



The effects of the implementation of creativity training in the elementary school social studies curriculum
by Claudia Clague Hoy Tweet

A thesis submitted in partial fulfillment of the requirements for the degree of DOCTOR OF EDUCATION
Montana State University
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Abstract:

Experimental social studies curricula and teaching procedures were developed at the McKinley School in Butte, Montana, during the 1977-78 school term with fifth and sixth grade students of comparable classes.

Three groups were selected at each grade level. The Experimental1 groups had creativity training incorporated into their social studies program. The Experimental2 groups had creativity training dispersed throughout the curriculum. The Experimental3 groups acted as a non-treatment group.

Instruction was conducted by regular classroom teachers and the testing was supervised by a school counselor. Tests used were the Torrance Test of Creative Thinking and the Test for Inquiry Social Studies.

Data obtained from pre, post and retention testing were used to generate class means. The class means were compared by the student's t-test to determine if there had been a change in means after instruction. The data indicated that the Experimental1 groups' social studies means were significantly above the Experimental2 and Experimental3 groups' means. The creativity means of the Experimental1 and Experimental2 groups were significantly above the means of the Experimental3 groups on the sub-tests of fluency and originality.

Indications were that creativity skills had been increased by either teaching strategy but that social studies skills were only increased by the Experimental1 procedures.

An Anova was employed to determine if there were interactions between students' intelligence or sex and teaching methods. There was no interaction related to the sex variable. There was some main treatment effect between teaching methods and the intelligence factor with the high and low intelligence groups.

Recommendations from this study considered both the areas of creativity training and social studies. Recommendations for social studies are the inclusion of creativity training within the social studies curriculum and use of the local community for social studies enrichment. Creativity recommendations are the use of creativity training and creative problem solving in a spiral effect throughout the elementary curriculum.

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THE EFFECTS OF THE IMPLEMENTATION OF CREATIVITY TRAINING
IN THE ELEMENTARY SCHOOL SOCIAL STUDIES CURRICULUM

by

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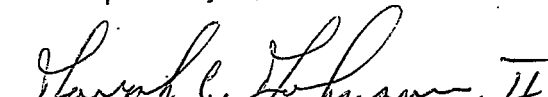
A thesis submitted in partial fulfillment
of the requirements for the degree

of

DOCTOR OF EDUCATION

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MONTANA STATE UNIVERSITY
Bozeman, Montana

February, 1980

ACKNOWLEDGEMENTS

The inspiration for and the completion of this dissertation was dependent upon many persons. The writer would like to sincerely thank Dr. James Hauwiler, Dr. Richard Horswill, Dr. Leroy Casagrande, Dr. Gerald Sullivan, Dr. Lawrence Ellerbruch, major advisor, and the Elementary Education staff of Montana State University for the aid and encouragement they have given to her.

The writer would also like to express appreciation for the services of Mr. William Milligan, and the school board members of School District Number One, Butte, Montana, Dr. Timothy Sullivan, the teaching staff, and students of the fifth and sixth grades of the McKinley School of Butte. To the personnel of the Anaconda Company, and other representatives of the Butte community at large, who assisted her in the accomplishment of this work there is sincere gratitude extended. Without all these persons' aid and cooperation, this study could not have been completed.

Special recognition is given to the writer's children, to her mother, to her immediate family and to her husband, Jim. If their encouragement, patience, and steadfastness had lessened, this dissertation could not have been possible.

All of these persons have given the writer the opportunity to experience what Eric Fromm meant when he stated: "Creativeness means to be born before one dies."

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ABSTRACT

Experimental social studies curricula and teaching procedures were developed at the McKinley School in Butte, Montana, during the 1977-78 school term with fifth and sixth grade students of comparable classes.

Three groups were selected at each grade level. The Experimental₁ groups had creativity training incorporated into their social studies program. The Experimental₂ groups had creativity training dispersed throughout the curriculum. The Experimental₃ groups acted as a non-treatment group.

Instruction was conducted by regular classroom teachers and the testing was supervised by a school counselor. Tests used were the Torrance Test of Creative Thinking and the Test for Inquiry Social Studies.

Data obtained from pre, post and retention testing were used to generate class means. The class means were compared by the student's t-test to determine if there had been a change in means after instruction. The data indicated that the Experimental₁ groups' social studies means were significantly above the Experimental₂ and Experimental₃ groups' means. The creativity means of the Experimental₁ and Experimental₂ groups were significantly above the means of the Experimental₃ groups on the sub-tests of fluency and originality.

