The Identification and Fostering of Creative Ability

James W. Lundahl

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THE IDENTIFICATION AND FOSTERING OF CREATIVE ABILITY

by

James W. Lundahl

A seminar report submitted in partial fulfillment of the requirements for the degree of

MASTER OF EDUCATION

in

Counseling and Guidance

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James W. Lundahl

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INTRODUCTION

During the last few years, there has been tremendous increase in educational programs for students with superior intellect. As our society becomes more complex, a more effective means must be devised to train superior students if the increased demand for highly trained personnel is to be met. This increased demand has led researchers into the problem of identifying intellectual promise.

For many years the gifted student was pictured as an unattractive, bespectacled, badly coordinated, socially inept individual who lived in a world all of his own. However, Terman's studies (Dunn, 1967) contradicted all this, and the gifted student was found to be healthier than the average, more attractive personally, better coordinated, and in general to be enjoying a richer, fuller life.

As investigations continued, many researchers became convinced that the traditional intelligence tests were not adequate measures of intellectual abilities and were dissatisfied with the I.Q. score as a single criterion for defining giftedness. The term "gifted" was synonymous with "high I.Q.," and the term "gifted children" was for all intents and purposes applied to children with high I.Q. However, it was evident that some individuals were in fact achieving at a level definitely indicating gifted ability, but they were not scoring high enough on I.Q. tests to be classified as gifted. These findings led researchers to ask the question
"Are there other intellectual qualities—qualities not presently sampled by present intelligence tests—that are also representative of giftedness?"

As a result, many studies are being made in an attempt to discover "other factors" not measured by present intelligence tests which enable a person to make a significant contribution to society.

Guilford's (1959) studies indicated that there are over 120 different factors of intelligence and that just a few of these factors are measured by the available intelligence tests. To do well on the typical intelligence test, the subject must be able to recall and recognize, perhaps even use prior learning to solve problems; he need not necessarily be able to invent, innovate, or create new approaches and ideas to the problems society faces.

In his 1950 presidential address to the American Psychological Association, Guilford observed the following:

Examination of the content of intelligence tests reveal very little that is of an obviously creative nature. ... Many believe that creative talent is to be accounted for in terms of high intelligence or I.Q. This conception is not only inadequate but has been largely responsible for the lack of progress in the understanding of creative people. ... If the correlations between intelligence test scores and many types of creative performance are only moderate or low, and I predict that such correlations will be found, it is because the primary abilities represented in those tests are not all important for creative behavior. It is also because some of the primary abilities important for creative behavior are not represented in the test at all. ... In other words, we must look well beyond the boundaries of the I.Q. if we are to fathom the domain of creativity. (Guilford, 1950, p. 447)
This report will identify other factors that are indicative of creative ability and then give ways that this creative ability can be fostered and developed.
IDENTIFICATION OF THE CREATIVE POTENTIAL

General Characteristics

In recent years the study of creative people has given us much information on the characteristics of the creative person. We must keep in mind, however, that this research is just beginning and that we do not, as yet, have a complete profile of the creative person. These studies, however, have identified traits which are peculiar to the creative individual. Razik (1966) has summarized various studies of the traits of creative people and has developed eight characteristics of the creative individual. These characteristics are:

1. The creative person shows originality in a variety of ways.

The creative person has the ability to sift out the relevant in dealing with ideas. He is intuitive and sees beyond the facts to what might be. Often the creative child in school may seem to be the troublemaker. In the California Studies, Barron (Brown, 1963) found the creative person seemed to thrive on disorder and responded by creating a new, and for him, superior arrangement out of the confusion. The creative person has to improve on systems that already exist and to gain ultimate mastery over problems.

2. Independence of judgment is a strong trait of the creative person.

Creative people usually are not impressed by what others think, and the say-so of authority leaves them cold. They show their independence
in many ways. They like to figure things out for themselves. They do not want instructions concerning when and what style of work should be performed.

