environment etc. Mathematics is included in our school curriculum to develop abstract knowledge / thinking, righteous ways of thinking etc. Likewise, all most all the subjects in curricular area are meant for achieving certain aims and objectives of teaching – learning in the cognitive area.

1.2.4 A CROSS COMPARISON BETWEEN CREATIVE ABILITY AND COGNITIVE ABILITY

While comparing creative ability with cognitive ability, one important question may arise in our mind, that –

Is creative ability exactly same with cognitive ability or differs from cognitive ability?
Referring to this question, one can say that it is a universally accepted fact that, creative ability is not exactly same as cognitive ability. We find a lot of similarities and a lot of differences between creative ability and cognitive ability, as described in the following manners:

Psychologists and educationists have categorized human behaviour into three major domains, i.e., cognitive domain, affective domain and psycho-motor domain. Cognitive ability is primarily the product of cognitive domain whereas the other domains have a little to do for it. But creative ability is reflected in all the domains of human behaviour. Creativity is based on the divergent productive abilities in all the domains of human behaviour. In case of cognitive area creativity requires a high sense of critical thinking, in case of affective area creativity depends in high sense of motivation and emotion, and in case of psycho-motor area creative ability depends upon a high sense of performance and the related skills.

![Diagram showing the interaction between cognitive abilities, creative abilities, affective values/motives, and psychomotor skills]

Creativity as the part of affective values and psychomotor skills except cognitive behaviour has been stated long back by many experts in the field. Torrance (1979) stated “A high level of creative achievement can be expected consistently only from those who have creative motivations (commitment) and the skills necessary to accompany the creative abilities. The person who has a high level of creative abilities and skills may become a creative achiever, if the creative motivation can be aroused. Similarly, the person who has creative abilities and motivations can become a creative achiever with the acquisition of the necessary creative skills (p-12)”.

Many of the psychologists and educationists have defined creativity in terms of divergent thinking ability. But the meaning of cognitive ability is
somewhat different. Cognitive ability includes almost all the mental abilities which can be divided into broadly two heads, i.e., convergent thinking ability and divergent thinking ability. According to Guilford’s structure of Intelligence (SOI) divergent thinking is regarded only one area of human intellectual ability.

1.2.5 NATURE OF TESTS WHICH ARE GENERALLY USED IN COGNITIVE AREA OR COGNITIVE ABILITY TESTS AND CONVERGENT THINKING

Cognitive assessment is a basic to the teaching learning process. Cognitive assessment is defined as the use of tests and observations to obtain an estimation of child’s present functioning of mental tasks (Lutey and Copeland, 1982). Lutey and Copeland (1982) also viewed that, “Individual cognitive assessment of school age children includes a broad range of evaluative methods, both objective and subjective; however, this discussion (the discussion made in his paper) emphasizes only selected facets of the assessment process. These facets include the child’s actual performance on a series of measures (including intelligence and achievement tests), the child’s potential for succeeding at school related tasks, selection and administration of instruments, and the traditional role of the evaluator as a technician versus the more inclusive role denoting professionalism (p-121)”.

One may be clarified from the above discussions of Lutey and Copeland that, intelligence tests, achievement tests, aptitude tests etc. are generally used for the assessment of the cognitive abilities of the child. But it is a knowingly and general fact that most of such cognitive ability tests including achievement tests, intelligence tests etc. are of ‘convergent’ in nature. That means such tests generally encourage convergent thinking ability in the learner. Defining the nature of convergent thinking, Croplay (1970) says, convergent thinking is characterised by its dependence on reproduction of the already learned and of fitting old responses to new situation in a more or less mechanical way.

Researchers, experts and the intellectuals in the field of psychology and cognitive psychology put forth their view that most of the usual kind of tests in the cognitive area (i.e. achievement tests, intelligence tests etc.) are convergent in nature. For example, Guilford (1950), told that, ‘examination of the kind of items
included in the usual I.Q. tests indicates that they concentrate heavily on items which require thinking of convergent kind, and neglect the divergent kind. Bartlett (1958), who pointed out that intelligence tests, with their emphasis on correct solution, elicit what he called 'closed thinking' and ignore 'open thinking'. Thus, the body of opinion, which argues for inadequacy of the commonly used I.Q. tests, stresses that such tests neglect thinking of the divergent or open kind (p-2).

Pointing out the convergent nature of the existing type of achievement/classroom tests, Croplay (1970, p-4) told that, in fact, the most commonly used tests of the conventional kind call for the finding of a single correct response to a clearly defined and explicitly stated test item.

The above discussions clarify that most of the tests in cognitive area (including achievement tests, intelligence tests etc.) are generally convergent in nature, which require fixed and logical answers for the clearly defined test items. Much of the discussions in this regard have been done also in the earlier pages of this chapter.