Indications were that creativity skills had been increased by either teaching strategy but that social studies skills were only increased by the Experimental₁ procedures.

An Anova was employed to determine if there were interactions between students' intelligence or sex and teaching methods. There was no interaction related to the sex variable. There was some main treatment effect between teaching methods and the intelligence factor with the high and low intelligence groups.

Recommendations from this study considered both the areas of creativity training and social studies. Recommendations for social studies are the inclusion of creativity training within the social studies curriculum and use of the local community for social studies enrichment. Creativity recommendations are the use of creativity training and creative problem solving in a spiral effect throughout the elementary curriculum.

Chapter 1

INTRODUCTION

Today's educators are faced with a variety of problems. They must adjust out-moded educational content and methodology to meet the needs of today's students. Some tried practices may have to be sacrificed and new educational procedures developed to fill in the gulfs the sacrifices have left in the educational scenario.

If the world would always remain the same, it would be best to teach students only the principles underlying the existing order. But things must change so that they can remain the same. The best students are able to obtain from education, is not information, but the method and spirit of exploratory thinking; the ability to face new situations, search and plan to meet changing conditions with new remedies and resources. Educators should distinguish the meat from the bones but on the average they have taken the preference for the bones (DeVito, 1976:49).

Our national survival depends on the ability of today's youth to solve and inquire into tomorrow's problems, even though we cannot know exactly what those problems may be. This calls for an effort to train today's youth to consider social and personal problems creatively. Creative thinking for most students is only an occasional involvement because they are rarely encouraged to engage in it. This situation is even more noticeable in elementary education. A curriculum and instructional method that rewards the projection of students' thinking into creative areas and which at the same time makes clear

the culture's value pattern is required (DeVito, 1976:49).

Although it is important that educators initiate leadership in creative thought, not all educators are receptive to the change which an inquiring student's mind will demand. But constructive creative thought in the classroom is not unreasonable. Man's potential for inquiring creatively is, perhaps, his least tapped potential. Education can develop this creative thought in students by allowing for production of new, original and unique solutions to problems, and by the uncovering of new patterns of ideas (DeVito, 1976).

Creative thinking involvements in education should provide for:

1. Aiding students in acquiring creative traits and inquiry skills.
2. Encouraging student to student interaction.
3. Structuring lessons posed as problems for students to analyze, gather data on, and form generalizations and concepts about.
4. Developing a student's confidence and faith in his/her ability to learn.
5. Prizing independent judgments made upon facts and personal values.
6. Recognizing strengths and limitations in individuals.
7. Allowing for deferred judgment until information is available.
8. Allowing for flexibility in entertaining points of view

other than the individuals'.

DeVito summarized the thoughts of some educators concerned with creative thought development when he pointed out that students should be encouraged to think divergently and creatively and that students should not be willing to accept all knowledge they are exposed to. They should be taught and allowed to think on issues. The timing of educators may be off, in that educators have not worked to produce thinking students, but given the luxury of more time, educators can work for the development of the creative thought mode. The divergent process has been characterized as creative thought, and some educators are currently interested in developing the creative process in students (Torrance, 1970).

It is an accepted principle of education that each individual should receive equal opportunity to develop his/her creative potential. America cannot afford to lose creative thought and potential that has been left unstimulated. Unused creativity is a blatant loss of brain power (Banks, 1973). Scientists seek constantly for new ways to approach the problems of modernization and the space age while politicians work desperately to find creative ways to meet world problems, but educators are leaving much of our natural resource of creativity untouched (Smith, 1966). Erich Fromm, in the "The Creative Attitude," vividly described how education for creativity is nothing short of education for living:

To be creative means to consider the whole process of life as a process of birth, and not to take any state of life as a final stage. Most people die before they are fully born. Creativeness means to be born before one dies. (Fromm, 1959:53-54).

Creativity exists in all individuals. If creativity is nourished, it thrives and flourishes; if it is oppressed, it declines and withers. It is one thing to accept responsibility for nurturing students' creativity, but quite another thing to bring it to fulfillment. The stimulation of creativity, carried on continually, calls for special efforts and a climate that germinates ideas that provide for free expression of thought (Dunfee and Sagle, 1966).

In order to provide for creative development in students, creativity training could be incorporated within the curriculum. Some of the areas of the elementary curriculum are by their nature, more conducive to the inclusion of creative instruction (Dunfee and Sagle, 1967).

