CONTENTS

1.1.0 Introduction
1.2.0 Creativity in Education
1.3.0 Scope of the Study
1.4.0 National Exegency for Creative Thinking
1.5.1 Problem of the Study
1.5.2 Definition of some of the Terms
1.5.3 Objectives of the Study
1.5.4 Hypotheses
1.5.5 Limitations of the Study
1.6.0 Scheme of Chapterization
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. Bloom (1958) is very pessimistic about development of creativity in present school set up. Ebel (1969) quotes Bloom (maintaining).

"There is some reason to believe that educational system can reduce originality and creativity. This negative effect on creativity is most marked when examinations instructional material and processes all emphasize learning by rote and the goal is centered on getting through examination."

This may be assumed as a precise description of our classroom today. Under this procedure almost all our teaching tends to crampt the imagination. Individual ideas are submerged by concern for a poorly justified conformity. We all are trying for developing the critical mind of the child while neglecting his creative potential. In the class-room the child is considered as

an object for intellectual and social nourishment rather than a thinker. He is perceived as an empty vessel to be filled with facts and bits of information and overburdened with material that requires his total concentration which prevents him from establishing his own approach to his study. Today a vast majority of students are not exposed to challenges which would develop their potential for creativity and innovation as the whole system of education is characterised by class work and examinations which emphasize rote learning and repetitive exercises. Perhaps this could be one of the reasons why learners fail to contribute anything new and fresh to the real advancement of civilization.

The story of the 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.

In the present set up the kind of education that they receive hardly helps them to solve their problems and hence the problem of society as well as nation remained pending to be solved. It is rightly mentioned in "Challenges of Education" a policy perspective that:
Apart from the imperative arising out of a continuing revolution in the world of technology, India is faced with challenges at home the urgency of which cannot be denied. Whether the country can face these internal as well as external challenges successfully will decide the utility of life of the citizen of tomorrow. Education is the most effective instrument to meet these challenges. Only education can imbue people with the knowledge the sense of purpose and the confidence essential for building a dynamic, vibrant and cohesive nation capable of providing its people with the wherewithal for creating better, fuller and more purposeful life.

Our present process is neither life-oriented nor child centred but examination oriented which has created tragedy for the process of creative education. This is also accepted by the Review Committee of 1977 that the general conditions prevailing in a majority of our schools progressively reduces the urge to experiment and to undertake creative work.

2. Challenges of Education: a policy perspective.

We need creative education which will help to create a better person to help a person grow bigger, taller, wiser, more perspective a person who incidently, would be more creative as a matter of course in all departments of life. Creative education will be the system evolved with the basic object of developing creative talent. It will detect the creative urge and provide all the opportunities to develop it into a creative personality by creating conducive climate for its emergence and by removing all the barriers internal as well as external in its way. The greatest hope for the better world lies in the cultivation of creative power. "To teach toward creativity is to teach toward the future of society". Earlier evidence suggests that only a narrow range of abilities is now being cultivated by our academic programmes. It is doubtful as to which type of thinking process (i.e., convergent and divergent) receives greater attention in most of our educational patterns. The convergent thinking has three dimensions like accuracy, speed, and correct choice. The divergent thinking has three dimensions like fluency, flexibility, and originality. Guilford distinguishes clearly between intellectual operation of divergent thinking which includes characteristics of fluency, flexibility, and foresight and convergent thinking which represents kind of

---

abilities measured by standard intelligence tests. Guilford\(^5\) has further mentioned:

"(Education) has emphasised abilities in the area of convergent thinking and evaluation, often at the expenses of divergent thinking. We have attempted to teach students how to arrive at correct answer that our civilization has taught us are correct. This is convergent thinking ... outside the art we have generally discouraged the development of divergent thinking abilities unintentionally but effectively."

In our educational pattern at all levels we fail to distinguish between the convergent and divergent talent. Though the extensive use of new divergent thinking tests, it was observed that the students who scored high on these tests are not the same as those who score high on I.Q. tests. These observations point out that the 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 Berkely an intensive study of architects made by Mackanon\(^6\) in 1968 revealed:

---


"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 score 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 task some may think more divergently and some may think more convergently. Some may come to solution immediately with only one solution, whereas others have a number of solutions before them. All types of creations involve certain typical mental functions and follow the same process of development.

