1.0.0 Introduction

It is fairly acknowledged by the known and concerned educationists that stereotyped system of education prevailing at every stage has been causing incalculable loss to the society in general and to an individual learner in particular. Our activities in the formal educational set up have been considered as the glorified teaching mechanical activities solely limited to the computerized out-dated worn out stereotyped old instructions in various branches of knowledge. Instead of producing creative minds they stuff minds of learners at every stage with ill-digested ideas for the purpose of passing examinations. Perhaps, this could be one of the reasons why learners fail to contribute anything new and fresh to the real advancement of the civilization.

The story of civilization right from the stone-age to space-age is the story of man's creative imagination. It is an accepted fact that behind every civilized act or product there is more often than not a creative mind. Every significant creative action has added a new dimension to the human dignity which has helped to accelerate the growth of civilization. The advanced nations have accepted the fact beyond doubt and have started giving due importance to creative approach to teach all subjects of curriculum at different stages of education.
The developing nations such as ours, need to impart such education to their people as would enable them to cope with emerging new problems. In the present set-up the kind of education that they receive hardly helps them to solve their problems. Hence the present school education needs a thorough change in its present approach which is entirely based upon rote memory. Generally human beings in all societies look for change in things such as house-hold things, clothes and even in the design of houses. However, change is unfortunately rarely observed in the teaching and learning process. Guilford has rightly said:

"If we are not ready to tolerate the idea of drastic changes, we are not ready for an age of creative education".

It is, therefore, necessary to improve the traditions established long ago and switch over to teaching for creativity. Our present process is neither life-oriented nor child-centered but examination-oriented which has created tragedy for the process of creative education. Hence there is a need to re-examine, remodel and change drastically the existing education system in favour of creative education which can encourage talent and excellence. We do not want to waste the talents of our youth that alone can produce, the future scientific discoveries, works of art and

literature and future advances in technology which would bring about change in social life. Therefore educated-man power with creativity is the need of our time. This can be realised through a massive change in Indian education at all levels. The present set-up may be helpful in producing an intellectual person, who is generally found to be accurate in his work, but found poor in his contribution towards something novel, useful, latest and progressive. A creatively educated person is original in thinking and other cognitive abilities and so is different from others in his peer groups.

Thinking process is often classified into two categories namely convergent and divergent. The convergent thinking has three dimensions like accuracy, speed and correct choice. The divergent thinking has also three dimensions like fluency, flexibility and originality. For measuring convergent thinking I.Q. tests are developed and for measuring divergent thinking creativity tests are developed. The characteristic which an I.Q. test item has in common, is that they all have one correct answer and they result in converging of the problem under consideration to one appropriate response. So too is the operation of convergent thinking in
any situation that provokes thinking in a person. In contrast to this, the creativity test items stress the importance of many answers. Indeed, one of the criteria for successful performance on these tests is the number of answers given. Such factors as flexibility and originality are also scored by evaluating the direction and quality of responses. Guilford,\(^2\) distinguishes clearly between intellectual operations of divergent thinking which includes characteristics of fluency, flexibility and foresight and convergent thinking which represents kind of abilities measured by standard intelligence tests. Through the extensive use of new divergent thinking tests it was observed that the students who score high on these tests are not the same as those who score high on I.Q. tests. These observations point out that I.Q. tests do not seek to measure creativity. However it is equally wrong to suppose that those who are very low in I.Q. measure like morons and idiots, may plausibly be expected to be creative geniuses. At the University of California (IPAR) at Berkeley an intensive study of architects made by Mackinnon\(^3\) in 1968 revealed that:

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"For certain intrinsically creative activities a specifiable minimum I.Q. is probably necessary in order to engage in the activity, but that beyond the minimum, which often is surprisingly low, creativity has little correlation with scores on I.Q. tests".

Creativity has been differently described by psychologists. They say that creativity is a domain in which it is something broader than and separate from intelligence. All individuals are not equally good in any task. Some may think more divergently and some may be more convergent in thinking. Some may come to the solution immediately with only one solution, whereas others may have a number of solutions before them. All types of creation involve certain typical mental functions and follow the same process of development.

1.1.0 Importance of Creativity in Education

In education, its objectives, methods and process are in a state of constant renewal in keeping pace with changing values in society. Its process of renewal can be accelerated only if new growth can be achieved. This requires boosting of creativity in individuals from the early period of life. This objective can be realized only if education can produce lively, dynamic, original and productive thinkers who through their creation are able to make their lives more comfortable, meaningful and of healthy understanding.
Educationists whose unique business is to provide for the development of creativity in a child for a better living under new socio-cultural set-up, must meet the new challenge by attempting to understand the phenomenon of creativity.

