CHAPTER – 1

CONCEPTUAL

FRAMEWORK OF

THE STUDY

CHAPTER - I

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1

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1.1   INTRODUCTION

" Education is a liberating force, and in our age it is also a democratising force, cutting across the barriers of caste and class, smoothing out inequalities imposed by birth and other circumstances."

- Indira Gandhi

The significant role of education is to make this world free from war, where people live in peace, enjoying the basic rights of justice. To attain human equality, freedom, dignity, fraternity, and prosperity-education plays a vital role. A humanized development of the society is possible only through a sound educational policy and programme which will prove to be panacea for the modern life's ills, inadequacies and disharmony. It is education alone which can generate awareness of individual's rights and help to promote understanding, tolerance and friendship among ethnic groups and nations by broadening the outlook of people. So the needs and priorities of the country in the field of education are articulated in the policy resolutions adopted by the country's parliament from time to time.

Every country guarantees some fundamental rights to its citizens and in case of denial of rights to them, many constitutional remedies are available to them. Some of the articles included in the universal declaration of human rights have found a place in the Constitution of India as fundamental rights and some as Directive Principles of state policy. The Constitutional provisions concerning children are :

Article - 24

No child below the age of fourteen years shall be employed to work in any factory or mine or engaged in any other hazardous employment.

Article - 29

No citizen shall be denied admission into any educational institution maintained by the state or receiving aid out of state funds or grounds only of religion, race, caste, language or any of them.

Article - 45

The state shall endeavour to provide, within a period of ten years from the commencement of this constitution, for free and compulsory education for all children until they complete the age of fourteen years.

Article - 46

The state shall promote with special care the educational and economic interests of the weaker sections of the people, and in particular, of the scheduled castes and the scheduled tribes, and shall protect them from social injustice and all form of exploitation.

The above provisions reveal that the nation's children are a supremely important asset and it shall be the policy of state to provide adequate services to children, both before and after birth and through the period of growth to ensure their full physical, mental and social development. This implies that "Education for all" is now a statutory obligation on the part of the state as well as on the part of each individual school. Also, in the wake of the Supreme Court decision, elementary education is now recognized as a fundamental right.

It is an important fact that in the educational ladder the primary education

is an important stage in helping the young minds to become responsible citizens of tomorrow. It is a base which needed to be strong enough so that the entire structure does not collapse. It is an important period that caters to the young students the basic language knowledge , skills, values, attitudes, and problem solving ability irrespective of what they are going to become later in life. These will help them in developing their full capacity of assessment, judgement, guidance, presentation, and any kind of direction to improve the quality of their lives and to continue learning for the future. Hence, realising the significance of primary education, it has been placed at an initial stage of the entire educational system.

Provision of universal elementary education has been a salient feature of the national policy since Independence in accordance with the constitutional commitment to ensure free and compulsory education for all children upto the age of fourteen years. This resolve has been spelt out emphatically in the National Policy on Education (NPE), 1986 and the Programme of Action (POA), 1992. A number of schemes and programmes were launched in pursuance of the emphasis embodied in NPE and POA. These includes Operation Blackboard (OB), Non-Formal Education (NFE), Teacher Education (TE), National Programmes on Nutritional Support to primary education, District Primary Education Programmes (DPEP), Shiksha Karmi Project (SKP), Lok Jumbish Project (LJP), Education Guarantee Scheme and Alternative Innovative Education (EGS & AIE), Sarva Shiksha Abhiyan (SSA) etc..In this connection the status of primary education in Gujarat is described as below :

1.2   PRIMARY EDUCATION IN GUJARAT

In Gujarat, primary education includes the schooling of Std. I to VII. It is

divided into two sections viz. pre-primary (std. I to IV) and upper - primary (std. V to VII).

As far as the effective literacy rate of primary education has reached **61.2** per cent in 1991 from a mere **36** per cent in 1961 however in terms of certain aspects, its status is a matter of concern for all of us.

(A)   Primary Schools of Gujarat

The Primary schools of Gujarat, managed by different bodies have been shown in the table no. 1.1.

TABLE No. 1.1

Primary schools of Gujarat managed by different bodies

Sr. No.	Managing bodies	No. of Schools (As on 31-8-1999)
1.	Local bodies	29635
2.	Private aided	657
3.	Private unaided	5683
	Total	**35975**

It can be observed from the table no. 1.1 that majority of the schools (29635) are being managed by the local bodies. The private aided and unaided schools are merely 6340.

(B)   Growth of Primary education in Gujarat

The growth of primary education with respect to number of schools, student's enrolment, number of teachers and classrooms has been given in the table no. 1.2.

5

TABLE No. 1.2

The growth of primary education in terms of schools, enrolment, teachers and classrooms

Years	schools	Enrolment	Teachers	Classrooms
1960-61	18,902	22,47,113	58,807	45,568
1970-71	21,355	36,04,967	92,801	68,692
1980-81	25,076	51,08,521	1,29,616	1,02,890
1990-91	31,279	69,89,505	1,67,983	1,34,430
1999-2000	35,975	81,34,004	1,98,407	1,37,274

(This does not include Ashram Shalas run by SJ & ED)

It can be seen from the table no. 1.2 that the figures mentioned for all aspects in 1960-61 have been increased on every subsequent ten years. This shows that the growth of primary education with respect to the above aspects is equally proportional to the every subsequent ten years.

(C)   Expenditure on Primary Education

The provision of budget on primary education in 2000-2001 was Rs. 1889.18 crores, which was 7.5 per cent of the total budget for the state. The expenditure on primary education in the last four decades has been shown in the table no. 1.3

TABLE No. 1.3

The Status of expenditure on primary education

Year	Plan	Non-Plan	Total	Expenditure per
	(Rs. in Crores)			Student (Rs.)
1961-62	0.62	6.02	6.64	33
1970-71	0.71	20.45	21.16	71
1980-81	2.58	95.50	98.08	186
1990-91	11.44	451.34	462.78	564
1999-2000	171.86	1531.71	1703.57	2828

The increasing expenditure on primary education can be observed from the table no. 1.3.

Thus, the continuous expansion and growth of primary education inspire individuals to think about the quality in primary education.

1.3 QUALITY IN PRIMARY EDUCATION

Looking to the above informations, it appears to be a satisfactory scenario of primary education in Gujarat. But when one thinks of the population growth rate of two per cent p.a. and the requirement of human power for future development, this increase in number of schools is insufficient. This shortage of schools further increases the pressure on the existing ones in terms of enrolment. Further the students are devoid of immediate access to schools and have to travel longer distance which affects their academic motivation.

As per Article - 45, primary education is the responsibility of the state government but the responsibility of management of primary education have been shifted to local bodies. However, it has not worked well. The schools have

suffered in terms of quality of education due to paucity of resources, demotivated. staff due to frequent transfers and excessive job protection, less power to local bodies for their own educational plans etc. A vast majority of primary schools have shortage of classrooms and other basic infrastructural facilities. It has reported in the vision - 2010 (Draft) that there were 1,37,274 classrooms in 1999-2000, rather than that there was shortage of 42,837 classrooms in district panchayat schools. This ultimately affects the quality of education and leads to a poor rate of retention. The quality of education provided by private aided and unaided schools is better, but their number is less and the price to be paid is not within the reach of the common man. Even on the other hand the existence of untrained teachers in many private schools further hinders quality; and generate the commercialisation of primary education.

The growth in the number of teachers is not in proportion to the growth in students enrolment. The statistics indicate that teacher-pupil ratio has increased, thus becoming one of the major barriers of quality improvement. The high teacher-pupil ratio exerts pressure on infrastructural facilities and the teachers. Any scope for innovations in the instructional process gets hindered.

With regard to expenditure on primary education, it has been observed an increase in absolute terms but when one considers the increase in number of schools, price increase etc., the increase in real terms is not very significant . Moreover, the lion's share goes to establishment/recurring expenditure. The availability of funds for qualitative improvement is meager. The delays, irregularities, malpractices, lack of awareness etc. affects the benefits of expenditure reaching the lower rung.

The results obtained as a part of the achievement surveys in 1998-99 and 2000-2001 respectively, at state level for the Std. III to VI have been pre-

sented in the table no. 1.4.

TABLE No. 1.4

Subjectwise Achievement and average result in percentage at state level for Std. III to VI

Subject	Std.	GAP - 1 *	GAP - 2 *	Difference
Maths	3	55.10	51.76	— 3.34
	4	57.96	43.04	— 14.92
	5	31:05	31.13	0.08
	6	47.27	53.82	6.55
Science/	3	53.27	54.14	0.87
En. Study	4	53.78	65.47	11.69
	5	45.71	47.79	2.08
	6	48.20	51.12	2.92
Gujarati	3	51.41	47.82	— 3.59
	4	49.14	45.29	— 3.85
	5	34.35	37.39	3.04
	6	47.89	43.55	— 4.34
Hindi	5	48.28	49.43	1.15
	6	46.10	46.98	0.88
Social -	5	43.53	49.82	6.29
Study	6	43.44	47.94	4.50
Physical -	5	52.02	56.92	4.90
Education	6	55.18	57.11	1.93

* GAP - 1 : Gujarat Achievement at Primary (1998-99).

* GAP - 2 : Gujarat Achievement at Primary (2000-01).

It can be seen from the table no. 1.4 that the positive differences between GAP-1 and GAP-2 shows the improvement in achievement level of the

9

related subject, whereas the negative differences between GAP-1 and GAP-2 shows the lower achievement in the related subject. In Mathematics, the achievement level has been decreased in Std. III & IV and in Gujarati, it has been decreased in Std. III, IV and VI. This shows the deterioration in the quality of primary education.

The position regarding drop-out rates in primary education in the last few years have been presented in the table no. 1.5.

TABLE No. 1.5

Yearwise Drop-out rates in primary education of Gujarat

Year	Std. I - V	Std. I - VII
1993-94	44.6	62.3
1994-95	37.7	53.1
1995-96	36.9	51.2
1996-97	35.4	49.4
1997-98	35.2	48.4
1998-99	28.9	48.1
1999-2000	22.30	41.48

The decreasing drop-out rate observed from the table no. 1.5, provides a sense of gratification. But, on the other hand the retention rate is merely 40 percent even after fifty years of Independence. This is a cause of concern as poor rate of retention affects quality.