1.2.0 CREATIVITY IN EDUCATION

At present the mankind is facing number of problems which disturb the mental equilibrium of numerous individuals every year. Every one is aware of society's very problems—over population, poverty, hunger, race, relation, wars, pollution, etc. It is ironic that we human community can spend billions of dollar to send men to the moon and back and yet allow more pressing problems here on earth to go relatively unattained. To have immediate solution of all these problems is the need of every country and community. To find out the solution of
these problems creative individuals can come to the rescue of mankind. A creative person has capacity to accept challenge, he refuses to fall in blind alleys of conformity and imitation. To prepare such a creative person, education can play an important role. Education is enriching life and living which should mean helping the educand to draw out all that is best in him/her and to help its development to its zenith. To this end if we endeavour, we would have different subjects and different methods mainly to concentrate educational efforts on:

(a) to pose challenge - may be visual, emotional intellectual etc.,

(b) to observe the process of meeting with the challenge by the educand - collecting data - analysing it, grading and classifying it,

(c) to respond and cater to the needs of the educand in the process of meeting with challenge offering and suggesting further data providing sources of information suggesting the ways and means of approach.

(d) to organize development encouraging on the conclusions arrived at however faulty or defective the may be, sympathizing with those feeling depressed and suggesting alternative at proper times pointing related actions.
In above mentioned points (a) is related to curriculum (b) to (d) are related to methodology and subjects.

When one has the creativity of the educand at heart the concept of compulsory and voluntary subjects slips into stupidity. In each individual case, it would be necessary to observe the areas of interest and natural choice. This could begin at an early stage. The extent of each studies in a subject will have to be determined and ample opportunities for variety will need to be provided in a detail statement. One may decide what co-related subjects could be grouped together in view of the educand's interest and creativity, to what extent to group the subjects and in what numbers the educand should be classified for group learning programme. This will provide the scope to frame suitable syllabus and curriculum, too.

As stated above (b) and (d) involve educational methodology which is tireless activity of observation, assessment and reaction to responsive or otherwise behavioural patterns of the educand and hence the teacher need to study and act. Teachers would bear in mind that he/she handles and treats individuals not groups, human beings not materials. The teacher's business would be to impose nothing, to propose nothing but to expose the individual to material, problem, challenge and render help wherever and whenever solicited.
by the learner. The teacher should always be on the lookout for what the learner has, what the learner feels or thinks, what the learner exhibits and in what direction the learner wants to go and how best the teacher could help one go.

One of the aims of education is to develop the children into fully functioning persons so that the creative abilities of the children cannot be ignored, remain undeveloped or paralysed. Creative thinking plays an important role in educational achievement. Teachers have to guide creative talent towards the contribution of creative growth in a variety of ways and fields. The future of our civilization depends upon the creative abilities of our generation. They are the real contributors to the progress of our society.

Researchers like Getzel, Jackson and Torrance have repeatedly found that creative thinking ability contributes to the acquisition of information and skills in a big way. In fact learning creativity is a natural method of learning. Moor and Ornstein have suggested that it is more economical to learn many things in a creative situation than in an authoritarian one and there are some people who learn little by authority but learn much creativity.  

1.3.0 SCOPE OF THE STUDY

Creativity has both social and personal significance. It is complex process, it involves a concept of self and relation to one's environment. All the students are capable of creative expression they may only differ in both degree and choice of the areas to manifest their creative potential. Broadly speaking each and every human being has a sense of creativity but it differs in subject, aptitudes or fields.

The main purpose of education in country like India is the all round development of individual which includes development of mental ability, thinking power, aptitude development, behaviour development, expansion of knowledge with day to day routine etc. To capture the purpose our schools activity programme should be mould in such a way that it covers both the types of thinking i.e. convergent and divergent. But it is an observed fact that very little is being done for the development of divergent thinking ability in our schools.