A curricular area that is receptive to creativity instruction must provide a rich reservoir of knowledge - words, facts, concepts, and principles - to draw on in implementing the intellectual abilities that are paramount to creativity development. Attitudes such as curiosity about the environment, open mindedness, willingness to try out new ideas, and a willingness to elaborate upon old concepts should be generic to the curricular area in which creativity training is incorporated (Dunfee and Sagle, 1967).

Dunfee and Sagle have used this criteria to evaluate the areas of elementary curriculum that may be receptive to the inclusion of creativity training and have determined that social studies is an appropriate discipline, in which the creativity of students may be developed.

Both the content and the method used to develop learnings in social studies are in themselves germinal of creativity. Consider first the content of the area of learning. Implicit in all social studies content is man's creativeness in transforming his environment and making visible the love for the world in which he lives (Dunfee and Sagle, 1967:207).

There is an elaboration on this statement by Dunfee and Sagle when they conclude that by inclusion of creativity training in social studies, the learning in the area is enriched. The learnings take on new dimensions as creative abilities increase. There is better organization of the thought processes, higher motivation for learning, and meanings become more vivid and realistic. To summarize they state:

There is, in short, a reciprocal relationship between areas of learning in social studies and the creative activities carried on in them (Dunfee and Sagle, 1967:216).

Statement of the Problem

Through the work of Torrance (1967), Parnes (1967) and Smith (1966) it has been shown that teachers can provide creativity training to students. Previous research and curriculum work were directed to

general creativity training.

The problems which this study questioned are:

1. Is there another approach to creativity training and curricula areas in which creativity skills can be stimulated?
2. Is social studies an appropriate and receptive area of the elementary curriculum for the inclusion of creativity instruction?
3. Can creativity training affect students' social studies skills?

In order to review these questions a situation would be required in which creativity training was provided within the social studies curriculum. Alternate situations would be needed in which creativity training was dispersed throughout the curriculum and where no specific creativity training was provided.

By comparing these three programs it might be determined if social studies was a receptive area for creativity instruction and if students' creativity and social studies skills were affected by exposure to a creative approach to social studies.

Need for the Study

The need for this study was explained by considering topics that are pertinent to the nature of the dissertation. The topics presented which established a need for this study are:

1. Ways of meeting students' need of creative expression and education.
2. Testing of the theoretical inclusion of creative thought training in social studies education.
3. Counteracting the lack of research dealing with the feasibility of the inclusion of creative thought training in the elementary social studies curriculum.

Ways of meeting students' need of creative expression. Students have a need to express their creativity and to experience creative learning. Individuals are driven to experiment and test, to correct errors and to modify speculations. Adults and children cannot tolerate too much uncertainty. Even after discovery, there is still disharmony until the discoverer communicates his/her finding to another individual. This is why it is natural for children to want and need to learn in creative ways (Torrance, 1970:13).

In considering the obviousness of the creative need, Torrance stated:

It should be clear that the creative needs are those which lead us to respond constructively to new situations, rather than merely to adapt or adjust to existing situations (Torrance, 1970:15).

In studies conducted by Torrance in the United States and foreign countries, the consensus of opinion of educators and specialists in child growth and development was that the creative needs of students include:

1. A need for a respect of their curiosity.
2. A need to be challenged and attempt difficult tasks.
3. A need to give oneself completely to a task.
4. A need to be honest and to search for the truth.
5. A need to be different, to be an individual.

This listing of student needs can be correlated to steps in the creative process and to educational practices directed to the development of creativity. The programs developed in this study are directed to meeting these needs.

Testing of the inclusion of creative thought training in social studies education. An educator who has developed a theoretical method for the inclusion of creativity training in the elementary curriculum is James A. Smith, of State University of New York at Oswego. Smith has produced methodology for inclusion of creativity training in many of the elementary curriculum components. Smith developed only a model and supplied suggestions for the instructional procedures which were aimed at the development of creative thought in students. He has not given empirical evidence as to field tests of his theories.

In his work Creative Teaching of the Social Studies in the Elementary School (1967), Smith developed basic principles of creative teaching and specific methods to incorporate instruction in the development of creative thought into the elementary social studies curriculum. Smith's instructional method encompassed techniques in

creative social living by: (1) an organization of skills in creative teaching; (2) uses of standard textbooks for creative teaching; (3) value and character development through creative instruction, and (4) procedures for the development of group living skills through creative thought development. Smith elucidated his philosophy concerning the need of creative thought development in social studies when he wrote:

Since the areas of social studies is the part of the curriculum which attempts to teach children the problems of man and his relation to other men (the skills of living together, the methods of identifying, refining, and solving problems, the skills of research, scientific investigation, and the scientific attitude toward life problems), the elementary school must play a vital part in developing the creativity of each child and in helping children find creative ways of living together. Through the social studies program children learn most directly how to take their places as participating, contributing citizens in a democratic society. And in a democratic society individuals and their individuality count! (Smith, 1967, Preface).