The reasons behind high drop-out rate have been identified and

mentioned in Vision (2010) Draft, such as :

- shortage of teachers

- shortage of classrooms

- lack of toilet facilities for girls

- non-availability of upper primary sections

- need for children to work or look after siblings

- migrating parents

- social restriction on educating girls

- uninteresting curriculum, outdated teaching methods and inadequate teaching learning materials and laboratory equipments.

In the last four years, State Government has introduced different schemes and programmes specially to solve the problems of drop-outs, which are as follows :

- Appointment of Vidya Sahayaks

- Construction, of classrooms

- Provision of toilets for girls

- Upgradation to upper primary schools

- Alternative schools

- Tarang Ullasmay Shikshan

- Free text books based on the principle of activity based learning

- Computer education

- Community Participation

- Shala Pravesh Utsav

- Education for disabled children

- District Primary Education Programme

- Primary teacher's training colleges

- District Institute of Education & Training

- Sarva Shiksha Abhiyan (SSA)

It can be concluded on the basis of the above discussion, in terms of major parameters that, though various schemes and programmes launched for the universalization of primary education, the main focus remained on the expansion of schools, classrooms and teacher's only. Enough attention has not been paid to the quality of primary education imparted in the classrooms. Evidently, quality of education is linked to the quality of teachers, academically as well as professionally. The Education commission as early as (1964-66) has observed that, "of all the factors that affect quality of education .... the quality, competency and character of teacher are undoubtedly the most significant." Its clarion call, "No nation can rise above the level of its teachers and that the destiny of the country is being shaped in its classrooms," has continued to remind policy makers of the importance of quality in teacher education. With reference to the above context and pursuant to provision of NPE (1986) on teacher education, a centrally sponsored scheme of restructuring and reorganization of teacher education was approved in 1987. One of the five components of the scheme was establishment of District Institutes of Education and Training (DIETs). Under this scheme 456 DIETs in all over India and 25 DIETs in Gujarat have been established so far.

1.4   DISTRICT INSTITUTE OF EDUCATION AND TRAINING (DIET)

DIET as an innovative institution, has been designed to renovate the

elementary teacher education programme according to new curricular demands: The four major functions of DIET, namely; (i) Pre-service teacher education (ii) in-service teacher education (iii) provision of resource support and (iv) conduct of research; are to be performed in close integration, which together contribute towards the overall objectives of professional development of teachers.

The DIET guidelines (1989) suggests that each DIET should have well equipped with human and physical resources to support, strengthen and raise the educational climate of the whole district. It has to be a storehouse of materials, technical expertise, aids and other educational treasures, which would make education worth-while. Every DIET has to have continuous rapport between itself and the elementary teachers and help them to renew themselves.

The NPE (1986) has laid a great emphasis on making a DIET, a powerful unit of educational planning, provision, supervision and control, which hitherto was done at state level.

In order to fulfil the above functions every DIET has the following seven academic branches.

(1)   Pre-service Teacher Education (PSTE) branch

(2)   Work Experience (WE) branch

(3)   District Resource Unit (DRU) branch

(4)   Inservice programmes, Field interaction and Innovation coordination (IFIC) branch

(5)   Curriculum, Material Development and Evaluation (CMDE) branch

(6)   Educational Technology (ET) branch

(7)   Planning and Management (P&M) branch

Merely with the establishment of DIETs, the real problem of quality improvement in primary education is still remained unsolved. There is a strong need to go ahead with the harmony of inservice teachers training and PSTE. The investigator feels on the basis of his experience as a teacher educator that, sincere efforts on PSTE can do a magic for the qualitative improvement of primary education. Its a right time to lay emphasis on PSTE because the new trends implemented for strengthening quality of primary education have already been assimilated in the existing curriculum of PSTE - course. Hence, that will be fruitful for the new generation pursuing primary education.

1.4.1 Pre-service Teacher Education (PSTE)

On the recommendations of the education commission (1964-66), the modified PSTE at primary level was started in Gujarat, in 1970. It was of two years duration. The minimum qualification for getting an admission was new S.S.C. (X^{th}). But, it has been observed that though all the inservice teachers are trained, they are not competent enough to provide quality based education. So the state government has decided the minimum qualification as Std. XIIth pass, for getting an admission in PSTE course, from the academic year 1998-99.

At present in Gujarat, 23 DIETs, 95 Elementary teachers training institutes (including 36 Self-financed colleges) are providing PSTE course to around 6000 students in different mediums like Gujarati, Hindi, English, Urdu, Sindhi, and Marathi.

The competency based curriculum frame work of the PSTE - course includes eight different parts, which are as follows :

1   Competency areas based on content cum methodology.

2   Areas of skill

14

3   Areas of commitment

4   Practice teaching

5   Work experience

6   Samuhjivan

7   Art (Drawing & Music), Physical Education and Yoga.

8   Planning of curriculum, its implementation and Evaluation.

Inspite of the comprehensive content coverage in the curriculum of PSTE course, it has been remained under constant criticism as well as modification. As it doesnot fulfil the major objective of providing competent teachers to promote quality based education, various transactions and reforms have been taken place on the basis of suggestions given by various committees and commissions from time to time.

1.4.2   Curriculum transactions and reform

After independence, a number of commissions and committees have focussed on curricular and co-curricular content, alongwith, the role of teacher and implications for teacher preparations, too. The secondary education commission (1952) devoted one complete chapter on the need of dynamic teaching techniques. The education commission (1964-66) reemphasized the same view.

In 1977, the review committee was appointed to review the whole curriculum. One of the major terms of reference of the committee was, "To review the present scheme of studies and the time allocation for various subjects with a view to ensure that the institution or teacher has adequate time for experimentation, creative work, remedial instruction etc."

In concluding remark, the review committee has emphasized the need of creative education. It maintains- "if the purpose of the education is to nurture the child's capacity to the full and give our people not only a useful occupation but a full and abundent life, then the creative urge in the children must in every possible way be actively stimulated and cultivated in as many direction as possible."

The National Council for Teacher Education (NCTE) has been in existence for the last more than two decades and has taken steps as regards quality improvement in teacher education. Among activities NCTE's efforts to prepare teacher education curriculum framework in 1978 and revising it in 1988, 1996, 2000 are being considered as milestones in teacher education.

"Challenge of education - a policy perspectives (1985)" emphasized the urgent need for a change of curricula in the teacher's training institutions for imparting a story and relevant value system, adequate emphasis will also have to be placed in the curricula on social awareness, national imparatives, physical culture, sports and richness of India's heritage and culture with the help of creative techniques and educational technology.

According to NPE (1986), a curriculum of teacher education, which is cut off from the school and society, serves no useful purpose because of its internal weaknesses, which are as follows :

- Teacher education has not been conceived as an integral part of the educ tional and social system.

- It is conventional, by and large, in its nature and purpose.

- It doesnot adequately meet the requirement of the school system.

- It doesnot meaningfully reflect the national values and goals.

- it is heavily loaded with disconnected informations rendering it difficult to be transformed into knowledge or theories.

- It lacks appropriate blend of theory and practical components.

- the results of the latest researches which have significant bearing upon the theory and practice of education do not find adequate place in it.

- It fails to develop the competencies/ skills for becoming an effective teacher.

- The latest educational development are not sufficiently reflected.

- It is terminal in the sense that it doesnot lay emphasis on continuous and life-long learning.

- It doesnot inculcate professional values.

The curriculum framework for teacher education (1996) mentioned that the changes in the school and social system occur earlier and the teacher education follows them later so an educational lag between the two continues. The curriculum of teacher education, therefore, doesnot meet the expectations either of the school or of the society. So based on a fresh look, it has also been suggested that :

(i) there is a need towards evolving a culture sensitive pedagogy. The cultural plurality should get embeded in the pedagogical practices.

(ii) there is a definite requirement of bringing in research methods and methodologies in appropriate form in teacher education at PSTE programme.

(iii) the curriculum of teacher education in practice, should have a wide scope for rigorous work from trainees regarding community work, community development and community experience.

(iv) the teaching community has to face the challenges thrown by science and technology. So the theories of heredity, learning, mental health, attention and

motivation should be given stress in the light of the scientific researches.

(v) the teacher education curriculum has to be reorganised both structurally and pedagogically with a view to lay foundation of the triangular relationship among the community, school and the teacher education curriculum in a symbiotic/ dialectic framework.

"Teacher Education : Vision and Action" - a national seminar (1999-2000) has clearly suggested that :

(i) importance of field experience as a part of the PSTE curriculum should be emphasized. Practice teaching programme should be more relevant in terms of better design, efficient and effective implementation.

(ii) the skill of learning to learn need to be given emphasis in teacher education as this would enable the teacher to readily transfer them to their students.

(iii) teacher education programme should be personalized and activity based. The approach should be child centred. Learning should be without burden and joyous as visualised in 'Divaswapna' of Gijubhai Badheka.

(iv) there should be continuous and comprehensive evaluation in the teacher education programme.

(v) educational technology should be one of the areas that need to be strengthened in teacher education. Also computer education, should be one of the options offered in teachers training.

National Curriculum Framework (2000) emphasized that :

(i) The PSTE curriculum will have to be relooked inspite of its having been revised recently new concerns and issues will have to be incorporated there

in ;

(ii) In the PSTE programme adequate content knowledge of different subject area and proper integration of methods of teaching with content of school subjects such as cascade model and teleconferencing etc. are need to be placed.

(iii) A strong component of 'Evaluation' mechanisms / procedures will have to be ensured.

It has been observed that the curriculum of PSTE is under constant criticism. It was first time modified in 1977, in Gujarat to prepare competent primary teachers.