The teaching learning process is complex process which includes the variety of interrelated factors that facilitate or hinder creativity development. It is therefore necessary to relate specific teaching behaviours to specific goals and to explore outcomes in terms of creative ability. The development of creativity will be more effective if the teaching method includes
the strategies which are designed to create favourable conditions. Several investigation in the U.S.A. and in other countries have shown that creative expression is a form of learned behaviour which can be developed by application of appropriate teaching practices and by manipulating environmental conditions in the class-room. It can be achieved within a comparatively shorter time of creating instruction in any school subject area and may involve any media or mode of expression. In our country it is right time to think, since the curriculum and teaching methods in Indian secondary schools are undergoing extensive re-examination and revision. Much thought is being devoted to the discovery of new methods of stimulating creativity and maximising learning outcomes in the class-room. Many exciting ideas are emerging due to various experiments in various fields. There is a need of efforts to operationalise those provocative ideas and apply them to class-room experiences.

1.4.0 NATIONAL EXIGENCY FOR CREATIVE THINKING

A glance at Indian History shows that India had been a nation of warriors, philosophers, artists, artisans and agriculturists by and large before the advent of the British rule. And this too was without any universal system of education, atleast institutionalized system of education. Every home and skilled craftsmen are Guru's - discharging their obligations to the younger generations thriving in creativity - how else could there have been wonders of the created on this soil, The British brought in 'instruction' not education - and we see that it brought about
an agitation and struggle against the British, rooted in the oldest traditional ways of warfare and that the creativity died away in the instruction that follows the British pattern, though with numerous additions and alteration so here we are on the doorstep of 21st century when ....

Indian educational system has failed to produce the best creative geniuses in the various fields - what we have is some scholars with bookish information stuffed brain with a subject which hardly had generated creator in any walk of life, in any branch of studies. Some genius in various branches are not due to the existing system of education but they are the products due to other such factors. In pure science or applied, crafts arms ammunitions we have most persons doing the jobs of glorified clerks rather than workers or experts contributing to the development or advancement of any studies or branch of knowledge.

With this state of affair, we are with the ever changing world - The world that grows smaller due to the means of transport, travel, communication, the world that has stopped the space, age planning human habitation and warfare in space. It appears that we certainly have not kept pace with this world as we lack in creativity. Hence to build up a future of the nation, education must look into the creative abilities of citizens and help them to grow with the spirit of the age.
In order to keep pace with the spirit of the progressive and progressing world, we have to shed all fears and launch an enthusiastic attack. In most cases fears arise from inferiority complex lack of funds person and/or faith. Every citizen individually is a multiple product of interest and abilities, besides the fact that our land provided for a number of chances for a self expression and higher motivation owing to old tradition and culture and touches with the modern world. Let us, therefore, plan and approach for creativity in education. May be one finds some difference at the initial stage, for a sound beginning but be sure it won't for future follow ups. No sacrifice would be too great for that!

1.5.1 PROBLEM OF THE STUDY

The +2 stage of the 10+2+3 pattern is known as higher secondary unit which was introduced in Gujarat in 1976. The general age group of this stage is +15 to +17 which adolescent period. There is no such study in the state focusing on the creative thinking ability (C.T.A.) among children of this stage. Considering such points the investigator felt the need to prepare a valid and reliable tool to measure this kind of student's ability particularly in State of Gujarat. He also felt the need to explore its relation with some of the potential psychosocio correlates.
The title of the present study is as follows:

"An investigation into the creative thinking ability of students of higher secondary of Gujarat State in the context of some psycho-socio factors".

1.5.2 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) Creative Thinking Ability (CTA) (d) Psycho-socio factors and (e) Higher Secondary.

(a) **CREATIVITY**

According to Guilford\(^8\) 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\(^9\) creativity is "The process of sensing gaps or distributing, missing elements, forming ideas or hypothesis and communicating the results possibly modifying and retesting the hypothesis". Creativity is the encounter of the intensity conscious human being with his work.\(^{10}\)

---

(b) INVESTIGATION : According to Webster's Dictionary\textsuperscript{11} "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 Learner Dictionary\textsuperscript{12} "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 experimental or mathematical treatment".

(c) CREATIVE THINKING ABILITY (C.T.A.)

Passi\textsuperscript{13} (1971) has defined creative thinking ability as a multi/dimensional (verbal and non-verbal attribute differentially distributed among people and includes chiefly the factor of seeing problems, fluency, flexibility, originality, inquisitiveness and persistency. The investigator, accepts this definition and that of Torrance (1974) as the bases of present study Torrance has defined creative thinking ability as

\begin{itemize}
\end{itemize}
a process of becoming sensitive to problems, deficiencies, gaps in knowledge the difficulty, searching for solutions, making guesses, or formulating hypothesis about the deficiencies; testing and re-testing these hypotheses and possibly modifying and retesting them, and finally communicating the results.