The instructional methods and curriculum developed in this study tested many of Smith's principles.

Counteracting the lack of research on the inclusion of creativity training in elementary social studies. Even though there have been procedures developed for the stimulation of students' innate creative abilities, there have been few textbooks that have addressed themselves in this direction (Torrance, 1970). In considering educational research on the use of creativity training, Parnes (1967)

listed studies which occurred between 1959 and 1966. These studies were aimed at investigating the feasibility of developing creative thought processes in students, grades kindergarten through high school. All the studies indicated that creativity could be developed in students, but the creative experiences were general in nature or generic to the fields of creative dramatics, visual arts, music or science. None were described in which training in creative thought processes was approached in the area of social studies.

In dissertation abstracts and ERIC from 1967 through 1976, there were references to over forty studies dealing with the development of creative thought processes in elementary students. These studies dealt with creativity development in a general context, or with specified intelligence levels. One study dealing with the stimulation of creative potential in ninth grade social studies students in Georgia, indicated that student creativity levels were raised by instruction in creative processes and that their social studies problem-solving techniques were expanded (Judge, 1974).

Another study by Hutchenson in 1967 indicated that the only area of the creative skills tested by the Torrance Test of Creative Thinking, which was difficult to change, in elementary students was the area of flexibility (Parnes, 1967).

A study conducted by Gross, 1976, indicated substantial interest by high school teachers of social studies in creative thought

development. The study also noted that some social studies teachers were using an increasing amount of instructional time in creative approaches to social studies, and were including cultural awareness and problem-solving questions related to democratic heritage issues in their social studies inquiries.

In reviewing educational journals, text book reviews, and in interviewing social studies teachers, this researcher did not locate curricula or instructional methods, currently used and tested, which were specifically addressed to the development of creative thought in elementary students through social studies instruction.

Questions to be Addressed by this Study

Major questions concerning students' skills were considered by this study. The skills that were analyzed were related to students' development in both the areas of creativity and social studies.

These questions were:

1. Is students' creativity development affected by the inclusion of creativity training in the social studies discipline?
2. Can students' creativity development be provided for by not including creativity training specifically in the social studies program but by dispersing creativity training throughout the curriculum?
3. What is the effect on students' creative development skills

when no creativity training is provided either within or outside of the elementary curriculum?

4. Are students' skills in social studies changed by the inclusion of creativity training in the social studies instruction?

5. Are students' social studies skills affected by a lack of creativity training in the social studies instruction?

6. What is the effect on students' social studies skills when no creativity training is provided either within or outside of the social studies area?

General Procedures

The procedures of this study follow a chronological order.

Procedure One -

The first procedure was to complete an extensive review of the literature in the areas of creativity training and social studies instruction. This review formed a basis for developing definitions of terms used in the study. The literature from 1954 to 1978 was reviewed by an ERIC search.

Procedure Two -

The following procedure was to obtain a verification from a school district's central administration that the testing and implementations involved in the study could be carried out in the district. This verification was obtained from the administration

in Butte, Montana, and from the principal of the McKinley School in that city.

Procedure Three -

Two instructional plans were developed for the use of creative techniques aimed at the stimulation of creative thought processes in students. One plan called for creativity training to be incorporated within the social studies area. The other plan dispersed creativity training throughout the curriculum.

Procedure Four -

Because the local community was used as a data bank for developing creativity skills in social studies, the cooperation of representatives of local community groups and agencies was obtained.

Procedure Five -

At the beginning of the 1978 school year at the McKinley School, three groups of students were selected. One group had creativity instruction incorporated within the social studies curriculum, a second group had creativity instruction provided but not within the social studies. The final group was not provided with creativity instruction. The described groups were selected at both the fifth and sixth grade levels.

Procedure Six -

After the selection of the student groups, the teachers dealing with the groups were provided with in-service instruction as to their

potential role and instructional methods to be used with the students in their group.

Procedure Seven -

Before instruction procedures were begun, the students in all groups at each grade level were pre-tested in the areas of creativity and social studies skills.

Procedure Eight -

Detailed data gathering mechanisms were established to monitor the instructional experiment.

Procedure Nine -

The procedures in which the teachers had been trained were initiated in the established groups at the fifth and sixth grade levels.