In 1978, a document 'Teacher Education Curriculum Framework' took a comprehensive view of the existing realities and perceived futuristic scenario. Though there was a subsequent modifications of this document in 1988 and 1996, teachers training institutions are yet to take adequate steps to upgrade their curricula. At last, after eighteen years, attempts have been made for the reformation of new competency based curriculum for the quality education at primary level. This curriculum was prepared keeping in mind the definition : "Pre-service Teacher Education is a process of transformation of a lay-person into a competent and committed professional educator", by the Nirma Education and Research Foundation, with the co-operation of National Council For Teacher Education (NCTE) and Gujarat Council of Educational Research and Training (GCERT), Gandhinagar, and Institute of Advanced Study in Education (IASE), Ahmedabad in August-1998. Implementation of this new curriculum of PSTE course was started from 1998-99 in Gujarat.

But as it is rightly quoted in National Curriculum Framework (2000) that :
"Curriculum is a device to translate national goals into educational experiences and this curriculum development is not a one time exercise but an on going process that has to be sensitive and responsive to the entire gamut of societal, pedagogical and other change at all levels", the exercise is still continued at present in the direction of curriculum refinement.

Thus, it has been found that the PSTE curriculum fails not only to serve the purpose of quality based primary education but also the other aspects like value based education, integration between education and social system, creative education, environmental awareness, professional values, activity based and joyous instructional process, effective practice teaching etc.

Ultimately all these aspects have made the classroom transaction ineffective. So deliberately, it leads us to ponder over the strong need of creativity in education. If the concept of creativity in terms of abilities and personality traits associated with creativity; identification, nurture and development of creativity; techniques for creative teaching and learning mingled with the curriculum of PSTE, the desired purpose can be fulfilled. Hence the nature and concept of creativity with respect to the above mentioned aspects have been discussed as under :

1.5 CREATIVITY : THE NATURE AND CONCEPT

There are many interpretation of the concept of creativity. The concept has been studied from a variety of desciplines - philosophy, sociology, neurobiology, psychology and so on. Each view point reflects its own relevant apporach. The focus here is to describe the basic nature of creativity from the perspective of educational psychology avoding various conceptual issues. In other words, the emphasis is on how teachers should view and understand creativity in a

20

classroom situation in terms of applied aspects.

As a psychological construct, creativity has proved to be difficult to be understood in one single definition. There is no universal definition of creativity. From psychological point of view, attempts have been made to operationalise the term in order to study it scientifically. There are about 50 to 60 definitions in the psychology literature, each emphasising different aspects of creativity. Some persons place more emphasis on qualities of the person who creates, others stress on how creative ideas and solutions are arrived at, still others highlight the qualities of the products to be judged as creative.

Creativity is visualised as a multivariate phenomenon. This is well reflected in the great diversity of definitions and variety of meaning attached to it. some definitions of creativity given by different authors are as follows :

1.5.1 Few Definitions of Creativity

Thurston (1955) : " An act is creative if the thinker reaches the solution in a sudden closure which necessarily implies some novelty to him".

Torrance (1955) : " A process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies and so on; identifying the difficulties, searching for solutions, making guesses or formulating hypotheses about the deficiencies, testing and retesting them, and finally communicating the results".

Stein (1953) : " A process is creative when it results in a novel work that is accepted as tenable, useful or satisfying by a group at a point of time".

Rogers (1959) : " A creative process is the emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand,

and the materials, events, people, or circumstances of his life on the other".

Lahois (1963) : " Creativity as a complex human attribute that is manifested as a cognitive empirical process from which an original product emerges".

Dehaan and Havinghhurst (1961) : "Creativity is the quality which leads to the production of something new and desirable. The new product may be new to society or new to the individual who creates it".

Drevahal (1964) : "Creativity is that human ability by which he presents any novel work or idea".

Barron (1961) : "Creativity means to make new combinations from the already existing objects and elements".

Taylor (1964) : "The measure of a creative product be the extent to which it restructures our universe of understanding."

Mednick (1964) : "Creative thinking consists of forming of associative elements into new combinations which either meet specific requirements or are in some way useful. The more mutually remote the elements of the new combinations, the more creative is the process or solutions".

Israile (1965) : "Creativity is the capacity of constructig and manipulating any new object."

Glen Hass (1968) : "Creativity is the bringing into existence ideas or products new to the individual, but not necessarily new to the others."

Passi (1973) : "Creativity as a multi.dimensional (verbal and non-verbal) attribute differentially distributed among people and includes chiefly the factors of seeing problems, fluency, flexibility, originality, inquisitiveness, and persistency."

Welsch (1980) : "Creativity is the process of generating unique products by trans-formation of existing products. These prodcuts, tangible and intangible, must be unique only to the creator, and must meet the criteria of purpose and value established by the creator".

Guilford (1950) clarifies the concept of creativity by making distinction between two types of thinking abilities namely ; convergent thinking and divergent thinking. Divergent thinking as a kind of mental operation in which individuals think in different directions, sometimes searching, sometimes seeking variety. Unlike convergent thinking where information leads to one right or a recognised best or conventional answer, divergent production leads to novel responses to given stimuli. The unique feature of divergent thinking is that a variety of responses is produced. Guilford relates divergent thinking to certain well-known ability factors viz. sensitivity to problems, fluency, flexibility, originality, redefinition, and elaboration - which seem to go with creative output.

Creativity as a concept has different meanings and interpretations for different people. It is indeed a multi-faceted phenomenon. But despite of differences in view points and definitions; all seem to have something common that creativity involves the ability to produce something new and unique. The something new or unique is usually a product resulting from a process initiated by a person. In short, creativity is a process where the individual locates gaps in ideas, thinks of alternative solutions to a problem, persists on an idea, doesnot easily agree to what is usually thought to be correct and has unique/original ways of thinking or doing.

A close analysis of different definitions of creativity provide the notion that it can be described as the four Ps, that is, the product of creative thinking

(Product), the process of creative thinking (Process), the person who is creative (Person), and the press or environment in which the creation comes about (Press).

1.5.2 Creativity as the product

The word 'Creativity' is derived from the Latin word 'Crea' means to create. Creating something new, original and unique. Morgan (1953) listed 25 definitions of creativity and viewed that creativity involves the development of something unique. It may be a painting, a poem, a theory, a story, or a solution. The newness only in the product is not enough. It must also be useful or satisfying. Both novelty and utility have to be combined in a product before it can be rated as creative.

1.5.3 Creativity as the process

The process approach to creativity is concerned with what actually happens in producing something creative or, in other words, what are the processes involved in the creative act ?

Torrance, who is a pioneer in the field of creativity research says, "The process of creativity consists of sensing problems or gaps in information, forming ideas or hypotheses and communicating the results."

The process of creativity is also described as combination of ideas that are not generally associated together. This is what Mednick (1964) calls 'remote association'. There is an intermixing of ideas. This usually results in new combinations. Out of a number of combinations one or two may turn out to be creative.

Based on the product and process approaches, creativity may be defined as a process to fill a sensed gap resulting in a new insight in which ideas, not

24

usually associated together, are combined, or some ideas are perceived in a new perspective leading to a novel and useful product.

There are different stages of the creative thinking process. Thinking of new and unusual ideas involves more than a flash of insight. Coming with new ideas is not the end of the process. Edison, the inventor of the light bulb, took years of experimenting with hundreds of failures until he succeeded in producing a bulb which worked.

1.5.4 Creativity as the person

Certain personal qualities help the individual to be creative in his respective : openness (descriptive terms like curiosity, adventure-someness, inquisitiveness, exploration), an internal locus of evaluation (ascribing success as result of efforts and self confidence) and the ability to toy with elements. Review of published work in the area of creativity reveals that qualities like risk-taking, independent in making judgement, less authoritarian, accepting chances, persistence (Stein and Henze), awareness, humour, non-conformity, confidence, selfsufficient, accepting disorder, strong affection (Torrance), fluency, flexibility, originality and elaboration in thinking, skepticism, intellectual playfulness (Guilford), and many more characterise creative persons at all levels whether they are in school or have grown into adults.

It is generally found that people are creative within particular domains, even though people who are creative in different domains may share common traits. Thus one may be a creative biologist but an uncreative novelist.

1.5.5 Creativity as the press

A deep into the creativity literature reveals that creativity is seen not only as a person, as a product, as a process but it sometimes results from the person

and his interaction with the environment, which is known as press. The mere congenial the environment for creativity, the more a person is likely to exhibit his creativity.

Regarding environmental correlates Taylor and Barron (1966) have observed : "We are perhaps more in dark about environmental conditions which facilitate creativity than we are about any other aspect of the problem. Beyond obvious conditions such as the need for ample time in which,to work freely on problems of one's own choice little is known. "

Certain important factors like democratic conditions in group work, freedom of expression and movement, lack of fear of failure and provision of psychological safety, encouragement and motivation, playfulness, breaking the barriers of conformity, family environment and background-play very important role in proper nurture of creativity of an individual.

Thus, the above described four Ps related to the creative thinking, point out the abilities and personality traits of individuals associated with creativity, which are as follows:

1.6   ABILITIES AND PERSONALITY TRAITS ASSOCIATED WITH CREATIVITY

A creative person is the product of a number of abilities and favourable personality traits. Each field of creative work requires certain basic abilities. In the absence of requisite abilities, creative work of a high order can hardly be expected.

1.6.1. Creative abilities

Creative ability is a characteristic endowment of human being and has been mainly responsible for development of civilization and culture. The major

creative abilities are discussed as under :

(a)   Divergent thinking :

Guilford's major contribution to creativity is his concept of divergent thinking as given in the Structure of Intellect Model. In divergent thinking there can be a number of answers to the question. Instead of converging on one answer, the mind goes in different directions and a number of answers emerge. It is an open - ended thinking.

Divergent thinking abilities generally include Fluency, Flexibility, Originality and Elaboration.

- **Fluency** is the ability to produce many ideas for a given task. The more ideas a person produces, the higher is his fluency.

- **Flexibility** is the ability to produce ideas that shows a person's movement from one level of thinking to another, or shifts in thinking. It indicates variety in thinking.

- **Originality** is the ability to produce ideas that not many people think of or that are unusual, remote and clever.

- **Elaboration** is the ability that enables a person to go into details.