1.2.6 DIFFERENCE BETWEEN COGNITIVE ABILITY TEST AND CREATIVE ABILITY TEST FROM A PRAGMATIC VIEW POINT

When we say about the cognitive ability tests or tests in cognitive area, these refers mostly to the tests like intelligence tests, achievement tests, aptitude tests etc. All these tests cover the broad range of objectives in cognitive area. For example intelligence tests cover a product of 180 primary mental abilities [Guilford's structure of intelligence (GSI)] and for which intelligence tests are also called as General Mental Ability tests. Achievement tests in cognitive area cover a wide range/sample of cognitive objectives like knowledge, understanding, application etc. at the lower class level and objectives like analysis, synthesis, evaluation etc. including the lower order objectives of knowledge, understanding, application etc. at the higher class level. Like these intelligence tests and achievement tests, different type of aptitude tests like multiple aptitude tests, special aptitude tests etc. are also falls in the cognitive area. One significant characteristic that one can remark from all these tests is that – generally these tests demands the answers, which are mostly convergent in nature. That means, the answers required for these test items are primarily logical, fixed, well defined and limited.
Contrasting to these intelligence tests, aptitude tests and achievement tests etc. one most significant characteristic of creative ability tests is that all the creative ability tests encourage the *divergent thinking*. That means, the answers required for the items of creative ability tests are divergent in nature. In a more clear-cut word, the answers required for creative ability test items are not fixed.

### 1.2.7. CAN WE DEVELOP CONVERGENT THINKING AND DIVERGENT THINKING SIMULTANEOUSLY THROUGH THE TEACHING OF SAME TOPIC / SUBJECT

Convergent thinking and divergent thinking are the two sides of same coin. For the wholesome / total development of individual child, the development of both convergent and divergent abilities are quite essential. It is true that convergent thinking provides the base for divergent thinking and divergent thinking helps for true right / convergent answer. That is why, in problem solving and related activities, at first, we go for divergent (tentative) answers and then we select / choose the right / logical answer from these divergent (tentative) answers. Therefore, it should be the challenge of our educational system to develop both convergent as well as divergent thinking simultaneously.

Further, the question arises, whether the same topic can be used for developing both convergent thinking and divergent thinking simultaneously or separate topics are needed for development of each of these aspects of thinking separately. In order to answer this question one can say, each of the subjects / topics in general and also each of the topics / subjects in specific provide scope for developing both convergent thinking and divergent thinking simultaneously. But degree of difference in scope is found there. Some subjects / topics provide more scope for developing convergent thinking but less scope for divergent thinking. Whereas, there are some subjects / topics which provide more scope for developing the divergent thinking but less scope for convergent thinking. It is also to remark that, there are some subjects / topics which more or less provide same scope for both convergent and divergent thinking. Therefore one can say, the development of both convergent and divergent thinking can be possible simultaneously through the teaching of same subject/ topic. The following examples will clarify how the same topic can provide scope for developing
convergent and divergent thinking simultaneously. Suppose the name of a topic is “food item” in the area of science. In the same topic “food item” two groups of items are given. One group of items is related to the convergent thinking whereas the other group is related with divergent thinking. The items in the convergent thinking area have corresponding relationship with divergent thinking area.

<table>
<thead>
<tr>
<th>Items in convergent thinking area</th>
<th>Items in divergent thinking area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Name one food item, which is eaten raw.</td>
<td>Name as many as food items, which are eaten raw.</td>
</tr>
<tr>
<td>2 Name the food items, which you have taken in today’s breakfast.</td>
<td>Name as many as food items which are generally taken in breakfast</td>
</tr>
<tr>
<td>3 Write the name of two vegetables produced in winter season.</td>
<td>Write the name of as many as vegetables, which are produced in winter season.</td>
</tr>
</tbody>
</table>

