
NEW DIRECTIONS IN CREATIVITY **MARK 1**

The *NEW DIRECTIONS IN CREATIVITY* program,
under the direction of Joseph S. Renzulli,
includes the following manuals:

MARK A

MARK B

MARK 1

MARK 2

MARK 3

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NEW DIRECTIONS IN CREATIVITY

MARK 1

JOSEPH S. RENZULLI

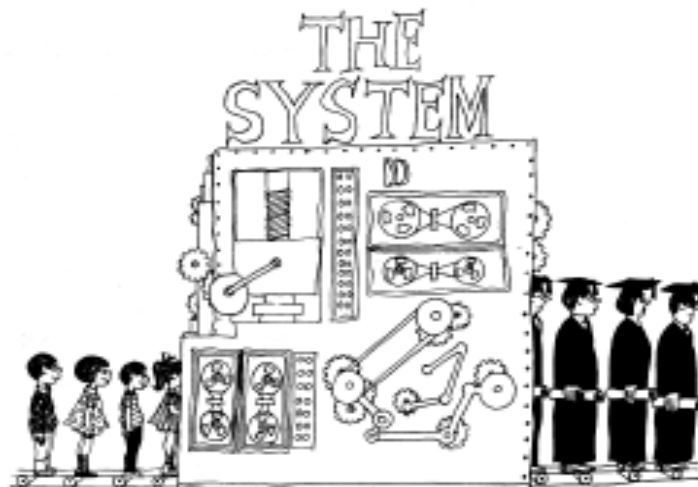
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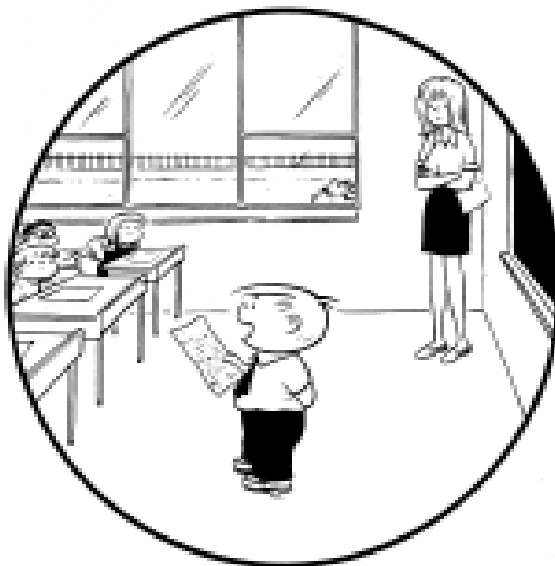
In children creativity is a universal. Among adults it is almost nonexistent. The great question is: What has happened to this enormous and universal human resource? This is the question of the age and the quest of our research.

—from Harold H. Anderson, ed., *Creativity and Its Cultivation* (New York: Harper & Brothers, 1959), p. xii.



“The main thing is not to take it personal.”

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“What I liked best about school this year was the teachers’ strike.”

The Family Circus by Bil Keane. Copyright © 1971 by The Register and Tribune Syndicate, Inc., Des Moines, Iowa. Reprinted by permission.

A PERSONAL NOTE TO TEACHERS

Whenever teachers ask me how I became interested in creativity and why I developed a creativity training program for children, I often answer by referring to the quotation and the two cartoons on page vi. The quotation from Harold Anderson's book points out the great loss in human potential for creative development that takes place between childhood and adulthood. Although this loss no doubt takes its toll by limiting the number of people who make creative contributions to our society, a much more serious and far-reaching consequence is that many adults never have the opportunity to experience the satisfaction and enjoyment that results from the act of creating. Somehow the joys that were associated with childhood fantasy and imaginary excursions into the world of the improbable seem to disappear as we engage in the business of growing up. Although growing up is indeed a serious business, I often wonder if the emphasis that our culture places on the practical and the utilitarian causes most people to arrive at adulthood without the creative ability that they possessed as children.

The first cartoon illustrates the emphasis that our educational system places on the process of conformity. Most learning experiences are designed in a way that causes all youngsters to arrive at the same solutions to problems; thus it is not surprising to see a very homogenized group emerging from "the system." A quick glance at most workbooks or exercises in textbooks reveals that only rarely do these materials purposefully encourage youngsters to be as original as possible in their answers to given problems and questions.

The second cartoon presents a sad but essentially valid picture of most children's perception of school. Our preoccupation with order, control, routine, and conformity has made schools into dreary and often oppressive places for many children. The supposedly exciting act of learning has frequently been a coercive and sometimes even punitive process.

Many writers have summarized problems that have made schools such unfriendly places and have pointed out some of the ways that these problems can be overcome. One suggestion common to many writers is that classrooms need to be more engaging, creative, and interactive places and that youngsters need to be given greater opportunities to imagine, create, and express themselves.

The creativity training program described in this manual represents one attempt to provide both teachers and students with a set of materials that will help them learn a variety of ways for expressing their creative potential. Creativity is a dynamic process that involves "a way of looking at things"; therefore the activities included in this program are designed to broaden the way that youngsters look at their world. The program is not an end in itself, but rather a series of first steps that will provide teachers and students with the basic skills involved in creative production. Over the past few years, I have worked with hundreds of teachers in courses and workshops dealing with creativity. These experiences have shown me that a minimum amount of instruction and a maximum amount of actual involvement with the materials have effected the biggest changes in teachers' understanding and application of creativity training activities. The old saying "The best way to learn how to do it is to do it" is a guiding principle in my approach to teaching teachers the skills of creative production. Once these skills have been assimilated, they can be applied to all areas of the curriculum and to most of the learning experiences that take place in the classroom.

Joseph S. Renzulli
Storrs, Connecticut

PART I

*I hear, and I forget;
I see, and I remember;
I do, and I understand.*
Chinese Proverb

PURPOSE AND DESCRIPTION OF THE PROGRAM

The *New Directions in Creativity* program consists of five volumes: *Mark A*, *Mark B*, *Mark 1*, *Mark 2*, and *Mark 3*. The program is designed to help teachers develop the creative thinking abilities of primary and middle-grade youngsters. Research has shown that almost all children have the potential to think creatively and that creative production can be improved by providing systematic learning experiences that foster use of imagination.

Purpose of the Program

The general purpose of this creativity training program can best be explained by contrasting the creative or *divergent* production abilities with the *convergent* production abilities emphasized in most elementary school classrooms. In most traditional teaching-learning situations, major emphasis is placed on locating or converging upon correct answers. Teachers raise questions and present problems with a predetermined response in mind, and student performance is usually evaluated in terms of the correctness of a particular answer and the speed and accuracy with which youngsters respond to verbal or written exercises. Thus the types of problems raised by the teacher or textbook and the system of rewards used to evaluate student progress cause most youngsters to develop a learning style that is oriented toward zeroing in on the “right” answer as quickly and as efficiently as possible. Although this ability has its place in the overall development of the learner, most teachers would agree that impressionable young minds also need opportunities to develop their rare and precious creative thinking abilities.