(b)   Intelligence as an ability :

Guilford and his associates (1950,56) on the structure of intellect have brought out with the distinction between the two types of thinking abilities as,convergent thinking came to be identified with intelligence as usually defined and measured by the well known intelligence tests, while divergent thinking gave the most obvious indication of the term 'Creativity '.

As the concept of creativity gradually emerged, it was noticed that per-

sons with high IQ were not necessarily creative also. At the same time, creative ideas could come from persons, who did not have a very high IQ. This led educationists to recognise intelligence as one type of ability and creativity as another. Of course, to be creative, a certain level of intelligence is required but not vice-versa. Intelligence enables a person to comprehend complex problems while creativity helps him in being productive in new directions.

(c)   Problem solving ability :

It refers to all those mental and experimental activities a person goes through in attempting to resolve some problems. There are certain abilities related to problem-solving and creative thinking. Among these are sensitivity in perceiving a problem, defining the problem, eagerness to look for more information, searching for alternative solutions, willingness to accept conflicting ideas, breaking away from facts, avoiding jumping to conclusions, searching for unusual ideas and seeing new relationships.

(d)   Intuition and the Unconcious :

Intuition is the ability of coming to a conclusion without going through all the steps of analytical thinking. There are number of instances where the scientist knew the answer even before he started the investigation.

The unconscious follows a type of thinking that is different from the logical and analytical thinking of the conscious mind. Freud has studied the mechanisms that the unconscious uses in thinking and calls them primary thought processes.These mechanisms can be seen in dreams. Some persons have access to the resources of the unconscious. These are mentally healthy persons and they can draw upon the unconscious in their creative work. But there are very few research evidences about how to use intuition and the unconscious in

creative work.

1.6.2. Personality Traits

There are some personality traits that bear a close relationship to creativity. Some of these are as below :

(a) Motivation :

Creative persons who have attained eminence show a high level of motivation. They find their work so absorbing that they prefer to forego social and recreational activities that would take them away from their work. Eminent scientist are observed to work long hours, 7 days a week, because their work gives them more pleasure than anything else. This is what called 'intrinsic motivation'. They work to satisfy an inner urge and not just to get an external reward.

(b) Imagination and Visualisation :

Imagination saves the individual from unnecessary labour and expenditure of time. Many creative ideas are first imagined and then translated into action. Visualisation is an aspect of imagination where in persons are able to see images and manipulate them. When visual images replace symbols their thinking gets a new direction leading to an unexpected solution.

(c) Independence :

Another important characteristic of creative persons is that they are independent in thinking and also independent in their judgement. If a person is swayed by criticism, he will never be able to implement his ideas. A creative person has the capacity for taking calculated risks. He is able to take risk because he has confidence in himself and courage of his convictions.

(d) Tolerance of Ambiguity and preference for complexity :

29

In any creative attempt a person will come across situations which are complex and which do not indicate any clear-cut results of solutions. He has to face complexity and ambiguity.

(e)   Introversion :

Creative persons are usually introverts. They avoid spending time in social gatherings or meeting people unless it has something to do with their work. They prefer solitude as it gives them time to do their thinking. But this does not mean that all creative people are introverts. Some are extroverts also.

(f)   Curiosity, Wide Range of Interests and Humour :

Creative persons are open - minded and more receptive to new ideas. They are more curious. And due to this only they have wide range of interests. Creative people are usually interested in a variety of things, though due to lack of time they may have to forego many of their interests and hobbies.

Creative persons have a sense of humour. This may not be of much help to them in their work unless they are writing something witty, or drawing a cartoon, but the mental operation in humour is the same as in creative work. A direct benefit of humour is that, at crucial moments it helps to release tension.

(g)   Artistic and Aesthetic Interests :

It is natural to expect high aesthetic interest among artist and writers. But scientists including social scientists also show deep interests in artistic creations and music. One can say that rhythm, harmony, balance and other elements of arts have some kind of relationship to creation in fields that are not directly related to art.

These are some of the personality traits and abilities associated with

creativity. Each individual will have a unique combination of these, or may have some other traits and abilities which have not been discussed here.

With the help of the above discussion, it can be stated that the level at which an individual is working is not the same as that of a person with creative abilities and personality traits. The latter is decidedly working at higher level. In this regard, several psychologists have tried to describe the levels and types of creativity, which are as follows :

1.7   CREATIVITY - LEVELS AND TYPES

(a)   Levels of creativity :

Creativity operates at different levels. The higher order level creativity might change the meaning of the Universe, whereas, the lower order level may marginally develop an idea or improve a product. All children have some element of creativity. It may be expressed in a child's writing essays, poems, paintings, drawings, music, dance, classroom discussions, experiments, working on projects and co-curricular activities.

Ghiselin (1963) puts creativity under two broad levels : primary and secondary. Primary creativity is that which, " alters the universe of meaning itself, by introducing in it some new element of meaning or some new order of significance, or more commonly both". The work of Einstein (theory of relativity), Copernicus, Harvey, Freud, Piaget and others are good examples of primary creativity.

Creative action at the secondary level brings about further development to an established body of knowledge. For example, Terman took up Binet's tests of intelligence, refined and modified them, and added new tests. Binet's work would come under primary creativity, while that of Terman under secondary creativity.

(b)   Types of creativity :

Creativity is of two types- verbal and non- verbal. A child may show creative behaviour in writing, or composing poems. This is verbal creativity. The child may show creative behaviour in drawing, painting, craft etc.. This is non - verbal creativity.

Some students are good on verbal creativity, whereas others may be good on non-verbal or both. Normally creativity includes the capability of producing more ideas in many different directions and giving original responses alongwith their relevant details for the solutions of a given problem.

Thus on the basis of the above discussion, it can be concluded that creativity is not limited to artistic productions or scientific inventions and discoveries. It can find expression in any activity, howsoever humble or grand it may be. It makes an object or activity better, richer, more productive, fruitful and aesthetically satisfying. Ultimately it proves that creativity is mankind's greatest asset and creative people are the backbone of any nation. Hence, the need of *why* and *how* to identify, nurture, and develop the creativity among individuals has been strongly felt.

1.8   IDENTIFICATION, NURTURE AND DEVELOPMENT OF CREATIVITY

"Full many a flower is born to blush unseen" - is an oft qutoed line from Thomas Gray. The creativity bugs would like to say, probably, that many a buds dry without even blossoming. So the practical problem becomes one of divising the best means of identifying, nurturing and developing the creativity which exists in the students.

Through creativity, the individual not only identifies himself with what he

is not, also gains distance from it, unlike the burdens of everyday life. Thus creativity becomes a magic aid towards mastering the real world, controlling nature and developing social relationship. Torrance (1963) declares that it is of obvious importance to society, that creative talent be identified, developed and utilised. And finding the talented, encouraging their advancement, making known their potentialities serves two purposes: (i) individuals are helped to fulfil their promises and ; (ii) society is enriched. Hence, sincere attempts for early identification of creative talents are required.

1.8.1 Identification of creativity

Before any attempt is made to nurture creativity in students, it is important to identify it. No programme of developing creative potential can be successful unless a sincere attempt is made to identify the same, right from the beginning.

There are a number of systematic procedures and techniques to identify creativity among children. These have been broadly classified in two ways, viz. (i) non - testing techniques and ; (ii) testing techniques. The testing methods includes the use of various standardised tests. However, there are a variety of procedures which do not involve any kind of formal testing. These are called the non-testing techniques.

(i)   The Non - testing techniques :

There are various non-testing techniques viz. Observation, Ratings, Biographical Data and Anecdotal Records, Questioning and Check-lists.

(a)   Observation :

It is not difficult for a teacher to locate creative children, if he is a little

alert and careful in observing children's behaviour inside and outside the class-room. A teacher should observe the following aspects :

- Does the child easily adapt to any situation at home, school or outside ?

- Does the child think highly of himself and his abilities ?

- Does the child exhibit an urge to continuously excel in his own performance ?

- Is the child not being disturbed easily, while working in challenging situations ?

- Does the child strive to do his best in whatever task is being assigned to him and will not give up easily ?

- Does the child show readiness to take risks in various activities ?

- Does the child act according to his own will ?

- Is the child becoming more anxious than others in solving problems faced by him ?

- Does the child not get confused when situations posed appear apparently illogical or unconnected ?

- Does the child show an ability to withstand stress without affecting his behaviour ?

- Is the child enthusiastic to work on the task assigned ?

In case of a child, if the answers to some of these questions are 'Yes', he is potentially a creative child.

(b)   Ratings :

Rating scale approach has also been very popular for assessing creativity across various age-levels and professional groups. In this approach, the raters are asked to rate the pupils as high or low on the specified traits of

34

creativity.

Teachers ratings can provide valuable source of information. However, it is necessary to first define creativity in terms of specific traits. In the school, teachers may first pick out the most outstanding and the least outstanding students on the traits being assessed. Then the next best and the next least outstanding should be rated and so on. Parents, peers and friends can infact provide valuble information about the creative potential of the child.

(c)   Biographical Data and Anecdotal Records :

Another important source of identifying creativity is biographical data and anecdotal records. The basic idea underlying the application of biographical analysis is that children who have already showed certain characteristics related to creativity are likely to continue to do so. Taking highly creative persons e.g. scientists and artists, as the sample and their biographical information as the data, researchers have identified a number of biographical traits which can now serve as the basis for identifying creativity. Some of the characteristics of creative children shch as courageousness, critical independence in judgement and thinking, imagination, curiosity, absorption in work, openness to new ideas, sense of humour etc. The teacher can look for children with these characteristics through parents as well as their friends besides their own experiences about them. They may keep record of the instances, incidences and happenings which may throw light on the above characteristics in the child. His habits, areas of interests, thinking styles and skills, could also be noted to identify the creativity.

(d)   Questioning :

Questioning, as a technique to identify creativity, has been favoured by many writers, researchers and classroom practitioners. In order to evoke creative

thinking, following guidelines can be suggested to the teachers in this context (singh - 1995) :

- Pose problematic questions and situations at different stages of the lesson and encourage them to resolve.

- Put provocative questions requiring the pupils to examine things / information in different and new ways.

- Ask them to frame as many different types of questions as they can on a given topic of idea.

- Look for pupils asking too many questions and also those asking difficult, puzzling and unusual questions.