Intelligence is considered to be a stepping-stone to creativity. Creativity is the higher function of intellectual components of human personality. Environment is one of the most potent features influencing a child's development. Besides this, organizational and administrative factors affecting the achievement of pupils are also important.

The present system of education has been mostly reduced to instruction of the mediocres, by the mediocres. On the other hand advancement of a nation depends upon the identification and nurturing of potential talent. So far the contribution by talent to the advancement of human civilization has been accidental, and not deliberate. The new trend in education towards identifying creative individuals, at an early age is a healthy sign. This will not only reduce frustration among gifted children but may result in the flowering of the potential in them and
Nurture of the creative talent cannot be formalized into any steps or procedure. Creativity grows in an atmosphere of inquiry.

Creativity is considered to be one of the highest attainments of human intellect. It has a broader connotation than is commonly understood. It can find expression in any activity whether it is humble or grand. The work of carpentry or that of a machinist can be as creative as the work of persons occupying highly prestigious positions in the society. The impact of creativity is to make an activity or object better, richer and of more productive nature. Creativity is not limited only to adults. Even children of young age can do creative processes leading to creative performances.

1.2.0 National Exigency for Creative Thinking

Our country is confronted with numerous problems. There is almost a state of starvation in some of the remote parts of India. We need creative talent of our country to rise to the occasions and solve its varied problems. We need to transform our agriculture, industry
and our entire economy to give our people benefits of science. For that we need to produce leaders who do not fall back on the old traditional patterns of thinking, but may have a foresight of attacking the problems in a newer and creative manner.

The space age is building up a world where old and comfortable ideas would no longer apply, such a world will require a high degree of creative potential in to-day's school-going children. We all are aware that human development comes through original thoughts and inventions. The importance of creative education is widely accepted in to-day's schools. The school of to-day has to aim at developing what is distinctive in every child. It is necessary to put emphasis on differences and originality rather than on stereotyped personalities. Creative education alone can lead to the development of that originality in the children. To understand the concept of creative education, let's understand the concept of creativity.

1.3.0 Trends in Creative Thinking Ability

During the second half of the twentieth century, creativity has come out as a fascinating subject of
investigation and area of concern. A creative individual can be identified to some extent by certain personality trends. Some such characteristics have been either identified through a number of studies.

Creativity can have manifold relationship with psycho-socio factors viz., (a) motivational factors, (b) age, (c) educational level, (d) personality traits and (e) sex.

Carl Rogers⁴ has pointed out that the available tests of creativity are no more highly related to one another than they are to intelligence tests. It is however agreed that creative ability belongs as much to human mind as does intelligence. But whereas intelligence has a growth pattern of its own and a measure like the I.Q., it is yet to be explored whether creativity has any such growth-pattern and if any creativity quotient (C.Q.) can be found out. So far the available studies have not been able to find out whether creativity of a person during his life time has any cycles of

creative work. It may be possible that during a person's lifetime, he can have some definite peak-periods of creative work and some definite period of creative stagnation.

Taylor, who conducted some research work in this field claims to establish that in a human life the best productions occur mostly between his/her age of thirty or forty years. This finding is however not conclusive. So yet it remains to be found out whether creative excellence has any relationship with concomitant factors of any kind.

Human creativity is a continuous process hankering for satisfaction and perfection. Yet creativity has a typical place in human life. It gives speed to the process; it removes complexities and adds enjoyment to life. When a person acts differently and divergently to explore new horizons, he becomes a creative individual.

Barron states:


"Human creativity may prove to be key to success or failure in mankind's quest for knowledge". E.P. Torrance states:

"Creative children in the first three grades, specifically the boys, often have a reputation among the other children for having 'silly ideas' or 'naughty ideas'. By the end of third grade they have usually learned to be evasive and to keep their thoughts for themselves with consequent loss of some of that previous spark of originality. The ninth and tenth year are transitional for most children."

Ghiselin observed that there was no peak period of creativity. She said that a study of the lives of artists and other creative workers revealed that they reached their peak periods at widely different ages. The question of peak period for creativity cannot be


decided without considering cultural environment, home background, social institutions, educational system, etc.

Tailer and Holland have said:

"There is some evidence that creative persons are more autonomous than others, more self-sufficient, more independent in judgement, more stable, more self-accepting, more radical, more self-controlled and possibly more emotionally sensitive and more introverted but hold."