Divergent production is a kind of thinking that is characterized by breaking away from conventional restrictions on thinking and letting one’s mind flow across a broad range of ideas and possible solutions to a problem. The real problems humanity confronts do not have the kinds of predetermined or “pat” answers that a great deal of instruction focuses on in

the convergent-oriented classrooms. Yet we give our children very few opportunities to practice letting their minds range far and wide over a broad spectrum of solutions. The philosopher Alan Watts (1964) has talked about these two kinds of thinking in terms of what he calls the “spotlight mind” and the “floodlight mind.” The spotlight mind focuses on a clearly defined area and cannot see the many alternative possibilities or solutions to a problem that may exist outside that area. Floodlight thinking, on the other hand, reaches upward and outward without clearly defined borders or limitations. The floodlight thinker is free to let his or her imagination wander without the confinements or limitations that usually lead to conformity. Both types of thinking are valuable, and to pursue one at the expense of the other is clearly a disservice to the children for whose development we are responsible.

This description of divergent thinking should not lead teachers to believe it is undisciplined or disorderly. Mary Nicol Meeker (1969) has pointed out that “divergent generation does not proceed willy-nilly; the divergent thinker is not a scatterbrain; the worthwhile generation of information requires discipline and guidance.” Following Meeker’s suggestion, the *New Directions in Creativity* program has attempted to provide youngsters with an opportunity to break away from conventional restrictions on their thinking. Yet an effort has been made to generate responses that are relevant to particular kinds of problems and that fall within reasonable bounds.

Specific Abilities Developed by the Program

The *New Directions in Creativity* program is designed to develop each of the following creative thinking abilities:

1. *Fluency*—the ability to generate a ready flow of ideas, possibilities, consequences, and objects
2. *Flexibility*—the ability to use many different approaches or strategies in solving a problem; the

willingness to change direction and modify given information

3. *Originality*—the ability to produce clever, unique, and unusual responses

4. *Elaboration*—the ability to expand, develop, particularize, and embellish one’s ideas, stories, and illustrations

Each activity in the program is designed to promote one or more of these four general abilities. The activities are also classified according to (1) the types of information involved in each exercise (semantic, symbolic, figural) and (2) the ways that information is organized in each exercise (units, classes, relations, systems, transformations, implications, elaborations). These two dimensions are described in detail in Part III of this manual. The activity-by-activity lesson guides presented in Part IV include the specific objectives for each activity and suggestions for follow-up activities designed to develop further the specific abilities toward which the respective exercises are directed. Although many of the objectives and suggestions for follow-up activity are directed toward the development of traditional skills in language arts, these skills are always “piggybacked” on the four major creative thinking skills. Field testing has shown that students are more motivated to pursue traditional language arts skills when such skills are based upon activities that make use of their own creative products.

Although the purpose of each manual in this program is to provide teachers with a systematic set of activities aimed at promoting creativity in children, a second and equally important objective is to help teachers unlock their own potential for more creative teaching. In almost every school where these activities were field tested, participating teachers began to develop their own materials and activities for creativity training. In many cases, the teacher-made activities were highly original and skillfully integrated with various aspects of the regular curriculum. Once teachers understood the general nature of the creative process, they were quickly able to apply the same basic strategies to other areas of the curriculum. Therefore, teachers should view this creativity training program as a starting point that will eventually lead to the development of a “creativity orientation” on the part of teachers. This orientation will assist teachers in finding numerous opportunities for creativity training in a wide variety of learning situations.

Description of the Program

Each manual in the *New Directions in Creativity* program consists of twenty-four types of creativity training activities. Two activity sheets, both containing one or more exercises, are provided for each type of activity, and each type is classified according to the kinds of information involved in the exercises and the ways that information is organized. Each activity is further classified according to the level of response required. This classification scheme is based on Guilford’s model of the structure of human abilities. Teachers who wish to know more about this model should refer to Part III of this manual. (An overview of the activities in this manual, listing the types of activities according to Guilford’s classification scheme appears on page 22.)

Mark A and Mark B : Most of the activities in the primary volumes have been designed so that children can respond with either words or pictures. This approach allows children who cannot yet express themselves in writing to communicate their creative ideas through pictures. Suggestions for alternative modes of expression, such as dictating responses to a teacher’s aid or to a tape recorder are also included. The primary volumes are also designed to develop the psychomotor abilities of younger children through manipulative and dramatic activities, and the teaching suggestions present ideas for using primary teaching aids such as flannel boards, chart paper, scissors, and paste.

The format of the primary activities attempts to take account of the developmental level of the young child. Illustrations on the exercise sheets are generally larger and less complicated than the drawings in the middle-grade books, and fewer responses are required to allow for the gross motor coordination of the primary-aged youngster. Page directions are simpler, and greater reliance is placed on illustrations than on written directions. The lesson guides for the primary volumes contain more detailed suggestions for introducing activities and emphasize using concrete examples to get children started on exercises that are more easily demonstrated than described.

Mark 1, Mark 2, and Mark 3 : Most of the activities in the middle-grade volumes deal with semantic information. Some symbolic activities that involve the use of words have been included, and a few figural activities have also been included to help students understand that creativity skills can be applied to both verbal and nonverbal information.

Activities dealing with information that is organized into units, classes, or relations generally require students to (1) fill in blanks with unspecified words, (2) manipulate given words and figures, or (3) complete short statements. These activities are considered warm-ups for higher level activities, and they are generally directed toward giving students practice in the basic creativity skill of brainstorming. Brainstorming activities help students free their thinking processes from the restraints that usually hinder creativity and provide an effective means for promoting a free and open classroom atmosphere.

The higher level activities deal with information that is organized into systems, transformations, implications, or elaborations. The major difference between the two levels of activities is that fewer specifications are given for the kinds of responses required in the higher level activities. These responses are generally more open-ended, and fewer restrictions are placed on the nature of the products developed by students. Although all activities provide youngsters with opportunities to express themselves in a relatively free and unrestricted manner, the program will be most effective if students pursue a balanced combination of the various types of activities. Each type is designed to develop and give practice in the use of certain creativity skills, and the skills developed by the warm-up activities are necessary for maximum development of the more advanced kinds of creative thinking necessary for the higher level activities. Suggestions for the most effective sequencing of activities are included in Part II of this manual.

Grade and Ability Levels

Although no specific grade level has been assigned to the respective volumes, field tests have shown that *Mark A* is most successful with children in kindergarten and first grade and that *Mark B* works best with second- and third-grade youngsters. An attempt was made to separate activities in the primary volumes so that the first book would contain exercises for children who have not yet developed reading and writing abilities or who are in the beginning stages of development in these areas. The exercises in *Mark B* were designed in accordance with the level of communication skills that typically are taught in second and third grades.