- Be respectful to imaginative ideas instead of ignoring them.

- Look for pupils with a tendency to meet challenges and to attempt difficult tasks and questions.

(e)   Check - lists :

Various kinds of check-lists and inventories are very useful in identifying creative potential. These check-lists inventories have been developed on the basis of activities, life experiences, hobbies, interests, etc. of creative individuals. One such tool has been given by Torrance in his book 'Guiding Creative Talent' (1969, PP. 251-253). It is a list of 100 activities which children do on their own in different fields.

Whatever the procedure may be, the teacher may have to use more than one procedure at a time for identifying creative potential.

(ii)   The testing techniques :

Besides the non-testing techniques, a number of standardised

procedures have been developed to assess the potential for creative thinking. These are known as creativity tests usually referred to as psychometric measures of creativity. Children show wide range of differences in imagination, original ideas, independent thinking and so on, and it is possible to measure one's present level of creative functioning. Hence creativity tests are generally used to identify the level of creativity with a view to nurturing their potentialities to the optimum.

A well known study by Getzels & Jackson (1962) showed that when intelligence tests alone were used to spot out creative students, many of the students were missed. They concluded that creative students have something more than what intelligence tests measure. The creativity tests have been developed because of such research finding, too.

Measurement of creativity has been one of the most important areas of research in the field of creativity. A variety of tests have been developed for assessing creativity of students of different age - groups. The tests reflect different concepts of creativity held by the authors about the nature of creativity. Guilford (1950) and Torrance (1968,1974) have done monumental work in this field by analysing the creative ability and developing tests for measuring the same through various factors included in it. Other investigators like Khatena (1973) , Mednick (1967), Wallach & Kogan (1965) also contributed to the development of creativity tests based on their concepts of creativity. In India, most of the creativity tests have been developed or adapted along the lines of Torrance and Guilford.

In India, Khire (1984) has constructed a battery of tests based on Guilford's Structure of Intellect Model for students from class-VIIIth to X[th]. Attempts have also been made by Passi (1972), Baqer Mehdi (1973), Kaul (1974), Ramchandran (1974), Dave (1980), Gilitwala (1978), Patel (1986) and Chaudhari (1986) to

develop their tools for measuring creativity in the line of Torrance's test. Paramesh (1972) adapted Wallach and Kogan's test suited to Indian conditions. These tests can be used to measure general creative thinking abilities and skills irrespective of any discipline. However, some investigators have also developed tests of creativity in different areas. These are tests of literary creativity (Rao, 1982; Kundley, 1977), scientific creativity (Singh,1978; Shukla, 1980), mathematical creativity (Parasnis,1985; Tuli, 1979) and creativity in physical sciences (Gupta, 1980).

Since children can express creativity through different ways, tests have been developed involving different types of contents like words, figures (non - verbal), actions and sounds etc.. Some highly creative children may lag in their verbal development hence non - verbal tests are also being used as a supplement to verbal measures. All the tests can be administered in groups as well as individually. Some tests are more useful for middle and high school students, and some can be used commonly for primary to graduate level. Each test has a standardised procedure, a complete set of manual, scoring and interpretation guide.

Generally, creativity tests have been used for reasearch purposes,rather than for selection or identification of creative children in India.

1.8.2 Nurturing of creativity

Students may not always reveal their creative potential automatically. Encouragement and opportunities are necessary before creative abilities are expressed. As a seed can grow into a plant only when suitable environmental conditions are there. Similarly during the early stage of schooling, if a wide range of opportunities in a variety of fields be provided, the creativity of a child can be nurtured. Regarding to this, the three major factors viz. (1) Home (2) School and (3) Society - facilitate children's creativity, which are discussed below :

38

(1) Home

Home is a social unit that exerts the greatest influence on the development of an individual's behaviour. Some important factors which can nourish children's creativity at home are described as under :

(a) Non - authoritarian Attitudes of parents :

Children can be helped to preserve and develop their creativity with parents having non-authoritarian attitudes. Parents may not always demand strict obedience. They may give support to the child who seems to be less obedient but creative.

(b) Emotional support :

Parents have keen interest in and love for the child. Emotional support at home, especially during early ages, can facilitate the expression and growth of creativity.

(c) Freedom :

Parents should give their children the freedom to explore, think, act, experiment, and express their views and feelings independently.

(d) Involvement in creative work :

Parents may try to help children engage in creative activities, provide support to different and unusual ideas. They must respond consistently in a positive manner toward new ideas, new ways of doing things and new experiences.

(e) Discipline :

Discipline should not be very strict to aid creative expression, but it must

be consistent. Physical punishment is to be avoided.

(f)   Early Identification of creativity :

First of all, parents need to find out the field in which their son/daughter shows a fairly good amount of creativity and then they can provide a variety of creative exeperiences related to the concerned area.

(g)   Appreciating creative behaviour :

Children may like to think creatively and share the joy of their creative discovery with parents. Parents may express their happiness atleast when they come across such behaviour.

(h)   Variety :

Variety can help one to go beyond the information available. This can make a child feel that he always has something new to do at home. Parents can provide facilities to help children pursue their hobbies and interests.

(i)   Availability of Role Models :

Parents can provide the facility for coming in contact with creative persons. This will help the child develop his /her creativity.

Besides this, there are another very simple things parents can do. A positive atmosphere plus activities geared to their level to provide them with success experience is important.

(2)   School :

Next to home, the school is the most important experience in the process of nurturing creativity. The following factors of school environment can stimulate the growth of student's creativity.

(a)   Psychological freedom and safety :

Students need psychological safety to experiment, to make errors and to bring forth unfinished thoughts and products without being afraid of harsh external evaluation. This will promote creativity.

(b)   Opportunity and support for creative work :

Teachers can provide opportunities to children and help them to produce poetry, prose, music, literature, cartoons, artistic paintings, sculpture, equipments or novel models etc.

(c)   Classroom learning environment :

A conducive classroom environment in terms of student-teacher relationship, interpersonal relationships among pupils, pupil's attitudes towards school subject and the method of teaching, pupil's perceptions of the teacher, physical characteristics of the class etc. facilitate creativity among the students.

(d)   Evaluation :

The teachers can at least give weightage to original and creative ideas and expression in classroom examinations.

(e)   Close liaison between Teachers and Parents :

Teachers may also make parents aware about the anti-creative behaviours, attitudes, activities, difficulties and progress of their child.

(3)   Society

Society also plays a vital role for nurturing creativity among the individuals. Arieti (1976) mentioned that some cultures nurture creativity are called creativogenic, and a society which nurture creativity is called creativogenic society. He regards it as an essential component of creativity. A creativogenic

society offers the individual, the possibility of becoming creative. In a dynamic relationship and creative exchange of the individual and his society, Arieti visualises a magic synthesis that leads to inventions, discovery and eminence. As a part of the creativogenic society youth clubs, associations, community development centre, youth wings of political parties, Bal Bhavans etc. may encourage children to think and act creatively.

Inspite of the above facilitating factors for nurturing creativity, there are many obstacles in the environment of child at home, classroom, school, community and his culture.

- The atmosphere at home to which the child belongs may be authoritative. Such an atmosphere demands him to behave according to elder's expectations, not permitting him to question them. This will become a barrier for creativity development of the child.

- A teacher in the classroom, who is not providing opportunities to children for free thinking, expression and actions, to that extent he is coming in the way of development of creativity. Such a classroom teacher is generally concerned with maintaining discipline, completing the course, confining to textbooks, over emphasising rote learning, criticising children for wrong answers, neither putting many open-ended questions nor allowing students to put questions and so on.

- The school, by not providing adequate facilities, instructional material, freedom to teacher and students, may cause another barrier.

- The community which causes a barrier when it ignores creativity while socializing children, to be productive.

It can be said that most of the barriers can be removed by harmonious efforts of parents and teachers. But especially within the classroom and school, what can teachers do to develop creativity among the students ? The raised question leads us towards the methods and techniques for creative teaching and learning for the development of creativity among the students.

1.8.3 Development of creativity

Our schooling provides many opprtunities to a teacher to create conducive conditions by using different creative teaching methods and techniques to develop the creative thinking and learning-processes among the students. Some of these are quite effective. These are: (i) Brain-storming, (ii) Attribute listing, (iii) Synectics, (iv) Role-playing, (v) Morphological analysis, (vi) Questioning, (vii) Self-discovery and guided-discovery method, (viii) Play way and activity method, and (ix) Creative writing.

(i)   Brain-storming :

It is creative problem solving technique frequently used in the classroom. Osborn (1963) developed this technique following the principle of deferred judgement because he believed that judgement and imagination can't go together in creative thinking.

Brain-storming can be used individually or in a group. In a group, particularly in the classroom situation, social facilitation is an extra advantage. In a group, ideas of others trigger further ideas and chain thinking occurs by association of ideas.

Normally, brain-storming is conducted in a small group of about 12 which includes one leader, one associate, five core members and five other members. But number is no restriction for brain-storming. Even the whole class can be taken

43

up as a group. The teacher can act as a leader who conducts the session, explains the rules of the game, and controls the behaviour of the group members. One of the students can act as an associate and record the ideas produced during the session. Those who are not included in the group, act as observers. The members of the group are kept changing so that everyone in the class gets an opportunity to participate in the brain-storming session.

Usually such session can be conducted in the morning hours when the mind is fresh. There is no fixed time limit for the session. It may continue for 40 to 60 minutes but usually fatigue sets early and the session ends in about 40-45 minutes. However, the session is stopped as soon as the group is dried of ideas.

The teacher, as a leader, has to set suitable conditions for free thinking in the class. He also has to purposefully encourage the unusual ideas. As a matter of fact, the brain-storming procedure itself has in built mechanism to create the conducive conditions for creative thinking.

Each of the steps of creative problem solving session using brain-storming technique is described as under.

(a)   Sensing the problem :

The group has to identify a problem for brain-storming. Any confusing situation, unsolved problem, gap, doubt etc. about which the class is concerned, can serve as a problem. If the problem is not felt by the group, the teacher should point it out to them. At the beginning, the problem would be hazy, unclear and too broad. But after detailed discussion, it should be made clear, familiar and specific to the group.