1.3.0. IMPORTANCE OF DEVELOPING CREATIVE AND COGNITIVE ABILITIES AT THE ELEMENTARY LEVEL

Elementary stage of life generally covers the formative / early years of one’s life. From the educational point of view this period generally covers the learners for the age group 6-14 years. Generally from Class –I to Class – VIII are regarded as elementary stage of education. In this stage of life the rapid growth and development takes place in the individual child. Most of the abilities of the individual child become prominent in this stage. Mental development of the child becomes faster in this stage. As the child comes in contact with various environmental stimuli, so, s/he receives many things rapidly from the environment and develops the capacities, capabilities, abilities, aptitudes etc. in different area / field in accordance with the facilities / conditions provided to him / her at home, school as well as in the society. In this stage, different kind of thinking comes to his/her mind. Always s/he tries to materialise all his / her thinking in best possible manner. And s/he tries his/her best to develop all inherited and acquired qualities, characteristics and abilities in full-fledged manner. Therefore, proper nourishment in this stage can lead the child towards the development of his / her cognitive ability and unfoldment of creative abilities. Emphasizing on the development of the manifold cognitive and creative characteristics of the child, NPE (1986) stressed on the qualitative development of the students at the elementary stage of school education. No doubt, both cognitive and creative talents seem to be the
two important dimensions of child's developmental tasks of this early / formative / primary years of life; and special efforts must be made to develop such dimensions in to higher level of proficiency through various environmental stimuli especially through school curricular and co-curricular programmes.

1.4.0 PLACE OF SOCIAL STUDIES IN ELEMENTARY CURRICULUM

'Social studies' occupies a significant place in our school curriculum. It is a single and composite instructional area, which includes history, geography and civics at the elementary stage; and includes history, geography, civics and a tinge of economics at the secondary stage. When the aspects of history, geography and civics (or history, geography, civics and economics) are taught under one umbrella in the form of integration for practical utility of the students then it is called 'social studies' and when the aspects of history, civics, geography and economics are labelled as discipline oriented and knowledge oriented subject matter for the students then it is called 'social sciences'. The subject 'social studies' is regarded as an important part of our elementary curriculum. The same subject 'social studies' at the higher class level / high school level is generally called 'social science' due to some sort of changes in its nature, objectives, contents etc.

This subject (social studies / social science) has been included in our school curriculum to aware the students about the socio-cultural system of the society and to help them to face the social reality. It aims at developing certain basic qualities, competencies and values among the students, so that they can solve the divergent social, cultural, political, economic and other such problems in the society. This subject helps the students to be effective members in a democratic society.

With regard to our National Curriculum Framework (NCF, 2000), the subject "Social Studies" contributes 16.65% to the school curriculum (at upper primary and secondary level) followed by Science and Technology 16.65%, Mathematics 16.65% and 16.65% of each language subject, in the curricular area, excluding the co-curricular areas of Health and Physical Education, Work Experience and Art Education.
1.4.1 WHAT SOCIAL-STUDIES IS

'Social Studies' is an area of knowledge, which is concerned with the different aspects of the society. This subject is concerned with the practical aspects of the society like social activities / phenomena, social habits, social customs, social traditions etc. It studies the concrete and realistic demonstration of the meaning and values of human life in society.

For the instructional purposes, 'social studies' has been narrowly defined. In the elementary level, it is regarded as a fusion of three parts (i.e., history, civics and geography) and in the secondary level it is fusion of four parts (history, civics, geography and economics). The brief descriptions of the parts are:

- **History** – It is concerned with study of human activities relating to time.
- **Geography** – It is concerned with study of human activities relating to space.
- **Civics** – It is concerned with study of human activities relating to state administration.
- **Economics** – It is concerned with study of human activities relating to financial matters like production, consumption, distribution, exchange etc.

J.V. Michaelis defines social studies as "The social studies is concerned with man and his interaction with his social and physical environment; they deal with human relationship......the central function of social studies is identical with the central purpose of education – the development of democratic citizenship"

S.E.C (1952-53) defines social studies as "Social studies as a term is comparatively new in Indian education. It is meant to cover the grounds traditionally associated with history, geography, economics, civics etc. This whole group for studies has therefore, to be viewed as a compact whole whose object is to adjust the students to their social environment which includes the family, community, state and nation —so that they may be able to understand how society has come to its present form".

<table>
<thead>
<tr>
<th>Co-curricular area</th>
<th>Contribution of different subjects to Curricular area (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPE</td>
<td>AE</td>
</tr>
<tr>
<td>16.65%</td>
<td>16.65%</td>
</tr>
</tbody>
</table>
One can summarize the meaning of social studies in the following ways.

(i) Social studies is a broad – composite instructional area which draws its contents from different social sciences.

(ii) Social studies is the applied branch of social sciences introduced in the school curriculum with a view to develop proper attitudes, values, skills among the students in order to be effective citizens in the state / society.

(iii) Social studies is compound rather than mixture, where its ingredient parts (history, civics etc.) cannot be separated just like watertight compartments.

(iv) Since social studies integrates knowledge from all the social sciences, so it is called the co-ordinated science.

(v) Social studies is concerned with the scientific and systematic study of the society.

(vi) Social studies deals with art of living.