Field tests have shown that *Mark 1*, *Mark 2*, and *Mark 3* are most successful with students in grades four through eight. The open-ended nature of creativity training activities has provided an opportunity to develop a truly nongraded program, and many of the

exercises have been used successfully with students at several grade levels. When there are no “right” or “wrong” answers, each student sets his or her own level of response. The responses of bright youngsters are often characterized by higher degrees of fluency, flexibility, originality, and elaboration, but even the slowest child is able to respond in a way that is appropriate to his or her own developmental level. It may be necessary for teachers to read some of the directions to students and to supervise their work more closely until they catch on to the nature of the various tasks. To help both younger and slower students grasp the main idea, most of the introductory exercises include illustrative examples. These examples are useful in helping students who have some trouble reading the directions or getting started on some of the more difficult exercises. Most of the exercises are not too difficult for younger or slower students, but because of the open-ended nature of the exercises, teachers must carefully explain directions, and they may have to provide a few examples of their own in order to start students off on the right track.

An important feature of this creativity training program is that a youngster can respond to each activity in terms of his or her own background and experience. Because the program is not based on the student’s ability to recall factual information, each student can express his or her creativity by drawing on his or her own knowledge and experiences. Many writers have pointed out that the child’s own experiences and activities are the principal agents of his or her development and that no matter how “primitive” a child’s level of development, he or she can extend his or her mental abilities by probing, manipulating, and applying his or her own experiences to new kinds of materials and situations. This idea is one of the fundamental principles on which the constructivist learning is based, and field tests with the *New Directions in Creativity* program have shown that students from so-called disadvantaged backgrounds are able to use their own experiences to complete most of the activities in the program.

Insofar as individualized programming is concerned, it is important for teachers to carefully consider each child’s preferences. Some students may show a preference for semantic activities, whereas others may prefer to respond figurally or symbolically. Similarly, certain children may like exercises with a less complicated response format (units, classes, relations), whereas others may show a preference for more complicated modes of expression such as poetry or story writing. The classification system which underlies the *New Direction in Creativity* program provides a unique opportunity for teachers to study children’s learning

style preferences and to adapt accordingly. The program will be most successful if teachers respect children's preferences and avoid forcing every child to complete every activity.

PART II

“Imagination grows by exercise.”

W. Somerset Maugham

GENERAL STRATEGIES FOR USING THE PROGRAM

Although a great deal has been written about fostering creativity in the classroom, relatively few basic teaching strategies have been effective in encouraging creative development. This section of the manual will describe the basic strategies that teachers have found most helpful in using the *New Directions in Creativity* program. Although the materials have been designed to require minimum preparation time, the importance of the teacher’s role cannot be overemphasized. In describing the role of teachers in this regard, Starko (1995) emphasized the distinction between teaching for the development of creativity versus creative teaching. She concluded that effective teachers who develop students’ creative thinking know how to teach techniques that “facilitate creative thinking across disciplines and provide a classroom atmosphere that is supportive of creativity” (p. 17). Other studies, including a meta-analysis study by Rose & Lin (1984) and a research synthesis by Torrance (1987), indicate that creativity training is associated with increased creativity, involvement in creative activities, and positive feelings toward school.

Brainstorming and the Fluency Principle

In most cases, the first thought that comes to mind in seeking the solution to a difficult problem is seldom the most original idea. Therefore, *fluency*, defined as the ability to produce several ideas or possible solutions to a problem situation, is an important condition for creative production. The fluency principle, which underlies the development of this creativity training program, maintains that fluency is a necessary, though not sufficient, condition for originality. Although there are some cases on record of highly creative products that have resulted from sudden inspirations, research on creativity in both children and adults strongly supports the fluency principle. Studies by Archambault (1970), Paulus (1970), and Baer (1993) have shown that initial responses to a given problem tend to be the more common ones and that the greater the number

of answers generated, the higher the probability of producing an original response (*original* in the sense that fewer students come up with that response). Therefore, a hypothetical curve of creativity for a given task or activity (see Figure 1) would show a gently sloping gradient with an increase in originality being related to an increase in the number of responses. For example, if we asked a group of students to list all of the utensils that people *might* use to eat with, their initial responses would no doubt include common utensils such as forks, spoons, and knives. But if we encouraged them to increase their lists by using their imaginations (“Suppose you didn’t have any forks or spoons. What *could* you use?”), students would begin to explore some possible alternatives. They might suggest such items as sharpened sticks, shells, and bottle caps. If we compared the lists of several youngsters, we would find that most of the initial answers are quite common—that most of the students have given the same responses. As the lists grow longer, we would find more divergence occurring, and the probability of a youngster’s producing an original response increases. In other words, quantity

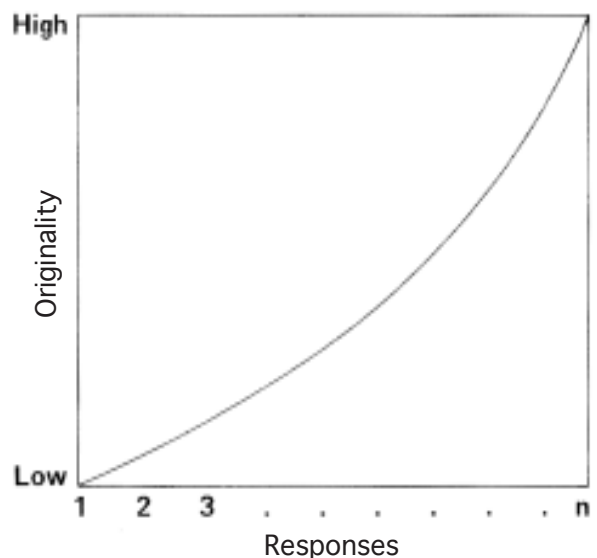


Figure 1. Hypothetical curve of creativity.

breeds quality, and research has shown that individuals who produce a large number of ideas are more likely to produce ideas that are more original.

Each manual in this program attempts to capitalize on the fluency principle by including a number of exercises that generate a large number of responses. In opposition to the techniques of convergent production discussed earlier, these exercises have no right answers. Rather, they are designed to encourage the student to produce a large quantity of responses, and, hopefully, practice in this mode of thinking will help free the learner from previously acquired habits which predispose him or her to rely mainly upon recall and convergent thinking.

The basic technique for increasing fluency of expression is called *brainstorming*. The first step in this process is to provide students with a problem that has many possible alternative solutions. Brainstorming can be carried out individually or in group sessions. During the early stages of a brainstorming activity, students should write or verbalize *all* thoughts and ideas that come to mind, no matter how silly, way-out, or wild the ideas may be. The best way to promote free-wheeling and offbeat thinking is to value quantity and withhold criticism and evaluation until students have exhausted their total supply of ideas related to a given problem. This principle, known as the principle of unevaluated practice, is further discussed in the section dealing with evaluation (pp. 10-12).

The following is a list of general questions (adapted from Arnold (1962)) that can be used to spur students' thinking during brainstorming sessions:

Other Uses

- Can it be put to other uses as is?
- Can it be put to other uses if it is modified?

Adaptation

- What else is like it?
- What other ideas does it suggest?
- What could you copy?
- Whom could you imitate?