1.4. Developmental Trends of Creativity

Torrance found that the development of creativity does not follow a steady increase from infancy to adolescence. There are dips as indicated by the scores obtained on it. The first dip comes at the age of five which is followed by increase in the first three grades.


of schooling. In the fourth grade there is again a decline. In the fifth grade the curve starts rising once again which in turn goes down in the seventh grade. This again is followed by recovery and a steady rise up to the eleventh grade.

Torrance\(^1\) attributes these drops and rises to new demands for conformity that originate from cultural and educational environment.

The first drop occurs with the beginning of the middle childhood when the child becomes conscious of social demands and expectations of outside authorities.

The second drop occurs at the age of nine when the child experiences increased need for acceptance and approval by the peer group of the same sex.

The third drop occurs at the onset of adolescence with its anxieties and worries.

While coming at the above hypotheses Torrance\(^2\) has collected data from cross-cultural studies. In a primitive

\(^{11}\) Ibid., p. 43.
\(^{12}\) Ibid., p. 45.
society like that of Samoa, with no cultural discontinuities and new demands, no drop was found at any stage, though the scores at different age-levels were much lower as compared to American children. In Australia and Germany the decline was found in grade third instead of fourth in India, the pattern of development was found similar to that of the United States.

Torrance\(^{13}\) came to a conclusion that in-service training attempts to encourage teachers to adopt creative methods while teaching, he even created instructional material that can be used in the classroom. This material was prepared for grade fourth because the decline in one's creativity has been noted during this period in United States. Recent studies have shown the fruitfulness of this instructional material.

Let's conclude this by the valuable remarks by Guilford\(^{14}\) a great name in pioneering researches in this area.

"I discuss the subject of creativity with considerable hesitation, for it represents an area in which psychologists whether they may be angles or not, have feared to tread. It was perhaps still hazy whether research on this relatively new concept would become a fascinating pursuit within a decade or so."

\(^{13}\) Ibid., p. 47.

1.5.0 Need of the Present Study

There is no doubt that a good deal of research work in the field of creativity has been done outside India. Researchers like Guilford and Torrance are trying hard to explore the field more extensively. Indian researchers like Paramesh, Raina, Mehdi, Ahmed etc., are also trying to study the rich area of original thinking and other distinct cognitive abilities.

In United States of America, the need of research in education and psychology was realized around 1950. Before the second world war there were scanty researches of this kind. Thurstone, C.W., Taylor, J.P., Guilford and their associates have been the pioneers in stimulating researches in the field of creativity. By 1960 'education for creativity' a very important issue throughout America. Since then considerable amount of research work has been done in the field of creativity by individual researchers as well as by teams of researchers and specialised research agencies. Such agencies have supported and fostered large scale research in this field. Their efforts have begun to yield fruitful dividends in the form of the changing pattern of educational system in that country.

For a developing country like India the utility of research in the field of creativity cannot be denied, we are
sorry for the fact that researches of a high level are wanting in the area of creativity. Recent doctoral studies in this field are either of adaptation or standardization of the available tests of creativity. In India Manas Ray Chaudhuri submitted first doctoral thesis of the kind to Calcutta University in 1962. Ray Chaudhuri pointed out:

"However there seems to be a growing interest among researchers to probe into this area eventhough resources, particularly financial, are limited."

1.6.0 Scope of the Study

It is obvious that creativity has a wider connotation. Creativity is not just painting a picture. In its fullest sense, it stands for 'Capacities to accept Challenges', 'freedom to exercise choice', and 'readiness to change self and environment'. A creative person stands up against dull and dreary dead routine.

The field of creativity is as vast as the ocean. It embraces many horizons. If we go into enumerating various theories it will throw a flood of light on the scope of 'the field of creativity'. The following are the various theories of creativity.
The researcher has selected a three dimensional model of 'The Intellectual Theory of Creativity'. He has taken into consideration the said theory while constructing and standardizing the research tool. Let's have a look into 'The Intellectual Theory of Creativity' in some details.

1.7.0 The Intellectual Theory

This theory has a statistical and empirical base. Guilford who produced a theoretical model of 'Structure of Intellect' believed that creativity is a group of mental

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abilities that are covered by divergent thinking slab of the SI model. According to this theory creativity, the so-called divergent thinking by Guilford, is drawn by divergent production put first with other four processes; then four contents and then six products. The SI model is as follows:

1. **Operations**
   - i. Evaluation
   - ii. Convergent Production
   - iii. Divergent Production
   - iv. Memory
   - v. Cognition

2. **Products**
   - i. Units
   - ii. Class
   - iii. Relations
   - iv. Systems
   - v. Transformation
   - vi. Implications

3. **Contents**
   - i. Figural
   - ii. Symbolic
   - iii. Semantic
   - iv. Behavioural

The structure of Intellect Theory model is thus three-dimensional.