(b)   Fact finding :

After the problem is selected, necessary information and relevant facts are required to define the problem for brain-storming session. At the beginning, a lot of information is collected from all the sources possbile i.e. books, references, journals etc. Then the problem is broken down to specific sub-problems, relevant facts are selected, a framework for problem is built and the problem is redefined in specific, familiar and clear terms.

(c)   Ideation :

Actual brain-storming is done at this stage and large number of ideas are produced. To facilitate generation of ideas, the following ground rules of the session are first established by the teacher :

-    **Criticism is ruled out :** The group is given to understand that all forms of criticism, i.e. laughter, comments, ridicule, gestures, etc. are not allowed in the session. They have to contiune thinking. No evaluation of ideas is permitted at this stage.

-    **Freewheeling is welcome :** The group is told that wilder the ideas, the better it is. The teacher rather insist for the most wild and unusual ideas.

-    **Quantity is wanted :** It is believed that quantity breeds quality because best ideas come at the later stage of thinking. Therefore the teacher insists for maximum number of ideas and variety in thinking.

-    **Combination and improvement of ideas sought :** It is also encouraged by the teacher to use the ideas of others to produce new ideas as well as to combine different ideas into newer ideas.

The ideation continues till all the ideas are put forth, accepted and noted without exception. This list of ideas is then circulated to all the group members.

They are advised to add to the list any new idea they could think of till the time of evaluation of these ideas.

(d)   Evaluation of ideas :

Out of the plenty of ideas, the selection of the best ideas is done at this stage on the basis of variety of criteria such as time, cost, availability, safety, practicability, testing, effectiveness, economy, like-dislike, usefulness etc. The group itself decides the criteria for evaluation of ideas produced by it. Best solutions thus selected are considered for implementation.

(e)   Planning for implementation :

It is a challenge for a group to make promising ideas acceptable as solutions. In classroom situation, this stage normally is not involved unless the problem demands implementation of ideas as a solution.

This is how the brain-stroming session is conducted. This technique can be used in teaching of any school subject, especially the topics, where more and more ideas are required.

(ii)   Attribute listing (AL) :

Attribute listing (AL) of Crawford (1971), is a technique to design or refine some product or activity. This technique is used to produce new creative ideas to modify anything in a novel way.

In AL, a person has to do micro observations of basic characteristics of a product or activity which can be modified. After that, as per the demand the new creative ideas may be provided for the same. For example; now people are facilitated with light weight fibre plastic bag instead of heavy weight metal bag, with the same guarantee of its solidity and durability. Here the matter has been

changed to modify the bag. The matter is an element and the solidity, durability and the weight are its attributes. Now a days, the travellers prefer the wheeled bag as it is easy to pull on a railway station or on an airport. Here the attribute is its 'transport'. In this way its size and usage are also a subject of its renovation. These ideas are classified into three parts.

After collecting the newly generated ideas, discussion, checking, and elaboration of the same is desired. When it is acknowledged by the group, implementation is the last step which would have resulted into the modification. Creativity is continuing-stream of modifications suggested by ideas in use.

For AL, following types of product or activity can be selected :

- Comb   • Convocation   • Play - ground

Thus, AL is used just like a spring board, to stimulate the classroom discussion. It can also be used easily in the various discussion on social study, scientific problems and principles, case studies, story writing, and problem-solving. In short, it is the best teaching technique for the various aspects like fluency, flexibility, evaluation, elaboration and cognitive analysis of the skills.

(iii)   Synectics :

Synectics is an interesting approach to the development of creativity designed by Gordon and his associates (1961). The meaning of 'Synectics' in Greek language is to arrange the two diverse elements. According to Gordon (1961), creativity can be enhanced by a series of group exercises. These exercises are designed to help individual in understanding the process of creativity more completely and to use new metaphors and analogies to 'breakset' and generate new alternatives.

There are four famous analogies in synectics.

(a) Fantacy analogies :

In this , all the members of the group are told to imagine freely as if they are in their day-dreaming. It is desirable to find out the solution of the problem with the help of imagination in an irrational way. Soaring imagination is found in "If I were ......"- type essay writing. The same is possible in different subjects, too. For example,

- What will happen if the friction decreases gradually ?

- What would you do to pull a heavy object on a playground ?

(b) Direct analogies :

It is a simple comparision of two objects or concepts. The comparision doesnot have to be identical in all respects. Its function is simply to transpose the conditions of the real topic of problem situation to another situation in order to present a new view of an idea or problem. This involves identification with a person, plant, animal or non-living thing. For example :

- "How can one remove the heavy furniture from the classroom ?"

Such a situation is easily found in day to day life. Now think about this type of another situations.

(c) Personal analogies :

Personal analogy requires loss of self as one transports oneself into another space or object. The greater the conceptual distance created by loss of self, the more likely it is that the analogy is new and that the students have created. The emphasis in personal analogy is on emphathetic involvement. Students must feel that they have become part of the physical elements of the

problem. The identification may be with a person, plant, animal or non-living thing. Gordon believes that the usefulness of analogies is directly proportional to the distance created. The greater the distance, the more likely the student is to come up with new ideas. For example :

- Imagine that you are a flower. Write down your emotions and feelings.

(d)   Symbolic analogies :

In this, generally a two word description of an object, in which the words seem to be opposite or to contradict each other. According to Gordon, this provide the broadest insight into a new subject. They reflect the student's ability to incorporate two frames of reference with respect to a single object. For example : The title of a book "Gandhiji's demise" can be entitled as "Lover of peace",   "Mortality of the God" , "The murderer gun" etc.

Now to what extent one can compare imaginatively for the following :

(i)   Black money   (ii) your children.

In this way synectics is based on two different mental processes :

(i)   The process of visualizing the unfamiliar things in familiar ways;

(ii)   The process of visualizing the familiar things in unfamiliar ways.

Both of these processes help students, to make new, unfamiliar ideas more meaningful and to see old problems, ideas or products in a new, more creative light respectively.

(iv)   Role - playing :

Moreno (1946) used this natural phenomenon to develop his socio-drama and psycho-drama techniques. As an instructional technique it was later developed into role - playing which starts with imitation but then there is imagina-

49

tive transformation of reality. It is a group activity. It enables learners to adopt self-- learning process by exploring, correlating, contrasting and comparing. In role - playing , learning takes place not only at verbal level, but also at sense level, action level and emotional level. The learner experiments with his behaviour without fear of punishment from harsh realities of life.

Role - playing can be conducted in ordinary classroom setting. It is simple to perform and provide learning in real life situation. No written script is provided, there. Dialogues are spontaneously created by the actors while playing roles. Enacting roles makes the actors part of the problematic situation itself. They are emotionally involved. The description of the role playing session is given in the following steps :

(a)   Defining the problem situation :

The problem situation is described in the form of a story by the teacher and it is suggested to enact the story. The roles in the story are defined briefly but the situation is left open, so that the group can explore it. The situation selected should be interesting and easily understandable by the group. The teacher finally states the problem in objective terms to make the problem simple, specific, concrete, enabling the group to act it out.

(b)   Selecting Role-players :

At the beginning, the teacher may select the actors to play roles from amongst those who can speak boldly before the group. But normally the roles should be called out and volunteers should be invited to play the roles.

(c)   Warm - up :

When all the roles are accepted, the teacher has to prepare the actors

and the class to get the feel of the roles. They are told who and what they are in the story. This warm-up provides a sufficient background of the story to the actors and observers.

(d)   Briefing :

The teacher explains each role to the actors briefly, with bare guidelines, so that they follow the roles but do not confine themselves to a predetermined pattern or view, and work spontaneously. The actors are given a few minutes to create the stage and to establish the roles. Also the observers are told to be good listeners. In short, the explanation is kept to the minimum to ensure spontaneity of role - playing.

(e)   Enactment :

Once the roles accepted, actors are briefed and the stage is set, the actors start playing roles. The teacher tries his best to have maximum participation of the group.

Role- playing may continue from five minutes to an hour depending on the situation and how it is being handled.

(f)   Discussion :

After completion of the session, the group discusses the important issues and questions raised during the session. This discussion is normally controlled and guided one.
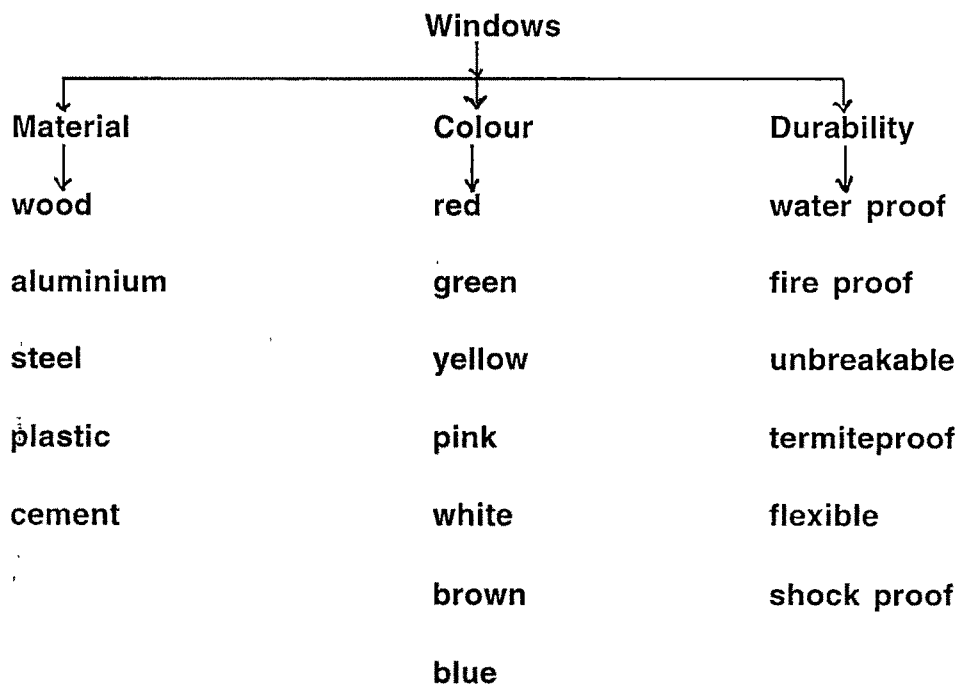
(g)   Evaluation :

Several questions are asked by the teacher to the group for evaluation of ideas. If the group is not satisfield by the way the session goes, the whole session is replayed in a different and more effective manner.