Modification

- What new twist can you make?
- Can you change the color, size, shape, motion, sound, form, odor?

Magnification

- What could you add?
- Can you add more time, strength, height, length, thickness, value?
- Can you duplicate or exaggerate it?

Minification

- Can you make it smaller, shorter, lighter, lower?
- Can you divide it up or omit certain parts?

Substitution

- Who else can do it?
- What can be used instead?
- Can you use other ingredients or materials?
- Can you use another source of power, another place, another process?
- Can you use another tone of voice?

Rearrangement

- Can you interchange parts?
- Can you use a different plan, pattern, or sequence?
- Can you change the schedule or rearrange cause and effect?

Reversibility

- Can you turn it backward or upside down?
- Can you reverse roles or do the opposite?

Combination

- Can you combine parts or ideas?
- Can you blend things together?
- Can you combine purposes?

These are only some of the questions that teachers and students can use to stimulate creative thinking during the brainstorming activities included in the program. Once students have learned the basic brainstorming technique, you should encourage students to approach each activity with an idea-finding frame of reference. The section "Introducing the Primary Activities" (pages 12-14) is especially designed to teach the brainstorming process through active involvement in both group and individual brainstorming activities. As a general rule, you should always encourage students to go as far as they can in completing the exercises on the activity

sheets and the follow-up activities. Students may need to go beyond the spaces provided or you may need to extend time limits when youngsters are engaged in a highly productive activity. Keep in mind that brainstorming is a skill that grows through practice, and students will develop this skill if they know you place major value on the quantity rather than the quality of their responses.

The Principle of Mild Competition

Although a great deal has been written about the dangers of high-pressure competition in the classroom, research with various curricular materials has shown that *mild* competition is a positive nutrient in motivating students to become involved in learning activities. The use of simulation and learning games to promote learning is based on the finding that gamelike activity is one of the child's preferred ways of learning. Several researchers have investigated the relationship between children's play and creativity. For example, Li (1985) found significant gains in preschool children's creativity after being exposed to play training. Mellou (1995) examined the literature on the relationship between dramatic play and creativity and concluded that most of the research supports a positive relationship between them, noting the alternative symbolic constructions and flexibility common to both. In a research synthesis on creativity processes in children that are predictive of adult creativity, Russ (1996) also concluded that the relationship between children's play and creativity is strong.

We have made an attempt to capitalize on the motivational benefits of gamelike activity by suggesting that certain exercises be carried out under mildly competitive conditions. This approach will introduce an element of excitement into the program and give youngsters an opportunity to pursue classroom activities in their preferred manner of learning.

To avoid the dangers associated with high-pressure competition, you should use caution when employing the mildly competitive mode. You should observe the following general rules whenever you introduce competition into creativity training activities.

1. Group competition should be used rather than individual competition.
2. Grades or other material rewards should never be associated with competitive activities. Students will derive satisfaction from the competitiveness itself and the excitement of winning or trying to win.

3. Teams should continually be rearranged in a way that allows all youngsters an opportunity to be on a winning team.

There are several ways of arranging teams for competitive classroom activities—row against row, boys against girls, or everybody wearing a certain color on one team, to name a few. If some youngsters find it difficult to perform under competitive conditions or if some put undue pressure on others who slow the team down, it may be wise to ask these students to serve as moderators or scorekeepers because “you need their help.” A good way to help build up enthusiasm is to get involved in competitive activities on an equal basis with students. When you join a given team, the students will no doubt look to you for leadership, but you should try to be just another member of the team and avoid contributing more than a proportionate share of the responses. You will, of course, have to experiment to determine the best ways for operating in the mildly competitive mode. A good deal of the art of teaching is involved in knowing your students and in using classroom management procedures that are especially applicable to a given group.

A general strategy that you can use in follow-up discussions of the exercises is intergroup competition. Prior to assigning a particular exercise or after an exercise has been completed, divide the class into several small groups which can then compete with each other on the basis of (1) the greatest number of team responses and (2) the most original responses (i.e., responses that other teams did not think of). A team's score would consist of one point for the total number of responses generated by all team members (including duplications) minus a given number of points for each response that appears on another team's list. Slowly increasing the number of points deducted for responses that are common among teams will encourage the students to strive for originality, as well as quantity, of responses. Students might like to keep a score card on the bulletin board to record team progress. Competitive follow-up activity of this type is probably most appropriate for exercises that emphasize the quantity of responses rather than the production of a story or single product.

The Principle of Cooperation

Researchers have found that activities involving team collaboration help youngsters increase their creative productivity. You should allow students to work on some activities in pairs or in small groups,

and students should direct their efforts toward the production of group responses, as well as individual responses. Group activities provide an opportunity for youngsters to learn cooperation and the benefits of bringing several minds to bear on a particular problem. They also provide opportunities for you to develop leadership skills and help less creative youngsters experience success by working cooperatively with more highly creative individuals. Since you can use many of the activities for both individual and group work, it is important for you to review each activity sheet before using it with students. Field tests have shown that the classroom teacher is the best judge of the conditions under which the class works best, and therefore the activities have not been classified as individual or group activities.

The best way to maximize the effectiveness of the *New Directions in Creativity* program is to vary continually the strategies for using the activities in the classroom. You should use competitive and cooperative modes as alternatives to the individual mode and use students as a guide in selecting the approach for a given activity. Part IV of this manual includes activity-by-activity lesson guides and suggestions for alternative ways of using the activities and follow-up activities. You should, of course, employ your own creative teaching strategies and develop new strategies by combining, modifying, and adapting suggested approaches.

Evaluation: The All-Important Classroom Atmosphere

The success of any creativity training program depends on the amount of freedom and flexibility that exists in the classroom. The very nature of creativity requires that students be allowed to express their thoughts and ideas in a warm and open atmosphere. Teachers should encourage their students to play with ideas, laugh, and have fun without worrying about being graded and evaluated when they are engaged in creativity training activities. Rogers (1969) emphasized the importance of freedom from the threat of evaluation and asserted that creativity can be fostered by establishing psychological safety through the unconditional acceptance of each individual's worth. When you encourage youngsters to express themselves in an uninhibited manner, it is extremely important that you also provide them with a climate that is free from external evaluation and the critical judgments so often associated with schoolwork. The importance of providing this free climate is supported by the research of Amabile (1996) and Lepper, Greene, and Nisbet

(1973) who found that extrinsic motivation undermines students' creativity, and Amabile identified factors of intrinsic motivation that impact students' performance on creative tasks. Since no right answers are prescribed for this creativity training program, students have the opportunity to work in an open atmosphere without the constant threat of failure hanging over their heads.

The most effective way to open up the classroom atmosphere is to minimize formal evaluation and lead students in the direction of self-evaluation. In the real world, people often judge things in terms of self-satisfaction and the degree to which they, as individuals, like or dislike the things they do or the products they produce. The only way that we can teach students to become self-evaluators is to give them numerous opportunities to judge their own work and to modify their work when they are not satisfied with it. Thus, this program does not include a formal grading system, and the suggestions that follow are designed to help develop strategies for (1) valuing students' original products and (2) teaching youngsters the techniques of self-assessment.