3. The creative person shows great curiosity about many things. He is continually seeking to find new meanings and how things work. He has a vivid imagination and especially responds to activities requiring new approaches or ideas. His stories show abundant use of humor, unusual situations, and unexpected endings.

4. A sense of humor is another characteristic of the creative person.

Getzels and Jackson (1962) considered the sense of humor especially noteworthy as one of the outstanding differences between the creative and the noncreative. Torrance (1962) found this same thing to be true when he did studies similar to those of Getzels and Jackson (1962).

5. The creative person shows an unusual sensitivity to problems, situations, and qualities of his experience.

He has an open, searching behavior and shows a growing trust in his own perceptions and is unwilling to accept authority without critical review. If unpopular ideas meet with his approval, then he is willing to accept them. They do not have to meet the demands of the group. Their openness to experience and their courage to explore the unknown and the unusual leads to some uncertainties and unresolved issues.
6. The creative person has a strong liking for autonomy.

They have a need for freedom and variety. They are more self-sufficient than others. They like to work on and be responsible for their own projects. For example, they appreciate the necessity of a few good rules in an organization but may be unusually sensitive to unnecessary organizational controls.

7. The creative person has a purpose and a goal and a capacity to concentrate completely on a task.

High energy plus vast output through disciplined work habits is usually apparent. They have an intense commitment to what they choose to do. They seem to have solved the problem of their own identities and have the capacity to rely on their own resources. Barron (Brown, 1963) reported that creative people may be more troubled psychologically than others, but they also have far greater inner resources to deal with their problems.

8. The creative person shows flexibility and spontaneity in his disposition and in his willingness to take calculated risks.

He does not want to deal with a "gamble" situation but rather will take a risk only when his own efforts may make the difference in the odds. He shows flexibility in his approach if one method does not work.

Torrance (1962) has compiled a list of 84 traits which he feels differentiates the highly creative individual from the less creative ones. Runner (1954) characterized the creative person as possessing the
following common traits. He incorporated many of Torrance's (1962) 84 traits. These traits are:

1. He seeks change and adventure and will adopt his own system.

2. He is inclined to be sloppy and disorganized but may give meticulous attention to matters which are important to him personally.

3. He may not plan his activity at all, except when his personal purposes are involved. He is inclined to wait for developments and then change his plans accordingly.

4. He tends to question rules and authority which are not reasonable to him, but his flexibility allows him to work within the bounds of these rules.

5. He does not confine his social activity to any certain groups. He may talk too much if he wants to talk, and he may refuse to talk if he is interested in something else.

6. He thinks of people as individuals. He is usually tolerant and open-minded.

7. He disciplines himself to the accomplishment of specific results.

These are the general characteristics of the creative individual. Our attention will now be focused on characteristics which would be peculiar to the classroom situation and which the teacher would be able to identify. The traits to be considered are intelligence, school achievement, school behavior, home environment, and tests of creative ability.
Intelligence

Intelligence does not insure high creativity and vice versa. Frandsen (1967) reported that the correlations between intelligence and academic achievement run from .40 to .70 with most correlations between .50 and .60. One of the most important findings of the Getzels and Jackson (1962) studies was that intelligence is not a reliable predictor of creativity. They demonstrated that creativity and high I.Q. tend to correlate only up to a certain point. Torrance (1962) estimated this is true at about the I.Q. level of 120. He also estimated that we would miss 67 percent of the upper 20 percent on creative thinking if we were to rely upon the traditional measure of intellectual promise. He believed that, although outstanding creativity is seldom found among children of below average I.Q., some types of creative talent may be found anywhere along the I.Q. scale. Some studies seem to indicate that even the mentally retarded show signs of being creative in certain areas—for example, art (Givens, 1962). Studies by MacKinnon and Barron (Brown, 1962) confirmed that there is no simple relationship between a person’s degree of intelligence and his creativity.