Thus, the success of the role-playing session depends on the skillful conduct of the session.

(v)   Morphological Analysis (MA) :

MA of Zuricky (1957) is a very simple and mechanical way of generation of ideas. These ideas may be used further in solving the problems. In this technique, a broad and general problem is taken up which is then broken into different aspects. Each aspect is then considered as a seperate dimension of the morphological model. Then each of the aspect is expressed in as many ways as possible. These different expressions become the units for each dimension. With these units, a multi-dimensional model is developed. Each cell of this model represents an idea and is a combination of one unit of each of the dimensions. Example : "How to make better windows ?" - Suppose this is a problem to be solved :

Windows

Material	Colour	Durability
wood	red	water proof
aluminium	green	fire proof
steel	yellow	unbreakable
plastic	pink	termiteproof
cement	white	flexible
	brown	shock proof
	blue	

It can be seen from the above chart that the three-dimensional morphological model using five types of materials, seven types of colours and six types of durability factors. Thus, this model will give **5 x 7 x 6 = 210** cells, each representing an idea.

The number of cell of the morphological model can easily be increased manifold by merely adding dimensions or/and units of any of dimensions, thereby increasing the number of combination cells.

(vi)   Questioning :

It is a learner-centred technique. Good questioning can very effectively provide for the development of student's curiosity, spontaneity, creativity and activity. But the type of thinking provokes, depends on the type of questions asked.

The teacher may use different types of questions while teaching different subjects. A few types of questions are described below :

(a)   Convergent Questions :

These questions are helpful in understanding information and lead to logical, critical, evaluative and convergent thinking. For example :

* What is the shape of the earth ?

* Draw a diagram of parts of a body.

(b)   Divergent Questions :

These questions are open - ended and seek more than one possible answers to the same question. They stimulate imagination and thinking. For example :

* Write an essay on 'Mother as river'.

* What type of adventures in mathematics are possible if zero had not been invented ?

(c)   Hypothetical Questions :

To stimulate imagination and creative thinking of students, the questions asked may or may not have relevance with reality, are called hypothetical questions. For example :

- If you were a snake, what would you do ?

- What will you do if you could fly in the sky ?

(d)   Consequential Questions :

In these questions, the student is asked to consider the event and describe its possible consequences. For example :

- What will happen if there is no water on the earth ?

- What will be a scene after an earthquake ?

(e)   Redefinition Questions :

These questions make the student redefine an object, animal, person, event in different terms, changing its perspective to a newer one . For example :

- How is a leader, a mother ?

- How is a face, a book ?

- How is a camel, a ship ?

(f)   Provocative Questions :

These questions are based on the information the student has got, but they lead him to go beyond the given facts. He has to imagine on the basis of the known facts, think and then answer these questions. For example :

- What would happen to the literature when there is no written language ?

- Had there been aeroplanes and telephones in the time of Krishna, how could he use them ?

(g) Futuristic Questions :

This type of questions make the student assume a situation or problem which may appear in future and then try to solve that problem. For example :

- How shall we be able to control the pollution evolved due to the plastic bags ?

- How shall we be able to control population explosion by the year 2002 ?

These are some of the types of questions that can be used by the teachers to develop creative thinking ability among the students.

(vii) Self - Discovery and Guided - Discovery Method :

At all levels there should be growing emphasis on having students discover rules or principles or appropriate definitions or axioms or steps in proof, instead of presenting them in readymade formula or assumptions or proofs. There is an evidence that discovery or inquiry oriented teaching techniques are more successful if the learner is allowed to speculate hypothesize, make errors without embarrassment, learn from the contradictions or inconsistencies and to produce and experience the growth of mathematical / scientific ideas in a first hand fashion.

Self discovery learning must be centered around a series of problem solving situations actively involving students. The teacher must take a definite role in guiding the entire process. Listed here are some tips, the teacher must keep in mind if he is to help students in discovery learning.

(a)   The teacher must allow students to discover for themselves solutions for the problems in their work. At all times, he must resist telling where there is a chance for students to structure the learning in their own internalized way.

(b)   The teacher should select studies from the conceptual schemes suggested by the experts (i.e scientists, mathematicians etc.). These studies should be obtainable for his students.

(c)   The teacher should be dedicated to the fact that learning by discovery takes a great deal of time but is vital for students to learn how to learn.

(d)   A general pattern for discovery learning should be class discussion (for topic identification), observations or experimentation, discussion and inter-pretation of data from observations and experiments, identification of new problems from interpretation, and new investigation starts again, etc.

(e)   The teacher should supply clues when students are bogged down in discov-ery learning to keep the process moving.

(f)   The teacher should have an overall plan to guide students in their studies.

(g)   Asking thought provoking questions is one of the best ways of stimulating discovery learning and keeping it moving along.

(h)   The teacher in discovery learning must have access to necessary supplies for his investigations with students.

(viii) Play-way and Activity method :

A natural way of learning for young children is to learn through activity and play. Play and activity are the two best ways to express what the child cannot express through language. As Munn (1974) has defined : "Play is a profound manifestation of creative activity." The principles underlying the play-way method

56

are similar to the principles of creative teaching.

Different forms of play and activities are popular at different stages of child development with the succession of forms reflecting the cognitive, emotional and social growth changes that occur with advancing maturity. The teacher should select the activities suitable to his/her class.

(ix) Creative writing:

Language has great potentiality for creative writing. There can be a variety of ways in which the students may be asked to express themselves. Through these, they will not only gain a better command over the language but will also develop sensitivity in the use of words and phrases, which lend an aesthetic value to what is expressed. Some of the forms of expression and experiences that are to be provided can be :

- Composing a poem

- Visualisation

- Identification

- Composing a story

- Dialogue writing

- Bringing in humour

- Giving similies

- Writing an advertisment

- Looking ahead

- Alerting the senses

On the basis of a few examples of how these can be utilized in writing

and other activities, the teacher will be able to evolve many more such exercises and experiences which will help in laying a good foundation for creative writing.

Thus, the discussion above can give teachers some ideas of wide variety of methods and techniques that they can use in classroom teaching. If a teacher has mastery over the above methods and techniques, he is able to play his role more satisfactory and effectively. Besides this, in his daily routine he can create favourable environment in the class or school to facilitate development of creativity among the students. For developing creativity in students the teacher can :

- pose open ended / divergent questions in the classroom wherever possible ;

- allow them to challenge the assumptions underlying the ideas presented ;

- encourage creative imagination in them ;

- avoid criticism and encourage free thinking ;

- provide informal and free atmosphere ;

- encourage them to search out new ideas and new things ;

- stimulate highly developed sense of humour ;

- give freedom to make mistakes ;

- assign projects or activities for them which call for original thinking or expression depending on their special areas of interest ;

- avoid too much rigidity of the time table ;

- provide as many stimulations and opportunities as possible for expression of ideas, in the areas of their interest ;

- stimulate them to write about themselves ;

- reward students for perfoming something uncommon, unique ;

- teach them to be flexible in thinking ;

- appreciate their ambiguous statements ;

- allow them to rethink or explore about the correctness of their answer instead of insisting on the correct answer of the given question.

- provide minimum guidance only , if it is necessary to them while they are engaged in working on a problem / project ;

- encourage them to do their best without giving hints for the solution;

- avoid rote learning or memorisation of facts ;

- provide a secular social climate which favours innovation ;

- respect their originality ;

- try new ways of teaching the same unit ;

- give various types of challenging assignments to them ;

- try different evaluation techniques;

- suggest and involve in various school improvement programmes ;

- try various ways of tapping community resources for classroom activities ;

- provide a democratic , friendly , co-operative and encouraging climate in which they will feel psychological safety and freedom which will aid to their creative growth.

Hence, it is needless to say that the teachers have to be creative for developing creativity of students . That is why, the methods and techniques need to be understood and mastered by the teachers . But are these techniques and

methods effective in the development of creativity ? In connection with this question, Torrance (1973) surveyed about 142 studies conducted with a view to develop creativity of primary and secondary school students . Each study involved one or the other creative teaching technique. The results of this survey showed that when teachers purposefully try to develop creative thinking of young children, the rate of success is very high. Seventy two percent of these studies showed increase in the level of creativity.

In later years , these observations are further strengthened by subsequent researches . Most of the studies conducted in India (Deshmukh, 1984; Bhaskara,1981 ; Yawalkar ,1987) have established that these techniques are equally effective in Indian classrooms. They can be used successfully for teaching of any school subject to any class without asking for much of the changes in the organisational set-up. But , for this teachers must have proper understanding and mastery over different methods and techniques . They need the training also, for the same. As the pre-service teacher trainees (PSTTs) are the ones who are going to be teachers after completion of pre-service teacher training, it necessitates that these student teachers need to be trained in this context. Especially at primary stage of education, this need can be fulfilled by the DIETs and other elementary teacher's training institutions. This thing inspires the investigator to ponder over the development of creativity among the PSTTs at primary level. Therefore it leads one to the rationale behind the present study. All the above discussion also helps in clarifying the rationale of the present study.

1.9   RATIONALE OF THE STUDY

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. The advanced nations have accepted the fact beyond doubt and have started giving the importance to creative approach to teach all subjects of curriculum at different stages of education.

The success of developing creativity depends on enthusiastic and careful transaction by the teacher in the classroom. As it is necessary for the teacher to know why creative children should be identified early. Children have an urge to learn by themselves and it is more so with creative children. If they are not provided chances to learn, think, discover and behave in their unique ways, especially in the early years of development, it may be blocking the creative talent of children permanently. Early identification of creative children and subsequently nurturing their creativity goes a long way in the development of any nation. The programmes of teacher education specially designed to promote creative teachers, who, in turn, would develop children's creativity. This work can be done on a large scale by developing creativity of teachers.