SOCIAL-STUDIES CONTENT INCLUDES THE BASIC CONCEPTS FROM

<table>
<thead>
<tr>
<th>Geography</th>
<th>MANY OF THE SOCIAL SCIENCES</th>
<th>Sociology</th>
</tr>
</thead>
<tbody>
<tr>
<td>History</td>
<td>Social Studies (the study of man and his relationship with physical and social environment)</td>
<td>Anthropology</td>
</tr>
<tr>
<td>Social Psychology</td>
<td></td>
<td>Political Science</td>
</tr>
<tr>
<td>Philosophy</td>
<td></td>
<td>Economics, etc.</td>
</tr>
</tbody>
</table>


1.4.2 DIFFERENCE BETWEEN SOCIAL STUDIES AND SOCIAL SCIENCES

A lot of similarities and difference are found between social studies and social sciences.

Similarities

(a) Both have common boundary of contents.

(b) In both cases central focus is on man’s relationship with man and environment.

(c) Human relationship is the common denominator of both cases.

(d) Both focus on man engaging in varieties of activities for the purpose of meeting his/her basic needs, communicating his/her ideas and feeling, producing and consuming the necessities of life, saving human and natural resources etc.
### Differences:

<table>
<thead>
<tr>
<th>Slo. No.</th>
<th>Social Sciences</th>
<th>Social Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Social sciences seek social utility</td>
<td>Social Studies seeks the instructional utility</td>
</tr>
<tr>
<td>2.</td>
<td>Concerned with theoretical parts of human affairs.</td>
<td>Concerned with practical parts of human affairs.</td>
</tr>
<tr>
<td>3.</td>
<td>Aims at contributing knowledge for the sake of knowledge and increasing the intellectual horizons.</td>
<td>Aims at solving various practical problems of the society.</td>
</tr>
<tr>
<td>4.</td>
<td>Social sciences are studied through idealistic approach.</td>
<td>Social studies is studied through pragmatic approach.</td>
</tr>
<tr>
<td>5.</td>
<td>Social sciences are composed of a large number of subjects like history, pol. science, sociology, geography, anthropology etc.</td>
<td>Social studies draws its contents from large number of social sciences, but those are generally labelled under three broad heads at elementary level and four broad heads at secondary level.</td>
</tr>
<tr>
<td>6.</td>
<td>Social sciences are mixture of different subjects where each and every subject has special identity and the subjects can be differentiated from each other easily.</td>
<td>Social studies is a compound rather than mixture in which the ingredients lose their identity and something new emerges out of the combination. It is very difficult to separate its constituent parts in a clear-cut way.</td>
</tr>
<tr>
<td>7.</td>
<td>Social sciences are the genesis / parental disciplines / soil root of social studies.</td>
<td>Social studies is the outcome / result of social sciences.</td>
</tr>
<tr>
<td>8.</td>
<td>The readers of social sciences are very few. Only those who are competent and interested, can read social sciences.</td>
<td>Since the citizenship preparation is the main aim of social studies, so it is studied by every body.</td>
</tr>
<tr>
<td>9.</td>
<td>Social sciences are the advance studies of human society, which are basically taught at the college and university stage.</td>
<td>Social studies is the simplified aspect of social sciences which is basically taught at the school stage.</td>
</tr>
<tr>
<td>10.</td>
<td>The scope of each social science is limited within its own field. For example economics is basically limited to economics field only.</td>
<td>The scope of social studies is vast and all embracing in the sense that it touches all the aspects of human life.</td>
</tr>
</tbody>
</table>
1.4.3 AIMS AND OBJECTIVES OF TEACHING SOCIAL-STUDIES AT THE ELEMENTARY LEVEL

The main objective teaching of 'social studies' in our elementary school is to prepare a child to face the realities of life. In other words, the main objective of teaching 'social Studies' at elementary level is the same as it is for the total school programme, i.e., the development of democratic citizenship. The perpetuation of our way of life, its values and ideals depend all most entirely upon the success of the society to educate its members in democratic principles and democratic action. And, the teaching of social studies plays a major role in this process of democratisation of young citizens or developing good citizenship qualities among the young learners. The term good citizenship is used because...
attention should be directed towards qualitative aspects of citizenship. When the Arm Forces Information and Education Division, Deptt. Of Defence (USA) faced the same problem following the World War-II, it was called upon the National Council of Social Studies to draw up a description of good citizen. The Council received consensus on 24 items from a group of three hundred citizens representing the legal profession, labour, management, religious groups, famous educationists and leaders in lay and professional groups. According to this definition the good citizen:

1. Believes in equality of opportunity for all people.
2. Values, respects and defends basic human right and privileges guaranteed by the United States Constitution.
3. Respects and upholds the law and its agencies.
4. Understands and accepts...democratic principles as guides in evaluating his own behaviour and the policies and practices of other persons and groups and judges his own behaviour and the behaviour of others by them.
5. Understands that in the long run, people will govern themselves better than any self appointed group would govern them.
6. Puts the general welfare above his own whenever a choice between them is necessary.
7. Feels that he has inherited an unfinished experiment in self-government, which it is his duty and privilege to carry on.
8. Exercises his right to vote.
9. Accepts civil responsibilities and discharges them to the best of his ability.
10. Knows the techniques of social action (e.g., how to win support for desirable legislation) and can co-operate with others in achieving such action.
11. Accepts the basic idea that in a democracy, the majority has a right to make decision under the constitution.
12. Assumes a personal responsibility to contribute towards a well-informed climate of opinion on current social, economic and political problems or issues.

13. Realises the necessary connection of education with democracy.

14. Respects property rights, meets his obligations in contact and obeys regulations governing the use of property.

15. Supports fair business practices and fair relations between employers and employees.

16. Assumes a personal responsibility for the wise use of natural resources.

17. Accepts responsibility for the maintenance and improvement of a competitive economic system assisted and regulated when necessary by governmental action.

18. Knows in general how other economic system operates including their political and social consequences.

19. Knows about, critically evaluates and supports promising efforts to prevent war, but stands ready to defend his country against tyranny and aggression.

20. Is deeply aware of the interdependence of people and realizes that a good life can be attained only by the organized co-operation of millions of people all over the world.

21. Understands cultures and ways of life other than his own.

22. Cultivates qualities of character and personality that have a high value in his culture.

23. Is a responsible family member and assumes his full responsibilities for maintaining the civic standards of his neighbourhood and community.

24. Recognizes tax as a payment for community services and pays them promptly.

1.4.4 SOCIAL STUDIES: A THRUST AREA FOR COGNITIVE AND CREATIVITY DEVELOPMENT OR SCOPE FOR DEVELOPING COGNITIVE AND CREATIVE ABILITIES THROUGH SOCIAL STUDIES CURRICULUM

It is already discussed in the earlier part of this chapter that all most all subjects in the curricular area provide greater scope for cognitive development of the students. The curricular subjects are meant for developing various cognitive abilities like knowledge ability, comprehension ability, application ability, analysis ability, synthesis ability, evaluation ability etc. The knowledge ability in the area of social studies deals with gathering / knowing / remembering about various facts / information regarding our physical, social, historic, geographical, economic, civil, cultural and other such characteristics about our country / society in particular and about the whole world / humanity in general. Comprehension or understanding ability in the area of social studies deals with providing the child the opportunities to extend his/her background of understanding to include basic and elementary concepts of geography, history, government, economics, and sociology as they bear upon the study of people and their struggle to solve the perennial problems of mankind. The child will have many occasions to call upon his/her reserve of background information to add meaning and depth to his/her thinking about and discussion of the problems of human relationship, and this is concerned with understanding ability. Like this, many other cognitive skills are related with social studies curriculum.

Social studies provides a great scope for the development of creative abilities / divergent thinking abilities of the individuals. The teaching of social studies is concerned with diversified physical, social, historical, economic, civic and environmental characteristics which can facilitates the divergent / creative thinking of the learners. The subject social studies is such a subject which provides greater scope to the learners to solve the same problem in different ways. The indicators of creative abilities such as fluency, flexibility, originality, elaboration etc. can more be facilitated through the subject social studies. While the subject social studies will be taught, the students must be encouraged to answer the question divergently. For example, if the question will be asked like
suggest different strategies to eradicate the poverty of the underdeveloped country like India, then this question will definitely yield divergent answers. This question will elicit many answers. Some of such answers are eradicating poverty through paying huge amount of money to the people, eradicating poverty through creating many job opportunities, eradicating poverty through educating the people etc.

The research evidences also provide strong support to the subject social studies as a means for creativity development. The most significant research in the area of classroom skills related to creativity has been reported by Hudson (1966). The studies of Hudson resulted that divergent thinkers showed an overwhelming preference for arts subjects (in other words they preferred literature, modern language, history, art and the like), while convergent thinkers strongly preferred science subjects (math, physical sciences and so on).

Hudson (1973) suggested that children who excel in science, math and technology also do well on traditional IQ tests, where there is just one right answer or just one solution to the problem. In contrast, who are divergent thinkers, find several possibilities for each question, and are good at thinking of many possible solutions to a problem. Hudson’s thesis was that the arts and sciences demand different kind of thinking. One implication of his view is that science, math and technology are uncreative in that they involve a very focussed perspective on possibility thinking. One can easily draw a conclusion from this study is also that arts subjects provides greater scope for creativity development. So social studies provide much scope for creativity development.