The principle of unevaluated practice simply means that judgment is deferred until the individual has had an opportunity to explore several possible answers or solutions to a given problem. The principle of deferred adjustment, first espoused by Osborn (1963), has consistently been shown to be an essential ingredient for creative thinking. Several researchers, such as Amabile (1985) and Baer (1993), have found evidence to support this claim. The main purpose of unevaluated practice is to free children from the fear of making mistakes.

Creating such an atmosphere in the classroom is far easier said than done, but there are some specific strategies that teachers can use to help promote an environment that is more supportive of creativity. The most important strategy is to be tolerant and respectful of children's ideas, questions, and products. You should show interest, acceptance, and excitement toward student responses and avoid expressions of shock, surprise, annoyance, or disinterest. Above all, never laugh at or make light of a youngster's responses and try to discourage teasing and laughter from other students. Healthy amusement and friendly competition will help promote a supportive atmosphere, but ridicule and scowls will have a negative effect. Each student must come to believe that his or her ideas are as valuable as the ideas of others.

One of the hardest things to control in the classroom is the spontaneous laughter that may arise when a student says something that is somewhat unusual. A good way to overcome this problem is to legitimize

laughter by showing students that you also have some way-out ideas and that you do not mind if the students laugh when you express them. You will note that in the section “Introducing the Primary Activities” the teacher is asked to demonstrate use of a pogo stick. This activity has been found to be an extremely effective way to legitimize laughter and show students that you are not afraid to express unusual ideas or actions. Whenever possible, participate in written and oral activities and set the pace by contributing your own unusual responses. Your contributions will help students realize that you are a human being and that you are not afraid to express yourself freely. Remember, you set the limits on student behavior. If you actually participate in creative activities, students will learn that you value creative behavior, and they will quickly begin to display their own creative thoughts.

Another strategy aimed at promoting an environment that encourages students to be creative involves the principle of rewarding desired types of responses. If you show generous praise for quantity and unusualness of responses, students will quickly recognize the types of behavior that you value and they will strive to achieve these types of behaviors.

You can increase creative production by combining the fluency principle with the reward principle and the principle of unevaluated practice. In follow-up discussions to the activities, you should praise individual responses and give generous praise to the sheer quantity of response. Remember that an increase in fluency will almost always result in a corresponding increase in originality. Consequently, you should develop a repertoire of fluency-producing, enthusiastic comments, such as “That’s really good. Can you think of a few more?” and “Let’s see who can come up with five more possible titles for Bill’s picture.” Don’t be afraid to make up a few new words (for example, “fantabulous,” “super-great”) to show your enthusiasm. Gently probing youngsters for more and more responses will help them develop a fluency set; and, hopefully, practice in this mode of thinking will carry over to other areas of learning and experience.

You should make every effort to avoid using phrases or expressions that are natural killers of creativity. Examples of such phrases include:

- Don’t be silly.
- Let’s be serious.
- That’s ridiculous.
- Quiet down.
- The principal won’t like it.
- Let’s be practical.

- You should know better.
- What’s the matter with you?
- That’s not our problem.
- We’ve tried that before.
- That’s not part of your assignment.
- That’s childish.
- A good idea but . . .
- It won’t work.
- Don’t be so sloppy.

One of the underlying purposes of the *New Directions in Creativity* program is to help youngsters learn how to evaluate their own creative products. One of the great tragedies of traditional school instruction is that students almost always look to the teacher for evaluation and approval. By so doing, they fail to develop a system of internal self-evaluation. And yet, psychological studies have revealed that each person has a need to be his or her own primary evaluator. The nature of creativity is such that the individual produces something that is new, unique, or novel for him or her at a particular time. To break away from social pressure toward ordinary and common production, a person must place his or her own opinions and feelings above those of others. He or she must be satisfied with his or her products and feel that they express a part of his or her feeling, thoughts, and ideas.

One of the primary tasks for teachers using this program is to help youngsters learn how to make judgments about their own work. This task is undoubtedly one of the most difficult of teaching, but there are a few simple guides that you can use to help students evaluate their own work. When students look to you for judgment, you might ask:

- What do *you* think about it?
- Do you feel good about it?
- Would you like to work on it some more?
- Why do you like (or dislike) it?
- What things (criteria) are important to you?
- How would you compare it to the work you did last time?

Encourage students to compare their own products by ranking them and selecting the ones they like best. Students should learn that you respect their judgment and will not overrule that judgment by placing your evaluation above their own. This behavior does not mean that you should not comment and make suggestions, but students should understand that you are stating your opinion and there is no reason to assume that it is more important than theirs. Since there

are no right answers to creativity exercises, and since students will not be graded on their creativity or creative products, the program provides a real opportunity for students to develop self-evaluation techniques. The key word in this process is *trust*. If students think that you will consider their creative activities in their final grades, they will constantly look to you as the ultimate source of judgment.

Peer evaluation can also provide students with a source of feedback. This feedback should always be informal, and it should be related to the type of product involved. For example, in writing a humorous ending for an unfinished story activity, if a student elicits laughter from the class, he or she will know that his or her efforts have been effective. You should encourage students to add their own praise to other children's responses, and their spontaneous reactions should be a regular part of all follow-up discussions.

A final consideration in the creation of a free and open classroom atmosphere is the acceptance of humor and playfulness. When you purposefully ask youngsters to strive for clever and unusual responses, a good deal of healthy noise and whimsical behavior is likely to result. The creative adult has the same uninhibited expressiveness and spontaneity found in happy and secure children. Creativity time should be a fun time, and playfulness, impulsiveness, humor, and spontaneity are all part of having fun.

How to Use the Primary Activities

Although many of the primary activities are most effective when used with groups, they can also serve as independent studies or as supplementary classroom activities. Field tests have shown that the program can be used continuously for a given period of time or on a one- or two-day-a-week basis throughout the school year. The suggested follow-up activities are an important part of the program. Together with the activity sheets, they provide a year-long supply of creativity training exercises. As indicated in Part I, the program is not intended to be an end in itself. Rather, it is designed to assist teachers in learning the nature of creative problem solving and in developing their own creativity activities. The program will yield maximum benefits if you follow a plan that uses a balanced combination of activity sheets and suggested follow-up activities.

Because of variations in the needs of various age and ability groups and because of differences in individual and group preferences, the "Suggested Sequence for *Mark A* Activities" (p. 21) should not

be considered a rigid lesson-by-lesson sequence. It is intended to serve as a broad guide, and you should feel free to modify the sequence to serve the individual interests and learning preferences of particular groups.

After students have become familiar with the various types of activities, you should give them opportunities to decide which activities they would like to pursue. Student interests should also guide you in determining which type of follow-up activities to use in future training sessions.