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 and elaboration".


(d) HIGHER SECONDARY:

+2 state of 10+2+3 Educational pattern as accepted by Government of Gujarat. It is an intermediate stage between secondary education and higher education.

(e) PAYCHO-SOCIO FACTORS:

One of the major goals of education is to bring about the optimum development of a whole individual. 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 habit which is known as "personality traits".

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 sex, socio-economic status, anxiety etc.

1.5.3 OBJECTIVES:

The objectives of the study are as follows:

1. To prepare a reliable and valid creative thinking ability test.

2. To study the trends of the creative thinking ability of pupils of higher secondary schools.
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 Science and Common streams.

5. To study the trends of creative thinking ability of pupils of different socio-economic levels.

6. To study the creative thinking ability in relation to their scholastic achievement.

7. To study the creative thinking ability in relation to their anxiety.

8. To study the creative thinking ability in the context of following personality traits (1) Radicalism (2) Neuroticism (3) Emotional Stability.

9. To study the creative thinking ability in relation to their reasoning ability.

1.5.4 HYPOTHESES

To achieve the objectives of the study mentioned above, the following null hypotheses were formed.

1. There is no significant difference between the means of urban students and rural students on C.T.A. Scores.
2. There is no significant difference between the means of the two groups of students formed on the basis of sex on C.T.A. scores.
3. There is no significant difference between the means of the two groups of students on the basis of streams on C.T.A. scores.
4. There is no significant difference between means of the two groups of students formed on the basis of socio-economic status on C.T.A. scores.
5. There is no significant difference between means of the two groups of students formed on the basis of radicalism vs conventionalism personality trait on C.T.A. scores.
6. There is no significant difference between means of the two groups of students formed on the basis of neuroticism personality trait on C.T.A. scores.
7. There is no significant difference between means of the two groups of students formed on the basis of emotional stability personality trait on C.T.A. scores.
8. There is no significant difference between means of the two groups of students formed on the basis of Anxiety levels on the C.T.A. scores.
9. There is no significant difference between means of the two groups of students formed on the basis of scholastic achievement on C.T.A. scores.
1.5.5 LIMITATIONS OF THE STUDY

The present investigation has certain limitations which are as follows:

1. The present investigation is limited to the pupils of higher secondary stage [+2 of 10+2+3] only which includes XI and XII stds. of Science and Common Streams.

2. All the schools selected for the study are mixed schools having Gujarati Medium of Baroda District only.

3. The test norms are established only for the population of Baroda District of Gujarat State.

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

5. Pupil's percentage in S.S.C. Examination is accepted as their scholastic achievement score.

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

1.6.0 THE SCHEME OF CHAPTERIZATION

A brief description of the chapters to follow is given hereunder with a view to acquainting the reader with the reporting pattern of the project.
CHAPTER II

THEORETICAL PERSPECTIVE

In this chapter the investigator has made an attempt to describe and discuss the concept of creativity. It also includes the criteria of creativity and important theories of creativity in the context of education is dealt.

CHAPTER III

REVIEW OF RELATED LITERATURE

It gives a short review of the past studies. The chapter presents a few studies on creative thinking ability of different age groups. It contains mainly significant contribution made by chief investigators of different schools of creativity. It also includes discussion on various correlates.

CHAPTER IV

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 tryout 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. Finally it gives the idea of the tests and scoring work done.
CHAPTER V

THE FINAL RUN OF THE TEST

It deals with final form of the test in which the final testing work has been done. The percentile scores for C.T.A. are given in the chapter. It also includes data regarding sample population description of Male-Female, Rural-Urban and Science common streams.

CHAPTER VI

RELIABILITY AND VALIDITY

This chapter describes the concept and calculations of reliability and validity of the test. It describes the various methods adopted to establish the reliability of the present test.

CHAPTER VII

STUDIES RELATED TO CREATIVE THINKING ABILITY

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

CHAPTER VIII

OBSERVATIONS AND CONCLUSIONS

The last chapter contains 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 results and interpretations presented in 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 description of all the essential steps taken to investigate the creative thinking ability of higher secondary students in Gujarat State. It also contains necessary tables, graphs, exhaustive bibliography and appendices at the end.