### 1.5.0 MULTI DIMENSIONAL ACTIVITY BASED INTEGRATED APPROACH OF TEACHING – LEARNING: AN ANALYSIS

“Multi-dimensional activity based integrated approach” is a new and innovative teaching-learning approach. This multi-dimensional activity based integrated approach states that the child / individual learner learns through the use / application of different activities; and the nature and type of activities in the teaching-learning process change in accordance with change in nature and types of lessons / units of teaching, change in teaching-learning situation, change in
nature of the learner, change in time and change in the learning materials. And, another significant characteristic of the multi-dimensional activity based integrated approach is that, for learning of a single lesson / unit of a lesson the learner may use one activity or more than one activity coming from one dimension (of activities) or more than one dimension (of activities). This multi-dimensional activity based integrated approach treats the teacher / preceptor as the facilitator / guide of the teaching-learning process but not as the director of the teaching-learning process; and this approach treats the learner as the sole agent of teaching-learning process. This activity based integrated approach is purely learner centric and follows the principles of learning by doing. Multi-dimensional activity based integrated approach based on the rationale that "teaching-learning aims at holistic development of the students. No single / particular activity based strategy or no particular approach of teaching-learning can be effective for developing all the competencies among the students. Activities used for teaching-learning should change from topic to topic, unit to unit and subject top subject in accordance with the changing needs of learners, changing needs of the content materials, changing needs of the time, changing demand of the society and facilities available for teaching-learning process".

1.5.1 WHAT IS MULTI-DIMENSIONAL ACTIVITY BASED INTEGRATED APPROACH OF TEACHING – LEARNING

Activities are of different types. For example, play way type, puzzle type, song type, quiz type, dance type, drama type, craftwork type, brain storming type, group competition type, debate type, creative writing type, creative use of materials type etc. There are hundreds and thousands types of activities, which can be used in our teaching – learning process. All the activities can be categorized under many heads / dimensions. However, here all most all the activities are categorized under three broad / major heads or dimensions. Such dimensions are:

(i) Head related activities or head dimension
(ii) Hand related activities or hand dimension, and
(iii) Heart related activities or heart dimensions.
The examples of some head related activities are debate, discussion, quiz, intellectual game, brainstorming technique, verbal competitions, divergent questioning and divergent answering techniques etc. The examples of some heart related activities are song, pledge, music related activities, dance related activities, role playing etc. The examples of some of the hand related activities are preparation of model and chart, play way activities, project work, poster preparation, games, craftwork etc. The multi-dimensional activity based integrated approach uses all these activities in the teaching-learning process in the way(s) as indicated below:

“Multi-dimensional activity based integrated approach is an approach of teaching-learning which allows a learner to use / practise a particular activity or a group of activities simultaneously coming from a dimension of activities or from many dimensions of activities for the better teaching – learning of a particular topic / unit”. A detail explanation about the ‘Multi-dimensional activity based integrated approach’ is given in Chapter – III.

1.5.2. WHAT IS ACTIVITY BASED APPROACH OF TEACHING – LEARNING

Activity based approach of teaching learning is an approach of teaching – learning which follows the principles of learning by doing. This approach emphasizes on the principle that ‘the child learns while s/he works / plays / does’. This approach is a learner-oriented approach and according to this approach learning takes place due to the active involvement of the child in the teaching-learning process. Activity based approach of teaching learning follows the principles of learning by doing, learning by playing, learning by enjoying and learning by problem solving. In this approach, the learner uses all the senses while s/he learns.

1.5.3 NEED FOR ACTIVITY BASED APPROACH OF TEACHING LEARNING

The NPE (1986) reported that though substantial growth has been made in the quantitative aspect of primary education, but the qualitative aspect is neglected. Similarly, various surveys depict that although the primary schools have been provided with better infrastructural facilities still there seems no better improvement in the internal efficiency of the system. The teaching – learning processes at the primary schools have not been more purposive, child centred and meaningful. The most important problem in our schools especially in elementary schools is about the maintenance of standard of learning (quality) and this standard of learning must be ensured to be achieved by all learners (equity).
This equity in quality of learning is possible if the learning will be imparted through activity-based approach. Because, in activity based approach of teaching-learning, all the teaching – learning materials, methods, strategies, environments etc. are based on the needs, interests, abilities and aptitudes of the learners.

Much of the researches have been conducted on different teaching-learning strategies relating to joyful learning activities and the results found to be positive. For example, the dramatization method of Kulkarni (1991), co-operative teaching – technique of Malhotra (1998), objective based teaching and testing of Palanivelu (1989), personalized system of instruction of Das Gupta (1987) etc. have showed the fruitful results.