In fact, it seems to us that Guilford's model was just a reinterpretation of the abilities that already existed, most of
them worked by Spearman through his statistical endeavour before Guilford talked of them. Of course Thurstone and Spearman recognized the limitedness of intelligence as a general mental ability; but it was Guilford who put forward the dimensional approach with the above model to understand all human abilities.

It is likely that some factors may have high value of creativity and less of intelligence. For example, in creativity cognitive ability of semantic units (Verbal Comprehension) may be low whereas that of evaluation of semantic implication (Problem Solving) may be high. Guilford thought of mental ability in a very limited and artificial sense and whatever divergent thinking abilities he drew were arbitrary and insufficient to describe the phenomenon of creativity.

The investigator has selected the model of the 'Structure of Intellect' and has prepared a test based on the definition propounded by Torrance, keeping major factors of the definition in mind.

1.8.0 Problem of the Study

There is hardly any study in India focussing on 'Creative Thinking Ability (C.T.A.)' among children of the age-group 11 to 13 and on its possible psycho-socio correlates. Considering all the above points, the investigator felt the need to prepare a valid and reliable tool to measure this
kind of child's ability of the aforesaid age-group, especially in Gujarati language, with precision. He also felt the need to explore its effect on possible psycho-socio correlates.

The title of the present study is as follows:

"AN INVESTIGATION INTO THE TRENDS OF CREATIVE THINKING ABILITY OF PUPILS OF AGE-GROUP 15+ to 13+ IN RELATION TO SOME PSYCHO-SOCIO CORRELATES"

1.9.0 Definitions of Some of the Terms

Before taking up further investigation it is obligatory on the part of the researcher to be clear about the key-terms used in the study viz., (a) Creativity, (b) Investigation, (c) Trends, (d) Creative Thinking Ability (C.T.A.), and (e) Psycho-socio Correlates.

(a) Creativity:

According to Guilford\textsuperscript{17} creativity is:

"An ambiguous word but when it is used in the phrase it means qualities or traits of individuals that predispose them to produce novel ideas and novel effects."

According to Torrance\textsuperscript{18} creativity is:

\textsuperscript{17} J.P. Guilford, Op. cit., p. 53.
"The process of sensing gaps or distributing, missing elements, forming ideas or hypotheses; and communicating the results, possibly modifying and retesting the hypotheses."

(b) Investigation:

According to Webster's Dictionary:19

"It is a noun-class word transformed from the verb class word 'Investigate'. It means an act of observation by close and systematic examination."

According to Advanced Learners Dictionary:20

"It means a careful and thorough inquiry into the problem on hand. It is an act or process of investigating or the condition of being investigated. A searching inquiry for ascertaining facts; a detailed or careful examination; a systematic examination of some scientific question whether by experiment or mathematical treatment."

(c) Trends:

According to Blond's Encyclopedia21 of Education it means:

"A phrase used to describe the growing tendency for children to stay at school beyond the statutory leaving age."

According to Random House Dictionary it means:
"A general course or prevailing tendency to a particular direction."

(d) **Creative Thinking Ability (C.T.A.)**:  
According to Flunks and Wagnells Standard Dictionary it means:
"The quality of being able to produce original work or ideas in any field."

According to Random House Dictionary it means:
"To cause to come into being, as something unique that would not naturally evolve or that is not made by ordinary process. To evolve from one's own thought or imagination as a work of art, an invention, etc."

The operational definition of creative thinking Ability (C.T.A.) has directed the methodology and scope of

the study. For the purpose of the present investigation, 'Creativity' or 'Creative Thinking Abilities' refers to the various characteristics as measured by a logically developed creativity test battery viz., fluency, flexibility, originality.

(e) Psycho-socio Correlates:

An individual's learning to think, feel and behave in an adult-way is the function of socialization. Age, sex, area and other physical make-up and basic mental potentialities have an immense impact on it. This ultimately results into a set of reaction-habits which is known as a 'Personality Trait'. Hence the researcher viewed that these Psycho-socio Economic Variables may have some effect on the development of creative thinking ability. Some human behaviours have been classified and have been named by exponents of different schools of psychology. There are still many to be classified and named. The researcher accepted the Trait Theory of Personality and chose carefully a few apparently related traits with the creativity phenomenon.