School achievement

Studies by MacKinnon and Barron (Brown, 1962) indicated that the creative person probably will not be a straight "A" student. Many of the creative people studied did not have academic grades that would admit them to graduate school today. This places a severe handicap upon
identification methods used today which may be keeping many creative people out of college and graduate school. However, Getzels and Jackson (1958) found that the highly creative were equally superior in school achievement, despite wide differences in mean I.Q. It would appear that the achievement of the highly creative person is equal to that of the high intelligent, but because of methods of evaluation often times it does not appear to be so.

School behavior

Getzels and Jackson (1958) in comparing the highly intelligent with the highly creative in the high school population found that: (a) highly creative were equally superior in school achievement despite wide differences in mean I.Q. However, the highly creative students were also high in I.Q., though not as high as the high I.Q. group (upper 20 percent). The creative students were just below the 81st percentile, (b) teachers showed preference for the high I.Q. child, and (c) creative students demonstrated imagination and originality unmatched by the I.Q. group. Torrance (1962) suggested three personality characteristics that stand out as differentiating the highly creative children from less creative but equally intelligent children. First, the highly creative children have a reputation for having wild or silly ideas. Second, their work is characterized by unique ideas, nonconforming approaches, and ideas which do not conform to the standard. Third, their work is characterized by humor, playfulness, and a lack of rigidity.
The very nature of these characteristics of the creative student may place him at odds with his peers, teachers, and other adults that he comes into contact with. This places a tremendous responsibility upon teachers and counselors to understand the creative student and them to be able to encourage and direct his creativity.

**Home environment**

Studies by Roe (1953), MacKinnon (1965), and Weisberg and Springer (1961) indicated that the number of creative individuals from professional families was way out of proportion to their representation in the community as a whole. These studies also indicated that creative behavior is exhibited more from families who stress education, who are academically superior, and where learning is valued for its own sake.

**Testing for creativity**

Educational systems might consider the administration of creativity tests, despite their present shortcomings. Perhaps, it would be wise to make creativity test scores available along with intelligence and achievement scores. One of the tests often used for measuring creative ability is the Torrence Tests of Creative Thinking. Holland (1968) reported reliability scores of many samples exceed .70; however, Wodtke's (1964) totals ranged from .35 to .79 with a median r of .60. Holland felt that the reliability of the scores makes the test meaningful, but the validity for the test has not been established satisfactorily. He stated:

Unless tests like the TTCT are tied to reality by studies of their external validity, it will never be known whether high scores
identify original people or crazy bricklayers and packers. . . . The current evidence about the TTCT implies that it may have some predictive validity, but explicit evidence is needed about its ability to forecast socially relevant creative behavior. (Holland, 1968, p. 298)

Yamamota (1966, p. 197) felt that "available measures of creativity are frankly experimental in nature with many conceptual and technical difficulties." Thorndike (1963, p. 424) stated "that at the present time the tests are offered to the public as only research tools and this is certainly as it should be."

Since the entire field of creativity research is still in the experimental stage, we must be careful about statements made on the basis of creativity tests. A study analogous to Terman's intelligence study would be needed to establish the predictive validity of creativity tests. However, these tests could be used as another tool in identifying creative behavior. Such a measure may at least suggest, to the teacher, students who may have creative potential.
FOSTERING OF CREATIVE ABILITY

The variety of potential in youth and their vast total potential is becoming more clearly identified and demonstrated as research continues in the investigation of the gifted. The prime challenge that we now face is to develop and foster this potential so that it will be realized. There is a general awakening to the idea that our human resources contain talents that were largely unknown several years ago. The real challenge of our society is to be able to recognize these talents and then to develop them to the utmost.

There is usually a large gap between a person's creative potential and his actual output. Educational programs should help to narrow this gap, and if we are to meet the challenge of maximum development of our gifted, then we must find ways to bridge the gap between the person's creative potential and his creative productivity. Torrance (1966, p. 168) is in strong disagreement with the idea that "creativity must be left to chance and that outstanding creative talent will somehow flourish in spite of neglect and abuse." Creativity can and is being stifled in our society. Creativity must be encouraged, must be fostered, and must be understood if we are to realize its potential.