Procedure Ten -

At the end of the experimental period, from November to March, the students in all the groups were post-tested in creativity and social studies. The same tests utilized in the pre-testing experience were used in the post-testing.

Procedure Eleven -

Using the data from the pre-testing and the post-testing, means of all the groups were computed and compared statistically.

After a two-month period, students were again tested on the same tests and retention scores determined. Difference from pre-test to

retention test were compiled and again compared statistically.

Procedure Twelve -

After all data was compiled, a statistical analysis was implemented at Montana State University.

Limitations

Specific limitations were generic to this study.

1. The site of the study was selected where the cooperation of the school district and a specific building principal was obtained.

2. Community data sources were restricted to those which correlate to the social studies materials used for the appropriate classes.

3. The class units of the experiment were established self-contained classrooms.

4. Since the study was conducted in only one city, conclusions were only applicable to that particular city.

5. The instruction was conducted by classroom teachers, and not specialists in the areas of creativity and social studies.

Delimitations

1. The instruction period was from November, 1978 to March, 1979. The period provided full time allotments in which to conduct post and retention testing.

2. The study was limited to one school building.

3. The criteria of the creative process suggested by Smith (1967) were categorized into characteristics of creativity as given by Torrance (1963). The Torrance characteristics were originality, fluency, flexibility, and elaboration of thought.

The observation of these four characteristics was used to evaluate the stimulation of the creative process in students.

Definition of Terms

Creativity. Creativity as defined by Smith was "... the ability to tap one's experiences and to come up with something new. This new product need not be new to the world, but it must be new to the individual" (Smith, 1967:8).

Smith elaborates on this definition by explaining, "Because creativity is a process and a product, attention must be paid to the process if it is to be developed in students" (Smith, 1967:8).

Principles of the General Creativity Process. For the purposes of this thesis, the characteristics of the creativity, as described by Smith (1967), were classified into the categories of expressions of creativity as given by Torrance (1962).

The classification was given as:

Torrance

Smith

1. Something new and different results

1. Originality _____
2. Divergent thinking takes place
3. The outcomes of inquiries are unpredictable.
4. The learner sets his/her own goals.
5. Self-initiated learning is stimulated.
2. Fluency _____
6. Self-criticism is constructively developed.
7. Many new ideas are developed.
8. Open-ended situations are utilized.
3. Flexibility _____
9. Students explore ideas on their own.
10. The process is as important as the product.
4. Elaboration _____
11. Ideas are explored.
12. Motivational tensions provide for elaboration of thought.
13. Pre-conscious thinking takes place.
14. New thinking skills are developed.

15. Creative explorations appear.
16. Ideas are explored to provide an orientation to success.

General Creativity Instruction Procedures. The instructional procedures utilized in this thesis were taken from the work of Smith (1967) and Parnes (1967). These techniques included:

1. Group and individual creative development.
2. Use of the textbook as a resource material.
3. Class discussions.
4. Brainstorming sessions.
5. Use of deferred evaluations and judgment.
6. Encouragement of original and flexible ideas.
7. Encouragement of a profusion of ideas on a central theme.
8. Encouragement of elaboration of ideas.
9. Making unusual ideas useful.
10. Explorations of the community as a data bank for social studies information.

Original Thought. Original thought was defined by Torrance as "thought that is new to the individual, but not necessarily new to a total group" (Torrance, 1963:73).

Fluency of Thought. Fluency of thought denoted an increase in ideas related to a specific topic (Torrance, 1963).

Flexibility of Thought. Flexibility of thought denoted the

ability to change direction of, add to, or delete from a thought (Torrance, 1967).

Elaboration of Thought. Elaboration of thought was characterized by the ability to enlarge upon or expand an idea. It also denoted finding new uses for the idea (Torrance, 1967).

Social Studies Inquiry. The inquiry process of social studies was defined as the learning experience composed of the acquisition of knowledge linked to value clarification experiences (Banks, 1972).

Acquisition of Knowledge. The acquisition of knowledge was defined as a hierarchical classification of intellectual abilities which included knowledge, comprehension, application, analysis, synthesis, and evaluation. This hierarchy followed Bloom's taxonomy (Banks, 1973:124-127).

Value Clarification.

This process involves investigation of a value or type of belief, centrally located within one's total belief system about how one ought or ought not to behave, or about some end-state of existence worth, or not worth attaining (Banks, 1973:407).

Problem Solving. This was defined as the scientific method of investigation which includes:

1. Definition of a problem.
2. Collection of data.
3. Forming tentative conclusions.
4. Developing concepts and generalizations.