As students progress, you should encourage them to use the skills they have developed in previous activities. For example, you might introduce an unfinished story activity by suggesting the first sentence of a possible ending to the story and asking students to suggest synonyms for specific words that would make the sentence more precise, colorful, and imaginative. When students are working on advertising or promotion activities, you should make them aware of the use of homonyms and rhyming words in slogans and jingles and remind them of the rhyming exercises they completed earlier.

The general plan for sequencing primary activities takes account of (1) a balance between semantic, symbolic, and figural material, (2) a balance between units, classes, relations, systems, transformations, and implications and elaborations, and (3) the level of difficulty and logical relationships between certain activities. Since there are two activity sheets for each type of activity, you can work through the suggested sequence twice. In each set of exercises, comprehensive directions and sample responses (when applicable) are always included on the first activity sheet. Therefore, for any given exercise, you should always use the activity sheet lettered "a" before the activity sheet lettered "b." By the time students get to the second activity sheet, they will have caught on to the nature of the exercise, and you can refresh their memory by referring to the first activity sheet. Occasionally, examples have been included on the second activity sheet to help provoke new ideas.

Each exercise should take approximately one class period, although some of the exercises that involve creative writing may require more time. You may want to assign for homework exercises that cannot be completed in class. However, it is necessary to have group discussions of all material that is completed outside of class as an important part of the creative process involves sharing creative products with others.

You can use the suggested follow-up activities included in the lesson guides any time after the students have completed the first activity sheet for each activity.

Whenever students show a preference for a particular type of activity, capitalize on their enthusiasm by developing similar activities of the type suggested in the follow-up sections of the lesson guides.

Introducing the Primary Activities

The basic strategy for introducing primary activities consists of freeing the classroom atmosphere from the usual constraints often associated with convergent production. Allow approximately one class period for the introductory session. It is extremely important for students to learn to appreciate questions and activities for which there are no right answers. You can introduce this concept by contrasting a convergent type of question with a divergent one. Before distributing the first activity sheet, you might say something like the following (but do not read it verbatim or sound too rehearsed):

Today we are going to begin practicing a new kind of thinking. This kind of thinking will help us learn how to explore many different kinds of solutions to a given problem. Some problems and questions have only one right answer, but there are also many problems and questions that have hundreds of possible answers.

Suppose I asked you, “In what year did Columbus discover America?” (Wait for an answer and write it on the chalkboard.)

Are there any other possible answers to this question? (General conclusion should be negative.)

Now suppose I were to ask you, “What are *all* of the possible ways that you *might* have come to school this morning?” (Call on youngsters and list responses on the chalkboard.)

Students will probably give some fairly common responses (“walk,” “bus,” “car,” “bicycle”). At this point, you might say:

Remember, I said all of the possible ways that you might have come. Use your imagination. Let your mind wander, even if you think the method for coming to school is silly or way-out. How about by donkey or pogo stick? (Add these to the list on the chalkboard.)

This point is extremely crucial to introducing the creativity training program. By suggesting the donkey and the pogo stick, you have accomplished three very important objectives. First, you have conveyed the idea that answers need not be feasible, practical, or realistic. Second, you have let youngsters know that you will accept these kinds of answers. Third and perhaps most important, you have let the youngsters know that you are capable of some way-out ideas. You can emphasize this point by grabbing a yardstick (conveniently placed nearby beforehand) and improvising with a few hops to demonstrate a pogo stick. Students will no doubt become a little noisy, but it is very important to tolerate this reaction. If you hush them, the whole atmosphere of freedom will be lost, and they will subjectively think that this new kind of thinking is the same old game—the teacher questions and students answer.

After your examples, students may give a wide variety of answers. Let them call out their answers (rather than raising hands) as you write them on the chalkboard. Prompt students if necessary:

Any other animals that you might come to school on? How about an airplane or a rocket? Or being dropped from a plane with a parachute?

A second crucial factor at this point is the generous use of praise on your part. Enthusiastic comments such as “good,” “great,” and “fantastic” will help youngsters open up. Do not call on students who are not taking part. It takes some youngsters longer than others to trust the teacher and his or her classmates in this type of situation. The main idea is to let students know that you like what is going on and that you are having fun. When the flow of responses begins to slow down, say:

Let’s go one step farther. Suppose you could change your size or shape. Can you think of some other ways that you might possibly come to school?

If no one responds, say:

Could you make yourself very tiny and come in your brother’s lunch box? Or, could you change to a drop of water and come in through the drinking fountain?

Continue to fill the chalkboard as long as the youngsters are generating responses. When you finally call a halt, say:

I guess there really are many questions and problems that have several possible answers. Do you think this kind of thinking is fun?

From time to time, we are going to be working on some activities like the one we just did. The main purpose of these activities will be to practice answering questions and solving problems that have many possible answers. We will be using our imaginations to come up with some clever new ideas.

At this point, distribute the first activity sheet for “Thinking about Things” and read the directions in the manual to the students. If you have any doubts about youngsters’ understanding the directions, ask if there are any questions. Then ask the students to complete the first exercise.

After they have finished, allow some students to discuss their responses. Ask, “How many had that idea?” and after a few students have shared their entire lists, ask if anyone has any responses that have not yet been mentioned. Praise unusual responses from individuals, and praise the entire group for catching on.

Follow the same procedure for the second exercise. It is especially important to be tolerant of unusual responses, increased noise levels, and occasional bursts of laughter. A comment such as “Let’s be serious” could destroy the entire atmosphere of freedom to express oneself. If time permits, you may wish to pursue one of the follow-up activities suggested in the lesson guide.

RATIONALE UNDERLYING THE PROGRAM**The Need for Creativity Training Programs**

Although interest in the identification and development of creativity has become one of the vital concerns of teachers, curriculum developers, and leaders in education, the actual effectiveness of schools in helping children realize their creative potential can be judged, at very best, as questionable. More than forty years of intensive research into the nature of creativity has yielded enough understanding about this dynamic process to enable educators to begin translating some of the research findings into classroom practice. The sad fact remains that in spite of dozens of books about creativity, hundreds of research studies, and thousands of training programs and workshops, the development of creative potential is still a largely ignored aspect of a child's total repertoire of acquired behaviors. At least three major problems seem to account for the failure to translate existing knowledge and understanding about the creative process into meaningful classroom practice.

The first problem is a lack of agreement among educators about the definition of creativity and its distinctiveness from other cognitive behaviors. A great deal of research devoted to this issue has led to conflicting conceptions of creativity, such that Davis (1999) concluded, "There are about as many definitions, theories, and ideas about creativity as there are people who have set their opinions on paper" (p. 40). Despite different views, however, most theorists agree with at least two generalizations about creativity. First, several research studies have supported the threshold concept of creativity, namely, a low to moderate relationship between creativity and intelligence (Getzels & Jackson, 1962; Simonton, 1988; Walberg & Zeiser, 1997; Wallach & Kogan, 1965). Highly creative individuals have generally been found to be above average in intelligence, but high intelligence does not necessarily insure high creativity. In addition, a number of studies (Jaben (1980), for example) have found that children of *all* ability levels, including students with special needs, are capable of creative thinking. In summarizing

this issue, Davis (1999) said, "It is absolutely true that despite genetic differences in our cognitive and affective gifts, everyone can become a more flexible, imaginative, and productive thinker" (p. ix). Thus, we can conclude that *all* children can benefit from systematic programming in this area.