The researcher also viewed that the physical and biological factors also play a part in shaping the creativity of a person. Hence he thought it proper to view creativity in the context of some traits of personality and social factors like, socio-economic status, sex, etc.
Objectives of the Study

The objectives of the present investigation are as follows:

1. To prepare a reliable and valid creative thinking ability test (C.T.A.)
2. To study the trends of creative thinking ability of pupils of different areas.
3. To study the trends of creative thinking ability of pupils of different sexes.
4. To study the trends of creative thinking ability of pupils of age group 11 to 13.
5. To study the trends of creative thinking ability in relation to their Socio-economic Status (S.E.S.)
6. To study the trends of creative thinking ability in relation to their need achievement (n.Ach.)
7. To study the trends of creative thinking ability in relation to their I.Q.
8. To study the trends of creative thinking ability in relation to their parental behaviour.
9. To study the trends of creative thinking ability in relation to their anxiety.
10. To study the trends of creative thinking ability in relation to their security - insecurity feelings.
11. To study the trends of creative thinking ability in relation to their radicalism vs conservatism trait.

12. To study the trends of creative thinking ability in relation to their flexibility vs rigidity trait.

13. To study the trends of creative thinking ability in relation to their suggestibility trait.

14. To study the trends of creative thinking ability in relation to their emotional stability trait.

1.11.0 Limitations of the Study

The present investigation has certain limitations. They are as follows:

1. The present investigation is limited to the pupils of age-group 11 to 13 studying in various primary and secondary schools of Sabarkantha District of Gujarat State.

2. The test's norms are established only for the population of Sabarkantha District of Gujarat State.

3. Only the percentile norms are established for the whole test.

4. The norms are established on the scores made by the pupils on the whole test.

5. The test is limited to the Gujarati speaking pupils.
6. A study taken on huge scale can hardly be a population study. A parametric study inevitably involves a few limitations about sampling. The present investigation is a parametric study.

7. The tools used for psycho-socio correlates are used for the purpose of classifying pupils in different categories or groups. All the groups are compared with the set of scores on creative thinking ability for finding out significance level through F-test among different groups.

8. The developmental trends are studied using simple trend analysis technique.

9. The main effects of independent variables and their interaction effects are studied using analysis of variance.

10. Information such as area, sex, family size and educational qualifications furnished by the pupils are taken up as true.

1.12.0 The Scheme of Characterisation

A brief description of the chapters to follow is given hereunder with a view to acquainting the reader with the treatment of the subject under investigation.
Chapter II : Review of the Past Studies

It gives a short review of the past studies. The chapter presents a few studies on creative thinking ability of children. It contains mainly significant contributions made by chief investigators of different schools of creativity. The studies that are done in foreign countries as well as in India, are described in brief.

Chapter III : Planning of the Present Test

This describes the nature of the study, and its characteristics. It deals with the collection of items for the test, and assessment of the statements by experts. It contains the description of the tools and their psychometric values. It contains the sample of the study and its procedure. The experimental try-out of the test, the full description of the procedure and criteria for selecting the items for the final form of the test have also been discussed in detail. And finally it gives the idea of the tests and the scoring work done.

Chapter IV : Final Run of the Test

It deals with the final form of the test in which the final testing work has been done. The percentile scores for
different age and group levels are given with a view to increasing the utility value, usefulness and worth of the test.

Chapter V : Reliability and Validity of the Test

It describes the various methods adopted to establish the reliability of the present test and the different methods to estimate validity of the present test. It also deals with the computation of factorial validity of the test.

Chapter VI : Studies Related to Creative Thinking Ability

It describes the correlational studies as mentioned in the objectives. This chapter describes ten studies. The studies are conducted in detail using descriptive and inferential statistics to arrive at reliable findings. The interpretation of the statistical tables and graphs has been given in this chapter, too.

Chapter VII : Observations and Suggestions

The last chapter gives the investigator's observations and conclusions on the basis of statistical analysis of the data. This chapter mainly deals with the observations and conclusions drawn on the basis of the results and interpretations presented in the previous chapters. It also suggests direction for the further studies that can be taken up in the field of creativity.
Thus, this thesis contains detailed descriptions of all the essential steps taken to investigate the creative thinking ability among the pupils of age group 11 to 13 of Sabarkantha District of Gujarat State and the effective correlates of the creative thinking ability. Besides this, it also contains necessary tables, graphs, exhaustive bibliography and appendices at the end.