Parnes (1967) reported that approximately 90 percent of the studies indicate that a person's creativity was significantly increased by
deliberate educational programs. This evidence overwhelmingly indicates that creative productivity can be increased.

For example, Parnes (1961) found that persistence or extended effort in the production of creative thinking tends to increase the quality of ideas. In other words, the usual responses are given first, and then after these are exhausted the more creative ideas emerge. Torrance (1962) found that students in primary grades can be taught concepts or principles that will enable them to increase the production of creative ideas and thoughts. One group of children was given a toy fire truck and told to make suggestions that would improve the toy. Afterwards they were taught ways that a square could be changed, such as make it larger, smaller, subtract something, change its color, and etc. When the students identified the principle of "changing the color," for example, then the examiner would remind them of a modification they had made to the toy which exemplified that principle. If a principle was not used in modifying the toy, then the examiner would explain the principle, and then the students would think of a way the toy could be modified by using that principle. When the trained group and a untrained group were then asked to modify a toy dog, the results of the trained group were significantly higher in the production of creative ideas than those of the untrained group.

The purpose of this portion of the report will be to discuss how the classroom teacher can help develop and foster creativity in his students.
General consideration will be discussed, and then specific techniques will be given that can be used in the classroom.

Creative behavior is not apt to occur in an environment where creative activity is not encouraged. The teacher, who administers the rewards and punishments for social and intellectual skills, is in the most advantageous position to encourage creativity or to discourage it.

Davis (1967) gave several general approaches to teaching creative thinking in the classroom. These approaches are: (a) providing a creative atmosphere, (b) stimulating thinking, (c) encouraging original thinking, (d) using a discovery method of teaching and learning, (e) changing curricula in the direction of more creative course work, (f) teaching problem-solving methods, and (g) teaching systematic methods for generating new and creative combinations of ideas.

**Providing a Creative Atmosphere**

One of the fundamental problems of the highly creative person is to maintain this creativity. Creativity involves nonconformity and independence of mind, and oftentimes teachers, parents, and peers feel threatened when highly creative people express their creativity. The teacher can provide opportunities for creative expression and can act as a refuge for the creative person in the classroom. Nelson (1965) in summarizing the characteristics of a creative atmosphere reported that teachers must (a) provide time, space, and social-emotional climate which encourages the creativity of the student, a climate which is free
from teacher disapproval and criticism; and (b) introduce rich sensory ex-
The thinking of the student. One of the most obvious ways to stimulate
this thinking is to ask searching questions such as "what would happen
if the Confederate Army had won the Civil War?" or "what would happen
if dinosaurs still existed?" This exploration of unusual ideas would
elicit a considerable amount of original thinking.

Encourage Original Thinking

This requires the student to think of highly unusual ideas. The
possibilities for questions and problems, which stimulate original think-
ing, are endless. For example, "Develop 10 ways to reduce the air
pollution problems that are now facing New York City."

Using a Discovery Method of Teaching and Learning

Increased motivation is said to occur on the basis of exploration
and novelty. The learner's curiosity is aroused with the aim of stimu-
lating learning. The discovery method is seen by its advocates as
improving problem-solving ability not only through the acquisition of
problem solving principles but also by the problem-solving attitude
fostered in the discovery process. Learning by discovery also allows
the students more time to work on independent projects.

Changing Curricula in the Direction of More
Creative Course Work

Since art work and creative writing seem to require creative think­
ing to a greater extent than do more content-oriented subjects, one sug­
gestion for stimulating creative potential is to increase the amount of
time or number of courses directed to creative behavior. A wide variety
of instruction in basic courses could be given so that each graduating
class has not studied the same thing. For example, instead of studying
Silas Marner in every eleventh grade English class, other classics
could be studied in other years so that students graduating from a par­
ticular school would have various backgrounds rather than basically the
same background.

Teaching Problem-Solving Methods

Since the very nature of solving problems requires clearly stating
the problem and then proposing and evaluating solutions, students
should be taught various problem-solving approaches.
Teaching Systematic Methods for Generating New Creative Combinations of Ideas

One method of generating suggestions for improving or changing a product is the attribute listing method. Students are taught to focus on each important attribute of a product as a source of possible change. Then they try to determine changes that could be made to improve the product.