5. Testing the concepts and generalizations.

6. Re-evaluation to fit personal conscience or group consensus (Banks, 1973).

Decision Making. This process was defined as a combining of social knowledge and value inquiry to form a rational decision for social action (Banks, 1973:29).

Summary

Creative expression is important in the life and development of each individual. The development of this creative process is particularly important in the education of elementary age children, if they are to keep their innate creativity and mature into creative adults. In order for creative thought expression to be meaningful to elementary children, creativity development should be included in the curriculum.

Social studies by its nature, is considered an appropriate curricular area for the inclusion of teaching techniques directed to the development of creativity in students.

Procedures were proposed in this study to explore the question of the inclusion of creativity training in elementary social studies classes. These procedures were couched in the format of an experimental study to determine the advisability and feasibility of using social studies as a vehicle for the subsuming of creativity

instruction in the total elementary curriculum. Specific limitations, delimitations, procedures, and definitions were presented as they apply to the construction and implementation components of this study.

Chapter 2

REVIEW OF LITERATURE

Introduction

An extensive review of the literature dealing with creativity and the development of divergent thought processes was conducted for the purpose of this paper. The area of social studies was also investigated to determine if this curricular field was receptive to the inclusion of creativity instruction for elementary students.

The goal of this review was to develop, through a critical appraisal of various and numerous writings in both subjects, a greater understanding of what was known about each area and if the social studies and creativity instruction shared a common ground. In order to develop a logical and adequate understanding of the interrelationship between creativity and social studies, various questions were posed by the investigator as the literature was reviewed and critiqued.

The following specific questions were considered:

1. What have leading educators and theorists stated concerning the development of creativity and thought processes?
2. What information and research was available that deals with the concept of creativity?
3. Can creative skills be developed and stimulated in

elementary students?

4. Were there realistic programs developed for increasing students' creative skills?

5. Can creativity instruction be included in the teaching of social studies?

6. Are there methods of social studies instruction which are conducive to the inclusion of creativity instruction?

CREATIVITY RESEARCH

American education has been charged with the responsibility of developing students that are capable of making reflective personal and societal decisions that will influence future directions of world nations (Banks, 1972). A principal goal of the educational program is to ensure that students acquire substantive abilities to synthesize intellectual skills that enable them to formulate meaningful decisions. This concept assumes that individuals are not born with the ability to solve all problems, but that decision-making and creative thinking is composed of a set of interrelated skills that can be identified and systematically developed by educational methods through education (Banks, 1973:4).

Thought Processes Related to Creativity

Education is committed to developing complete thought processes and capabilities in students. Guilford (1956) conducted research into

the structure of human intelligence and divided the components of intellectual functions into multiple abilities classified as: contents, processes and products, and operations. Operations were classified:

Convergent thinking; production of 'right answers' dependent upon the accumulation of information.

Divergent thinking; production of varied, fresh or novel answers dependent on information (Guilford, 1965).

Education has been concerned with the convergent process but may not have given equal emphasis to the divergent mode of thought. Convergent thought is depicted as accumulations of knowledge, comprehension, analysis, applications, synthesis and evaluation processes.

The divergent process is characterized by openness to evidence and operations so that the understanding of knowledge is linked to new and flexible thought forms.

Thought patterns have two basic operational modes:

1. The unconscious, primary mode.
2. The conscious, logical mode.

Convergent processes originate in the logical mode while divergent processes develop in the elaborations of fantasies from the unconscious into the conscious. The divergent process employs the primary mode, but is not overcome by it; so that transfers into the conscious mode are possible for elaboration into logical decisions.

Because activities of the unconscious are also available to the conscious, the "insight" and solutions sensed in the unconscious are later used to analyze, solve problems, test, and refine in the conscious process. This mixture of conscious and unconscious thought is the basis for creative thought. Creative thought is a necessity in the total development of the individual and essential in the educational growth of students.

Smith (1967:9) proposed:

Creativity has become a precious commodity. The schools must play a substantial role in producing this commodity in the citizens it turns out for the democratic way of life.

Problem-Solving Related to Creativity

Man has been described as a complete problem solving mechanism with sequential steps for creative growth. This creative problem-solving phenomena is a prime concept of creativity development. The development of creative problem solving passes through distinct stages:

1. The pre-conscious period of definition of a problem.
 2. The interlude in which the problem solver works over the problem.
 3. The stage in which the solver allows the problem to rest.
 4. The stage of testing the validity of the problem solution
- (Rugg, 1963).