1.6.0 RATIONALE OF THE STUDY

We all human beings possess more or less creative ability. The unfoldment of this creative ability requires proper nourishment. The researchers like Necka (1994), Toller (1985), Alencar (1999a), Poulich (1993), Cole, Sugioka and Yamagata – Lynch (1999), Guilford (1959), Alencar (1995, 1996), Alencar, Fleith and Virgolim (1995), Montuory & Purser (1995), Alencar, Fleith and Martinez (2003), MacKinnon (1978), Stein (1974), Croplay (1970) etc. criticized the existing classrooms as anti-creative and demanded the development of creative talents of the students through our education. The studies conducted by Tisdoll (1962), Rouse (1965), and Cawley and Chase (1967) suggest that even mentally retarded children are capable of thinking creatively. IEC (1964-66), NPE (1986-92), NCERT Curriculum Framework (1987) etc. emphasized a lot for the development of creative abilities among our school children. The issue of 'Can creativity be taught?' has been solved by many researchers. Parnes and Meadow (1959, 1969), Osborn (1957), Sullivan and Tylor (1967), Maltzman and et. al. (1958, 60) etc. have clearly stated that creativity can be enhanced through training, stimulation and intervention. Similarly, Craft (2000), Halliwell (1993 p-69), Jeffrey and Woods (1997 p-31), Gupta (2000) etc. appreciated the teaching of creativity, as the good teaching and the teaching of creativity should be given a significant place in the normal classroom. Regarding the fostering of creativity, Croplay (1970) says, it is good, convenient and beneficial to develop creativity among our school students through the teaching of different school subjects but less attempts should be made to teach creativity as a separate / formal school subject. Hudson (1973)
suggested that the arts subjects facilitate more creative ability than the subjects like science, math, technology etc.

The development of cognitive ability of the children is the prime task of each and every curricular area. It may be social studies or science or math or technology but all are meant for cognitive development of the children. The efforts made in the area of cognitive development of the children by Piaget (1952), Vigotskay (1978), Bloom and et al. (1956), Bruner (1960), James (1890), Guilford (1967) Fisher and Pipp (1984), Case and Griffin (1990), Elkind and Flavell (1969) etc. are quite significant. Gaysu (1988), Chhotray (1989) and Shah (1992) found that training can enhance the cognitive abilities of the students. The efforts made in this area are not sufficient and those need to be strengthened (Mishra, 1988; and Mishra and Agarwal, 1993).

The development of the cognitive and creative abilities is much important for all of us. The elementary stage is a vital stage for the development of cognitive and creative abilities. As the elementary stage is considered as the foundation stage of one’s life, so proper nourishment in this stage lead the child towards proper development of his/her cognitive ability and unfolding of his/her creative ability.

The subject ‘social studies’ provides vast scope for the development of cognitive and creative abilities of the elementary school children. It is a general fact that the subject social studies aims at securing maximal cognitive / mental development of students. Also the subject social studies is very much important for the development of creative ability. Torrance (1961), Hudson (1966, 1973), Craft (2000) etc. very categorically mentioned that creativity can be enhanced through teaching of different school subjects. And, among them Hudson (1966) told that divergent thinkers showed an overwhelming preference for arts subjects (in other words they preferred literature, modern languages, history, art and the like). And, from this (Hudson’s) study one can infer that arts subjects provide greater scope for development of creative ability, and since social studies is more considered as a arts subject so it seems to be a suitable medium for development of creative ability.

Teaching – learning aims at holistic development of the students. No particular / specific approach of teaching learning can be effective for developing all the competencies of the students. The approaches of teaching-learning will vary from topic/subject to topic/subject according to the needs of the learners, demand of the situation, nature of the content materials, nature of the learning
units / topics, demand of the society and the facilities available for it. The researchers like Sullivan (1967), Bloom (1971), Kohlberg (1976), Koul (1986), Panday (1986) and many others are agreed on the point that, no particular strategy is appropriate for achieving all the objectives of teaching – learning. This led the researcher to develop a new, flexible and activity oriented approach of teaching – learning, i.e., “Multi – dimensional activity based integrated approach of teaching-learning”.

The above discussions provide the following strong points to the researcher or the following research gaps:-

- Cognitive development is the prime task of each and every curricular area.
- Creativity development through different curricular subjects is a challenge for present day education.
- Elementary years are much important for cognitive and creativity development of the students.
- The subject social studies provide better scope for the development of cognitive and creative abilities of the students.
- “Multi-dimensional activity based integrated approach” is new flexible and activity oriented approach for teaching – learning.

And, judging the above stated research gaps, the researcher is very much anxious to know the effectiveness of a new strategy (multi-dimensional activity based integrated approach) in developing cognitive and creative abilities in social studies of elementary school children.