Reinforcement and feedback are powerful influences in shaping behavior, and if creative effort is to be encouraged, then the teacher should be alert to see that every effort in the direction of creativity, curiosity, independence, and self-reliance is rewarded. Taylor (1966) felt that if the teacher would keep in mind the following statements that he would be able to more effectively tap the creative reservoir of his students.

1. When encouraging students to generate and express ideas, a teacher may have to go against both his own well-established habits and the well-established habits of students.

2. Creativity, especially self-generation of ideas, can be encouraged or discouraged or ignored in the student by teachers and the teaching method.

3. In the process of communicating new information and new understanding, the teacher has opportunities to request and to catalyze both the generation and synthesis of ideas by students, but also many opportunities to inhibit expression of ideas.

4. Idea expressions by students can be easily inhibited by teachers, through attitudes and systems that discourage "hard" questions or that ridicule students' ideas.

5. Interpersonal issues among students and faculty—-their attitudes, perceptions, assumptions, and expectations about each other; the way they ask questions; the ways they evaluate each other; and the ways they act toward each other—-profoundly affect the environment for creative learning.

6. In order to obtain better measures of creative accomplishments, a teacher must assign more tasks in such a way and...
of such a nature that will give students opportunities to perform and produce creatively. One of the fascinating new educational challenges for teachers is the development of a greater number of appropriate tasks, within the official curriculum, that elicit creative responses.

7. Students can be encouraged to generate their own ideas and own programs for extra curricular activities. The problem is how to give official recognition and credit for these creative extra curricular activities and projects.

8. Much understanding of creativity—what encourage and discourage it—has resulted from research, most of it recently. The problem is how to bring this new understanding of creativity directly to bear in real teaching situations. (Taylor, 1966, p. 125)
TECHNIQUES THAT STIMULATE CREATIVE ACTIVITY

Some of the general attributes of the creative teacher and of the type of classroom and administrative philosophy, which would foster creativity, have been discussed. The discussion will now turn to those specific techniques that have been found successful in stimulating creative action.

Purdue University (Feldhusen, 1970) experimented with ways to increase creativity. One method that was developed was by the use of tape recorded stories from historical events. A brief presentation at the beginning of each tape gave specific suggestions about creative thinking and emphasized its value and importance. The series of programs dealt with such things as the Pony Express, development of the Polio Vaccine, and the astronauts and space exploration. The tapes are narrated by a professional radio announcer; the stories are dramatized with sound effects and appropriate background music. For example, in the story about the Pony Express, the sound of hoof beats and appropriate rhythmic music stimulates the listener to imagine a horse and rider racing across the plains. The exercises are based on the content of the story. Examples from the story of the Pony Express illustrate some of the problems the students might be asked to solve:

Suppose that you were a Pony Express Rider. You are riding across the country with a bag of mail. It is a warm afternoon. Suddenly, off in
the distance on a mountain ridge you see two Indians mounted on horses; they are standing still, looking in your direction. What would you do?

Suppose that the telegraph and the railroad had not come along and replaced the Pony Express. The Pony Express would probably have continued to carry the mail. How could the Pony Express service have been improved? List as many ways as you can think of that would have improved it.

These questions stress verbal fluency, originality, and flexibility.

Nonverbal skills can be stressed by having the person draw the situation.

Studies indicate that this total program—presentations, stories, and exercises—was effective in the development of creative abilities.

DeRoche (1967) has given several exercises which he felt would stimulate creative thinking in regards to space travel concepts.

**Going on a Space Trip:** Read some advertisements in newspapers and then pretend you own a company that arranges space trips. Write three ads that tell the public about your service. Draw pictures if you want to. Remember, be imaginative.

**You are the Teacher:** Imagine you are a teacher of the second grade. Write how you would explain to the children in your class why rockets are used for space flight. Use your own ideas, but remember what you learned in class.