This creative thought process is the transformation of an impulse by mental techniques and sign manipulations into a result. All sections of the brain are called upon to work together. The right brain is responsible for the vision, the impulse, the intuition; and the left section for the manipulation of the tools of the language appropriate for expression of the vision. Both brain hemispheres must work together for the development of a new idea. Utilizing both convergent and divergent thought forms builds a feeling of harmony associated with creating a new or unique thought. In reference to this generalization, Ferguson stated:

The view of creativity as a non-intellectual activity fails to take into account the dynamic, unitary, and coherent nature of the brain. Emotion and intellect, freedom and discipline, reason and processes, chaos and order -- all of these apparent opposites can exist in creative harmony in the human brain (1967:241).

Creative thought is necessary for creative problem solving. Its development is pertinent to the growth of creative thought processes in individuals. The machine can "think" logically and solve problems but only the human being can think "creatively". Rugg in 1968 made the statement that,

Only man can create, for only men have the capacity to turn signals into symbols. The higher animals and such clever machines as Grey Walter's 'Spectralatrix' can turn signals into gestural signs. But neither animals nor machines can achieve a symbolic transformation (p. 153).

Man is a complete problem solving mechanism with sequential steps

for creative problem solving growth. This growth aims at the progress through a set of distinct stages which lead to the individual's involvement of the creative process.

Rugg's Creative Process

Rugg (1963) expanded the creative process to include five stages. These stages were given as:

1. The pre-conscious period of definition of the problem.
2. The second interlude in which the problem solver works over the problem.
3. The stage in which the solver allows the problem to rest.
4. The stage of insight into the problem solution.
5. The stage of testing the validity of the solution.

Rugg did not believe the subconscious lies asleep waiting to be called on at certain times or coming to the fore only in dreams, or in times when the organism is off-guard. He believed that the subconscious takes an active part in everyday living. Actually, he seemed to feel that it is the unconscious mind that does most of our thinking. Rugg's theory differs from other writers on the subject of creative thinking in that he held that creative capacities in all sectors of thought are on a continuum of mental activity.

Rugg indicated that the essential quality of the creative person lies in his ability to draw from as many of life's experiences

as possible. His writings emphasized that creative thought happens when people place their minds in a "transliminal chamber", or an area somewhere between the conscious and the unconscious. The more open that the mind is to experiences, the greater the possibility of creativity or of preconscious content in the conscious process.

Necessity of Creative Imagination

All human beings, to a greater or lesser degree, possess the ability to imagine. This imaginative ability can be trained to be used more productively in the creative processes. Rugg explained this concept when he wrote:

The history of civilization is essentially the record of man's creative ability. Imagination is the cornerstone of human endeavor; it is, without doubt, responsible for man's survival as an animal; and it has caused him, as a human being, to conquer the world (Rugg, 1963:ix).

The potential power of creative imagination is all but limitless. The fact that creative imagination is the pristine power of the human mind has long been recognized by the world's great thinkers. Civilization itself is the product of creative thought. Imagination has been responsible for the major discoveries and inventions of world and American society. It can be utilized to solve America's public problems, community problems, domestic problems, and international confrontations.

In order to develop creative imagination exercise of the ability

is necessary. To develop creative imagination, the mind needs not only to exercise, but to be filled with material out of which ideas can be best formed. The richest fuel for ideation is experience.

Firsthand experience provides the basis for imagination that is apt to stay with the individual and bubble up when called upon.

Hobbies, arts, travel, reading and most important training in creative thought development have proven to be valuable sources for the development of creative imagination (Rugg, 1963).

Creative imagination can be considered a problem-solving process in terms of the following procedures:

1. Fact-finding
2. Idea-production and development
3. Solution-finding with evaluation and adoption (Rugg, 1963:111).

This creative ability utilizes the past experiences of the individual in new and unique means. It allows for the formation of new associations of ideas and concepts on which to build generalizations that have not been conceived before by the individual. By use of the imagination in the creative process, the individual produces original thoughts and ideas which in turn expand the imaginative power under development. Imagination is the spark that kindles and renews the flame of creative thought development (Rugg, 1963).

Creative imagination was described by Dayton (1976) in equation

form as:

Creative imagination = outer encounter + inner regression by imagination.

According to Dayton, creative imagination was the facilitator that drew upon the outer environment and personalized experiences for the individual. It is the catalyst that produced a creative production. Research conducted by Dayton indicates that cultivation of the imagination produced creative responses in subjects of higher frequency and larger quantity than in subjects who were not encouraged or trained to use their imagination in problem solving (Dayton, 1976).