The second generalization relating to defining creativity is that, rather than being an independent process, creativity consists of multidimensional processes involving interactions between the individual and his or her environment. These processes may differ from one another to such a degree that we must consider verbal creativity, creativity in problem solving, and creativity in the nonverbal arts as essentially different psychological phenomena. In other words, scientific creativity and creative problem solving may require different explanations than creativity in areas such as painting, music, and writing. And because of differences between individuals and their respective environments, what is a routine task for one person may very well be a creative experience for another. Since one of the basic assumptions underlying the development of the *New Directions in Creativity* program is that all people possess the ability to think creatively in varying degrees, the main purpose of the program is to assist youngsters in generating responses that are creative for the individual student at his or her present level of mental functioning. It is of course hoped that such experiences in creative thinking will help students develop a characteristic way of looking at things that will ultimately result in the creation of ideas and products that are truly original and useful for the culture at large. A good deal of research evidence that shows that people who have engaged in systematic creativity training exercises can increase their capacity for creative thinking in a variety of fields (Baer, 1996; Rose & Lin, 1984; Torrance, 1987).

Although this approach to the definition of creativity is relativistic rather than absolute, it is in

keeping with Guilford's (1967) conception of divergent thinking (discussed on pages 16-19) and Torrance's (1965) analytic description of the process which places creativity in the realm of daily living experiences rather than reserving it for the rarely achieved heights of creation:

I have tried to describe creative thinking as taking place in the process of sensing difficulties, problems, gaps in information, missing elements; making guesses or formulating hypotheses about these deficiencies; testing these guesses and possibly revising and retesting them; and finally in communicating the results. I like this definition because it describes such a natural process. Strong human needs appear to be at the basis of each of its stages. If we sense any incompleteness, something missing or out of place, tension is aroused. We are uncomfortable and want to do something to relieve the tension. As a result, we begin investigating, asking questions, manipulating things, making guesses, and the like. Until the guesses or hypotheses have been tested, modified, and retested, we are still uncomfortable. Then, even when this has been accomplished, the tension is usually unrelieved until we tell somebody what we have discovered. Throughout the process there is an element of responding constructively to existing or new situations, rather than merely adapting to them. (Torrance, 1965)

For the purposes of this program, creativity is defined as follows

Creativity is the production of an idea or product that is new, original, and satisfying to the creator or to someone else at a particular point in time, even if the idea or product has been previously discovered by someone else or if the idea or product will not be considered new, original, and satisfying at a later time or under different circumstances.

The second problem that has hampered efforts to promote creative thinking in the classroom has been the shortage of validated curriculum materials in this area. This shortage was the basis for one of the research challenges that emerged from the Sixth Utah Creativity Research Conference (Taylor and Williams, 1966), and was reemphasized in a study by Feldhusen, Bahlke, and Treffinger (1969). Among the many suggestions offered by theorists and researchers who have devoted attention to this problem has been a call

for instructional materials that give youngsters practice in opening up their minds and using modes of thought that are not characteristically developed in traditional curricular materials. An overwhelming proportion of existing curricular material places major emphasis on the acquisition of factual information and a kind of thinking that focuses on locating the one right solution to a problem. Although these activities are valuable in the total development of the learner, they often dominate the curriculum and are usually pursued at the expense of other aspects of development. Thus the development of higher level thought processes such as creativity simply does not take place or is an accidental by-product of instruction.

The third major inhibitor to the development of creativity in children has been a lack of understanding about the nature of creativity on the part of many classroom teachers (Williams, 1964; Eberle, 1966; Guilford, 1967). In some cases, this lack of understanding has resulted in the severe inhibition of creative thinking in the classroom and even discrimination against students who display creative behavior.

Although the development of an effective program of teacher training is beyond the scope of this manual, Part II presents a number of practical suggestions for teaching strategies. These suggestions are not intended to serve as a substitute for a course or workshop in creativity, nor will they provide the teacher with the breadth of information that they could gain through intensive reading in this area. Rather, the main purpose is to call attention to the characteristics of creative teachers and to point out a number of widely accepted principles for rewarding creative behavior.

Each manual in the *New Directions in Creativity* program provides a set of experiences that are systematically and purposefully directed toward developing certain creative thinking abilities. The program is not offered as the only approach to this problem, nor is it maintained that the program will develop all of the many dimensions of creativity that seem to exist. Rather, it is one possible approach to creativity training that has been developed within a specified framework. This framework is described in the following section.

The Structure of the Intellect Model

The *New Directions in Creativity* program represents an attempt to translate one aspect of Guilford's Structure of the Intellect Model (1967) of human abilities into classroom practice. This model, developed through factor-analytic methods at the University of Southern

California Psychological Laboratory, has been viewed by many educators as a potentially powerful tool for bringing about needed changes in the curriculum. Although the program focuses on only one dimension of the model, a brief overview of the entire system will provide teachers with the necessary frame of reference for understanding the approach used in this curriculum package.

The Structure of the Intellect Model (see Figure 2) is a three-dimensional classification system that is designed to encompass and organize 120 possible abilities according to (1) the types of mental *operations* employed in the act of thinking, (2) the types of *contents* involved in the thinking process, and (3) the types of *products* that result from the act of thinking.

(1) *Operations*

The operation dimension of Guilford's model consists of five major types of intellectual activities or processes of mind—the things that the organism does with the raw materials of information. These

five categories represent the mental operations that we as human beings can learn to use in processing the information with which we come into contact as we go about living and learning.

Cognition is the mental process involving immediate discovery, awareness, rediscovery, or recognition of information in various forms. *Understanding* and *comprehension* are terms that are commonly used to describe the act of cognition.

Memory is the process that deals with the retention or storage of information. It is accompanied by an ability to bring the information out of storage in response to cues or stimuli that bear some relationship to the stimuli presented when the information was originally stored.