1.7.0 STATEMENT OF THE PROBLEM

The problem of the present study can be stated as:

“EFFECT OF MULTI-DIMENSIONAL ACTIVITY BASED INTEGRATED APPROACH IN ENHANCING COGNITIVE AND CREATIVE ABILITIES IN SOCIAL STUDIES OF ELEMENTARY SCHOOL CHILDREN”.

1.8.0 OPERATIONAL DEFINITIONS OF THE TERMS USED

Multi-dimensional activity based integrated approach:- Multi-dimensional activity based integrated approach is an approach of teaching-learning which allows a learner to use / practise a particular activity or a group of activities simultaneously coming from a dimension of activities or from many dimensions of activities for the better teaching – learning of a particular topic /
unit. A detail explanation about the 'Multi-dimensional activity based integrated approach' is given in Chapter – III.

**Social Studies:** Social studies is a field of discipline. It is a major part of our school curriculum. Operationally, in the present study social studies includes the fusion of three content areas of learning, i.e., history, geography and civics.

**Cognitive abilities:** Cognitive abilities refer to all the mental abilities of an individual. In the present study, cognitive abilities include four important competencies in the cognitive area, namely, knowledge, understanding, skill and application which generally facilitate convergent type of thinking.

**Creative abilities:** Creative abilities include all the divergent thinking abilities of an individual. In the present study, creative abilities include the divergent thinking abilities in terms of three competency areas, namely, fluency, flexibility, and originality.

**Elementary level:** Elementary level starts from Class – I to VIII. Here Class – VI students are taken for study.

### 1.9.0 OBJECTIVES OF THE STUDY

The objectives of the present study are:

1. To identify four important cognitive competencies (knowledge, understanding, skill, and application) which can be developed through teaching of social studies.

2. To identify three important creative competencies (fluency, flexibility, and originality) which can be developed through the teaching of social studies.

3. To develop multi-dimensional activities in the area of social studies and integrate them for teaching of cognitive and creative abilities in social studies.

4. To study the effect of Multi-dimensional Activity based Integrated approach (MAI) over Traditional Method of Teaching (TMT) in enhancing over all cognitive abilities and overall creative abilities in social studies with regard to the pre-test and post-test scores.

5. To compare competency wise cognitive abilities developed through MAI and TMT; and creative abilities developed through
MAI and TMT in social studies with regard to pre-test and post-test scores.

6. To compare content area (Hist., Geog., and Civics) wise cognitive abilities developed through MAI and TMT; and content area (Hist., Geog., and Civics) wise creative abilities developed through MAI and TMT in social studies with regard to pre-test and post-test scores.

7. To compare the competency wise cognitive abilities developed through MAI and TMT in relation to different content areas in social studies; and the competency wise creative abilities developed through MAI and TMT in relation to different content areas in social studies with regard to pre-test and post-test scores.

1.10.0 HYPOTHESES OF THE STUDY

1. There exists significant difference between mean scores of overall cognitive abilities developed through MAI and mean scores of overall cognitive abilities developed through TMT in social studies with regard to pre-test and post-test scores.

2. There exists significant difference between mean scores of overall creative abilities developed through MAI and mean scores of overall creative abilities developed by TMT in social studies with regard to pre-test and post-test scores.

3. There exists competency wise differences between cognitive abilities developed through MAI and cognitive abilities developed through TMT in social studies with regard to pre-test and post-test scores.

4. There exists competency wise differences between creative abilities developed through MAI and creative abilities developed through TMT in social studies with regard to pre-test and post-test scores.

5. There exists subject area wise differences between cognitive abilities developed through MAI and cognitive abilities developed
through TMT in social studies with regard to pre-test and post-test scores.
6. There exists subject area wise differences between creative abilities developed through MAI and creative abilities developed through TMT in social studies with regard to pre-test and post-test scores.
7. There exists competency wise differences between cognitive abilities developed through MAI and cognitive abilities developed through TMT in relation to different content areas in social studies with regard to pre-test and post-test scores.
8. There exists competency wise differences between creative abilities developed through MAI and creative abilities developed through TMT in relation to different content areas in social studies with regard to pre-test and post-test scores.

1.11.0 DELIMITATION OF THE STUDY
1. The present study was confined to two English Medium Schools of Bhubaneswar City, namely, Demonstration Multipurpose School (Regional Institute of Education), Bhubaneswar, and Kendriya Vidyalaya No. I, Bhubaneswar.
2. The study was delimited to Class – VI students.
3. The study was delimited to cognitive and creative abilities in social studies.
4. The present piece of study was confined to few selected contents of the subject social studies.