Creativity Three S's

Certain characteristics are depicted in the utilization of the creative thought process. These characteristics are described as "sensitivity", "synergy", and "serendipity".

Sensitivity. This concept implies greater awareness, through all the senses, to the environment in which the individual functions. It is the ability to seize on stimuli that is constantly part of the surroundings of the individual and use such stimuli to invoke the creative thought process.

Synergy. The phenomena of synergy has been defined as behavior of integral aggregate systems of behaviors (Parnes, 1972). When two or more elements are associated in a new way the results are more than the sum of the parts and synergy has occurred. This is the essence

of creativity and a building block on which it is built.

Serendipity. Serendipity relies on an awareness of the relevancy of accidental happenings. The accidental happening is utilized toward the completion of a goal by means that have not been brought into focus previously.

The concepts of sensitivity, synergy, and serendipity all require divergent thinking, or the discovery of many alternatives to a problem solution. Research has shown a great deal of evidence to support the theory that the more ideas an individual generates, the more likelihood that individual had of producing a "good" idea for a problem solution (Parnes, 1972). This hypothesis implied that there must be a basis of the convergent thought or a base level of knowledge and understanding. Upon this base, and building from it, comes the divergent thought process that is the thought mode from which creative thoughts grow (Parnes, 1972).

The Creative Personality

The outward manifestations of creative thought are depicted in the personality of the creative individual. The creative person has set characteristics that influence maturation and growth.

In the personality development of the highly creative individual, three characteristics stand out. First, there is a tendency for him/her to gain a reputation of having wild and silly ideas. Second,

his/her work is characterized by a high productivity of ideas "off the beaten track". Third, his/her work is impregnated by humor or playfulness. These characteristics are of considerable importance in assisting the creative child to adjust to educational practices without sacrificing his/her creative ability.

Another consideration of creative characteristics was given by Donald W. MacKinnon (1962). MacKinnon lists the following characteristics of the creative personality:

Creative people do not represent stereotypes.

Creative people are well above average in intelligence.

Creative people possess verbal intelligence, spatial intelligence, or sometimes both.

Creative persons have an unusual capacity to record and retain and have readily available the experience of their life history.

They are discerning and observant in a different fashion; they are alert, capable of concentrating readily and shifting if appropriate; they are fluent in scanning thoughts and producing those that serve to solve the problems they undertake; they have a wide range of information at their command.

Intelligence alone will not tend to produce creativity. Creativity is the relevant absence of repression and suppression as mechanisms for the control of impulse and imagery. Repression operates against creativity, regardless of how intelligent a person may be.

The creative person, given to expression rather than suppression or repression, thus has fuller access to his own experience, both conscious and unconscious.

Openness to experience is one of the most striking characteristics of a highly creative person.

A highly creative person has a closer identification of feminine traits or characteristics in himself than non-creative. He is more open to feelings and emotions.

Everyone perceives and judges, but the creative person tends to prefer perceiving to judging. The perceptive creative person is inclined to be more interested and curious,

more open and receptive, seeking to experience life to the full. ...

A highly creative person is genuinely independent.

The creative person is relatively less interested in small detail, more concerned with meaning and implication. He is relatively uninterested in policing his own impulses and images or those of others.

He has preference for complexity and his delight is in the challenging and the unfinished. ...

Creative persons almost always display a good sense of humor.

Creative people tend to be more self-sufficient, more self-assertive, more self-accepting, more introverted but bold and more resourceful and self-accepting than the average person (MacKinnon, 1962:15-17).

Torrance (1962) studied the personality of the creative child.

The characteristics he listed incorporated the many characteristics listed by MacKinnon. Torrance's listing includes:

Strong affection. Altruistic. Always baffled by something. Attracted to mysterious. Attempts difficult jobs (sometimes too difficult). Bashful outwardly. Constructive in criticism. Courageous. Deep and conscientious convictions. Defies conventions of courtesy. Defies conventions of health. Desires to excel. Determination. Differentiated value-hierarchy. Discontented. Dominating (not in power sense). A fault-finder (1962:39).

Torrance listed further characteristics of the creative child which have a relationship to the child's attitude toward school and performance in the classroom as:

Doesn't fear being thought 'different'. Feels whole parade is out of step. Likes solitude. Industrious. Introversive. Keeps unusual hours. Lacks business ability. Makes mistakes. Never bored. Not hostile or negativistic. Oddities of habit. Persistent. Receptive to ideas of others. Regresses occasionally. Reserved. Resolute. Self-starter. Sense of destiny. Shuns power. Sincere. Not interested in small details.