Convergent production is the process of generating information from given information, where the emphasis is on achieving the conventionally accepted outcome. It is quite likely that the given information (cue) fully determines the response. Convergent

OPERATION:

- Evaluation
- Convergent production
- Divergent production
- Memory
- Cognition

PRODUCT:

- Units
- Classes
- Relations
- Systems
- Transformations
- Implications

CONTENT:

- Figural
- Symbolic
- Semantic
- Behavioral

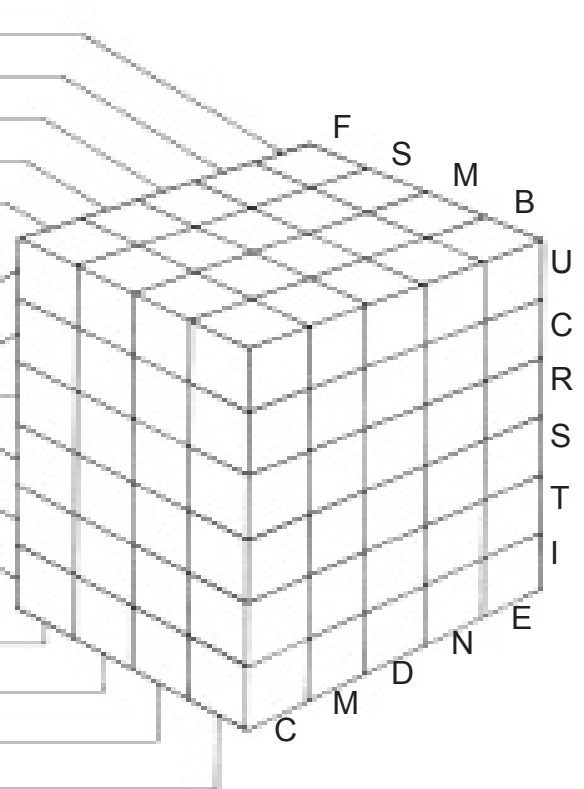


Figure 2. Guilford's Structure of the Intellect Model.

From *The Nature of Human Intelligence* by J. P. Guilford. Copyright ©1967 by McGraw Hill, Inc., New York. Reprinted by permission of McGraw-Hill Book Company.

production involves finding the correct solution to a problem by manipulating given information rather than merely retrieving information from memory; however, both memory and cognition are involved in convergent production.

Evaluation is the mental operation that refers to reaching decisions or making judgments concerning the criterion satisfaction (correctness, suitability, adequacy, desirability, etc.) of information. This operation implies a sensitivity to error and a judgment of the relative nearness of things to points on a continuum or set of standards.

Divergent production, the operation upon which this creativity training program focuses, involves the generation of information from given information, but here the emphasis is on variety and quantity of output from the same source. This operation is most clearly involved in aptitudes of creative potential and will be discussed in greater detail later in this section.

(2) Contents

The content dimension consists of the following four broad classes of information that are discriminable by the organism:

Figural content consists of information in concrete form, as perceived or recalled in the form of images. The term *figural* implies some degree of organization or structuring. Different sense modalities may be involved, such as seeing, touching, hearing, and smelling. Content information does not represent anything but itself—that which is sensed and discriminated.

Symbolic content involves information in the form of signs that have no significance in and of themselves. Letters, numbers, musical notations, and other code elements are examples of symbolic content. Objects, figures, and shapes are also examples of this type of content.

Semantic content is information in the form of meanings to which words commonly become attached. Semantic material is the major element in verbal thinking and in verbal communication (writing and speaking).

Behavioral content consists of essentially nonverbal information that is involved in human interactions, such as the awareness of attitudes, needs, desires, moods, intentions, perceptions, and thoughts of other

persons and of ourselves. The identification of abilities involving this type of content has not been as precisely defined as those abilities involved in figural, symbolic, and semantic content.

(3) Products

The product dimension of the Structure of the Intellect Model consists of the organization or form that information takes when it is processed by the human mind. The following six products, as defined by Guilford, are the result of interaction between our senses and the world around us:

Units are relatively segregated or circumscribed items of information that have singular character. For example, one chair would constitute a unit.

Classes are recognized sets of items of information grouped together by virtue of their common properties. Thus several chairs would form a class.

Relations are recognized connections between units of information based on variables or points of contact that apply to them. For example, a chair and a desk would constitute a relation.

Systems are organized or structured aggregates of items of information that are grouped together because of the interrelatedness or interaction of their respective parts. Systems are combinations of units, classes, and relations that have some total function. An example of this category is a “school system.”

Transformations are changes of various kinds of existing or known information. Transformations involve the redefinition or modification of existing ideas, products, or materials.

Implications and *elaborations* consist of extrapolations of information in the form of expectancies, predictions, known or suspected antecedents, commitments, or consequences. Asking questions, the answers to which should help people see a particular problem more clearly, suggests implications from known information.

The *New Directions in Creativity* program deals primarily with the divergent production operation of the Structure of the Intellect Model. Within this “slab” of the model, eight of the twenty-four factors have not yet been completely identified by Guilford (see Figure 3); thus only a few experimental activities have been

developed in these areas. The program does, however, include activities that sample all of the divergent production factors that involve semantics, as well as some selected activities that use symbolic and figural information. None of the exercises in the program are offered as “pure” exercises in the development of a given factor. For example, Guilford (1967) has stated that “memory storage” underlies all problem solving and creative production, and other researchers (Pollert et al., 1969) have found that memory abilities play an important role in divergent production. Guilford’s factor-analytic data also have shown that certain activities are related in varying degrees to more than one factor. Thus abilities from other areas such as cognition and memory are brought to bear on the operation of divergent production; and within the area of divergent production, certain abilities seem to act as contributory factors to the development of other abilities. For this reason, the classification of activities according to the Guilford structure is intended to point out the major focus of the respective activities in the program, but these classifications should not be interpreted to mean that other abilities are not involved in a given exercise.

The main purpose of this brief overview of Guilford’s Structure of the Intellect Model is to underscore the relationship between the focus on divergent production presented by the *New Directions in Creativity* program and the overall dimensions of the Guilford model. Teachers who are interested in delving further into the various dimensions of the model should refer to Guilford’s major work in this area, *The Nature of Human Intelligence* (1967). Another excellent interpretation of the model is presented in Meeker’s book entitled *The Structure of Intellect: Its Interpretation and Uses* (1969).

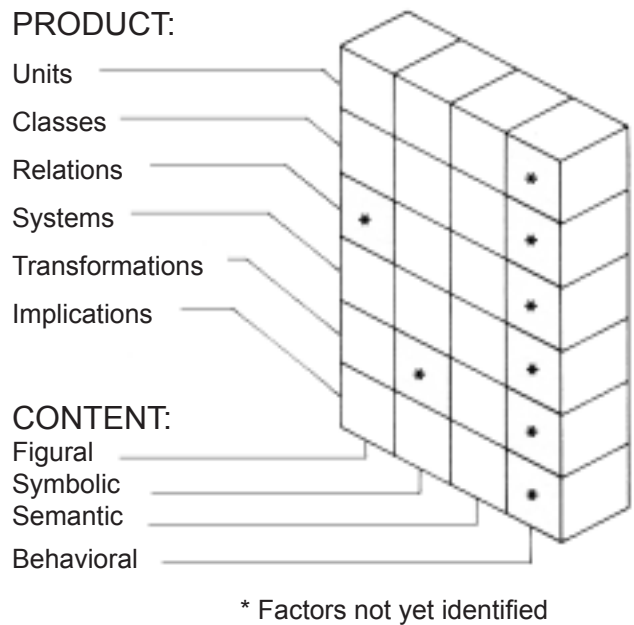


Figure 3. Factors in divergent production.

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