**Ask Questions:** Use your imagination to think of as many questions as you can about rockets. Remember, no answers, just questions. See how many you can list.

**Stretching your Imagination:** Most people would not know what to do with an old space capsule. Suppose that NASA gave you John Glenn's space capsule. List all the uses you can think of for your space capsule.

**Sketchinitions:** You are familiar with definitions, but have you heard about "Sketchinitions"—sketching or drawing the meanings of words. Make a sketchinition for the following words: ellipse, inertia, acceleration, G-force.
Science Junk: You can usually find the following things around your home that can aid you in explaining certain concepts in space flight. What scientific principle does each item illustrate: (a) balloon, (b) spool, string, and weights, (c) candles and water glasses, (d) tin cans and thermometers.

College Professor: Pretend you are a college professor who must explain to fourth graders how rocket engines work. All you can use in your explanation is a balloon, blackboard, and a piece of chalk. Tell us what you would do.

Weightfulness: Weightfulness is a problem that man will have to solve if he hopes to live in outer space. What ways could you suggest that would help spacemen solve this problem?

A Man of Few Words: Explain today's lesson by using only the following words (no other words may be used): bowl, marble, gravity, centrifugal force, orbit, satellite, speed, and balance. The question is how does a satellite keep from falling back to earth. As a hint, use sketches.

Be a poet: Write four line rhymes about each of the following: meteors, satellite, re-entry, apogee, G-force. Example: friction.

With a rub, rub, rub
and a tear, tear, tear
friction cause
heat and wear.

(DeRoche, 1967, p. 55)

Massialas and Zevin (1967) also demonstrated how creative behavior can be encouraged in the teaching of any subject through the use of open discussions and problem-solving. For example, the students might be asked to discuss the effects of the Kent State shooting in a social living class. Or in a geography class they might be given a map showing a large river and then be asked to select a site for a large dam and defend their choice.

Osborn's (1953) brainstorming technique has been used successfully in stimulating creative thoughts. Students are given realistic problems such as "think of new ways to eliminate air pollution in Logan."
They are then instructed to use a free-wheeling wild imagination, to think of as many ideas as possible, and to combine and improve upon the ideas of others.

The most important principle of brainstorming is that of deferred judgment. Since criticism or judgment of any kind will interfere with idea production, students are told that the ideas will be evaluated later, after the thinking sessions, and that they should never criticize ideas nor prematurely settle on any one best idea.

Other methods are:

**Attribute Listing**: In considering other uses for an object, such as a piece of paper, students are taught to look at each attribute of the paper, such as its whiteness, its four corners, its straight edge. Each of these attributes then suggests a number of possible uses.

**Check List Procedures**: In this procedure students are taught to analyze a problem from the standpoint of a number of questions, such as: How can we simplify? What combinations can be utilized? What adaptations can be made? What is unnecessary?

**Forced Relationships**: A list of ideas is produced for possible solution to a problem. Each of these ideas is then artificially related to each other idea on the list in order to force new combinations. Sometimes a somewhat ridiculous idea is taken as a starting point. By associating the idea with the actual problem, a series of associations is produced which may lead in some novel direction toward solving the problem. For example, an idea of selling more flowers by utilizing vending machines was rejected as poor. However, by forced association of the thought of "Vending Machines" with the problem of "selling more flowers" a useful solution was reached as follows: Approach companies who provide vending machines for employees in order to persuade them to utilize the profits from the machines for sending flowers to employees on birthdays and anniversaries. (Taylor, 1964, p. 27)
CONCLUSION

As life becomes more complex, then more unique and creative ideas must be developed to meet the problems of our society. Through the identification of creative potential and through fostering the creative potential, so it will become a creative reality, is one of the prime challenges of our educational system.

This report has illustrated some exercises that can be used to develop creative thinking abilities. Teachers can adapt many of these exercises to their classroom and subjects. However, if we are to really foster creativity, then we must also try to be "creative" in our teaching approach and must make creativity an integral part of class planning.
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