Renzuilli (1979) in his model of identification of talent, emphasized that creativity is a distinguishing characteristic of talent in every area of human activity. Although a majority of psychologists and educators would profess concern for identification and development of creativity in students, it is rarely an explicit goal of education.

In the Indian context, the school is, in fact the only place where an organized efforts can be made for creativity development. Now, whether a school would provide the environment and opportunities conducive for the development of creativity depends on a number of factors. The most important amongst these, is the teacher, who is the pivot of the educational process. Malhotra and Harilal

61

(1980) found that the teacher's encouraging behaviour, his creative teaching techniques, open mindedness, high motivation and his own creativity, contribute significantly to the development of student's creativity. However, this can happen only when the teacher is aware of and sensitive to what takes place in the classroom, is spontaneous and original in his thinking, to adopt materials, create new ones and devise new techniques. It is also important, that the teacher understands what a creative child is like, what kind of environment stimulates or stifles his creativity, what general and specific strategies could be used to nurture creativity in children and so on.

The teacher's attitude and interest are key factors in promoting original thinking. Torrance (1965) has demonstrated that creative thinking scores of students increase sharply when the teacher himself is interested in creativity. But in our formal schooling most of the personal characteristics like independence, nonconformity , curiosity which foster creative behaviour in children suffer a lot on account of uninspiring instructional process. This may be due to the limited opportunities offered to the teachers to get a true creative learning experience during their teacher's training programme.

Relating to development of talent and creativity, the National seminar on identification & development of talent (1985) has recommended that programme should be planned for orienting PSTTs for the development of variety of talents. Teacher education programme should be reviewed in the light of this recommen-dation. Special programmes for stimulating, enriching, and accelerating creativity should be introduced to promote the development of talent and creativity among the students.

Research has shown that teachers are not knowledgeable about creativity. The results of the study conducted by Willams (1976) on more than five

hundred teachers across the country have shown that teachers didnot understand what is meant by the term 'Creativity'. They had difficulty in identifying crative talent in the classroom pupils. In the same year Eberle replicated this study and again found that teachers were unable to identify their most creative pupils.

The first document on Challenge of Education-a policy perspective (1985) expressed its concern on this point.

"It has been noticed that the vast majority of students are not exposed to challenges which would develop their potential for creativity and innovation because the whole system of education is characterized by class work and examinations which emphasize rote learning and repetitive exercises. Undoubtedly, this will require the overhaul of pedagogic methodolgy 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 ethic, knowledge and skills of the teachers, 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."

Implications of creativity research for pre-service teacher education programmes are of considerable value. But, still creativity as a key area of training is yet to find a place in the regular training programmes of teacher's training in the country. This very things have motivated the investigator to select the present study.

According to Passi (1989), residential education programmes facilitate promotion of creativity to a greater extent than non-residential programmes. Also PSTE at primary level, is a two years full - time residential training programme. So keeping in mind the long term effect of the present study, the investigator has

63

prepared a creativity programme for the Pre-service Teacher Trainees (PSTTs) at primary level.

According to Edward De Bono, "Creative thinking is a skill and like a skill it can be developed and improved, if one knows how." To enhance the creativity level, the special programmes were developed by Covington (1970), Crutchfield (1972), Williams (1972), Feldhusen (1974), De Bono (1974) abroad, and by Jarial (1981), Patel (1984), Ciraben (1987) and Bhaskara (1981) in India. These programmes are mainly prepared for the groups like middle school children and secondary school students.

A peep into the research literature dealing with the techniques and procedures of developing creativity, it may be noted that a variety of numerous methods and techniques being employed for this purpose such as Osborn's (1963) 'Brain - storming', Gordon's (1961) 'Synectics', Crawford's (1971) 'Attribute List-ing', Paramesh's (1974) 'Morphological synthesis, check - listing, Bionics' , Moreno's (1946) 'Socio-drama, Psycho - drama' etc.

Some of the studies conducted on the effectiveness of the above methods and techniques on individual's creativity such as Parnes (1963, 1971), Torrance (1963), Torrance and Torrance (1973), Hutchinson (1967), Olton and Crutchfield (1971), Vaags (1973), Khatena (1974), Johnson (1975) and others, Nirphrake (1977) have concluded that there was marked increase in the creative thinking power of the subjects as a result of deliberate training in such thinking.

In the area of creativity there are about 214 studies, out of more than 6531 research studies done in India and reported in the five Surveys of Research in Education. Out of that 60 per cent researches have been done on the person-ality correlates of creativity and only 14.28 per cent researches have been done

on nurturance of creativity, though it is more important. Also most of the studies have been conducted on studies group like middle school children, secondary and higher secondary school students.

It seems that during the last decade, there has been a sharp increase in the volume of research on creativity and creative thinking with a major emphasis on constructing the tests of creativity and correlational studies of creativity with self - concept, personality etc. Unfortunately there has been a little research on the general problems of nurturing and promoting creative thinking, especially for the teachers and their transaction during the classroom settings.

Researches in the field of creativity during the last forty years have established two facts, rather unequivocally. They are -

(i)   Creativity is not an esoteric ability, a God - given, super - natural endowment possessed by a selected few;   but a common characteristic existing on a continuum.

(ii)   Creativity is teachable, educable and can be developed through training.

Every individual, every student, every teacher is creative and his creativity can be nurtured, nourished and enhanced. It means that development of creativity which has been neglected so far, should be developed among the teachers keeping in mind the fact that a creative teacher who serves as a model for the creative child. Thus, on this postulate the investigator has undertaken the present study, in terms of preparing a creativity programme for PSTTs at primary level.

1.10   STATEMENT OF THE PROBLEM

PREPARATION OF A CREATIVITY PROGRAMME FOR PRE - SERVICE TEACHER TRAINEES AT PRIMARY LEVEL AND A STUDY OF ITS EFFECTIVENESS.

1.11 OBJECTIVES OF THE STUDY

The study has been carried out with the following objectives :

1. To construct and standardize a creativity test for Pre-service Teacher Trainees at primary level.

2. To identify the creativity level of Pre-service Teacher Trainees at primary level.

3. To prepare a Creativity Programme (CP) for Pre-service Teacher Trainees at primary level.

4. To study the effectiveness of Creativity Programme with respect to :

   a) creativity components ;

   b) caste category ; and

   c) academic stream.

1.12 OPERATIONALIZATION OF THE TERMS USED

1.   Creativity :

Creativity is a process where the individual locates gaps in ideas, thinks of alternative solutions to a problem, persists on an idea, does not easily agree to what is usually thought to be correct and has unique/original ways of thinking or doing.

2.   A Creativity Programme (CP) :

This programme is constructed by the investigator with a view to nurture and develop the creativity level of Pre-service Teacher Trainees at primary level. Here, the CP relates to a collection of activities based on different primary school subjects and existing curriuclum of Pre-service Teacher Education, in a form of worksheets with exercises and workshop schedule. The following components of

creativity have been kept in mind and recognised to study the effectiveness of CP.

(i) Fluency (F) : The facility with which many ideas can be generated.

(ii) Flexibility (Fl) : The number of different principles, strategies, or approaches used in response to a task, or shifts in repsonse.

(iii) Originality (O) : Uniqueness of response, the response which is statistically uncommon.

(iv) Elaboration (E) : The number of details supplied beyond those necessary to communicate a basic idea.

3.   Pre-service Teacher Trainees (PSTTs) :

The term PSTTs is defined as : "The students who have passed H.S.C. Board Examination (XII th Std.) and joined Primary Teacher's Training Institute as their future educational career, to become a primary school teacher after completion of two years full-time, residential Pre-service Teacher Education (PSTE) Course."

4.   Creativity level of PSTTs :

Creativity level of PSTTs is represented by their total score on various components of creativity such as Fluency, Flexibility, Originality, and Elaboration which can be measured by the test of creativity.

5.   Effectiveness :

Effectiveness of the CP in the present study has been judged on the basis of the differences in the mean creativity score of pre-test and post -test for the experimental group and the control group.

1.13   HYPOTHESES

The objectives of the present study are achieved in terms of the following hypotheses :

Ho 1 : There will be no significant difference in the mean creativity score of the experimental group and the control group.

Ho 2 : There will be no significant difference in the mean fluency score of the experimental group and the control group.

Ho 3 : There will be no significant difference in the mean flexibility score of the experimental group and the control group.

Ho 4 :There will be no significant difference in the mean originality score of the experimental group and the control group.

Ho 5 :There will be no significant difference in the mean elaboration score of the experimental group and the control group.

Ho 6 :There will not be any differential impact of the creativity programme on the PSTTs of different caste category in terms of mean creativity score.

Ho 7 :There will not be any differential impact of the creativity programme on the PSTTs of different academic stream in terms of mean creativity score.

1.14   DELIMITATIONS OF THE STUDY

1.   The study was delimited to the PSTTs, who were studying in the first year of the PSTE course during 1999-2000 in the District Institutes of Education and Training (DIETs) Rajpipla-Dist. Narmada and Santrampur-Dist. Panchmahal.

2.   The verbal and non-verbal forms of the creativity test were constructed into

Gujarati langauage only as the sample selected for the study was from Gujarati medium only.

3.   Mehdi's (1973) Tests of Creative Thinking were translated into Gujarati for finding the validity of the constructed tool.

4.   The creativity level of the PSTTs was identified in terms of its four components viz. fluency, flexibility, originality and elaboration.

5.   The Creativity Programme also was prepared in Gujarati language only due to the above mentioned limitation.

1.15   CONCLUSION

In this chapter, the discussion on the various aspects of creativity emphasizing on how teachers should view and understand creativity in a classroom situation in terms of applied aspects and the present status of pre-service teacher education at primary level etc. inspires to ponder over the development of creativity among the PSTTs, who, in turn, would identify, nurture and develop student's creativity on a large scale. In short, the present study is the emergence of the investigator's own thoughts in terms of the present needs regarding creativity oriented PSTE programme at primary level. In the chapter to follow, a detailed discussion on the studies available in the area of creativity and its development have been done which helped the investigator to drawout the implication for the present piece of research.