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ABSTRACT

Educational experiences which facilitate the development of original thinking and learning are (1) the "open system" of education which stresses freedom at home and at school; (2) the emphasis on sensory awareness of the environment; (3) the development of curiosity and sense of wonder; (4) the growth of imaginative powers and original thinking experiences--reflection and meditation; (5) the recognition of the "contentual aspects of cognition" and "competence motivation"; (6) the immersion of the teacher in the subject; (7) an empathetic relationship between the teacher and the child in any creative endeavor; (8) the development of a "structural-cognitive" approach that fosters divergent thinking--spontaneity, flexibility of response; and (9) the cultivation of a creativity which produces "effective surprise." (A selected bibliography is included.) (JM)

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Developing an Original Person

A review of recent research in originality presupposes that some things may be done to facilitate original thinking and learning. A restatement of a previous definition of originality defines an original product as one which is unusual or unique and one which appears with statistical infrequency at a specified time in a particular population sample. For example, a third-grade class visited the San Francisco Zoological Gardens last week and returned home to write a diary of their experiences. One pupil out of thirty class members described the zebra as "a funny-looking horse which wore striped pajamas all of the time." This child's little paragraph was original and represented a quality of an original mind. All thirty children had been exposed to a similar experimental situation, but only one child responded in this unique manner. This consideration of the development of an original person will limit itself to educational experiences which expand the creative role of childhood and a discussion of a type of cultural milieu which might prevent the development of a bizarre type of an original personality. You will notice that most of the ideas which will be presented as curricular implications will consist of good teaching procedures applicable to any subject areas.

In developing this discussion, the writer will consider the aspects of (1) an open versus a closed system of education; (2) sensory encounters and the selection of a feasible world; (3) the spirit of inquiry and curiosity; (4) developmnet of flexible, divergent thinking; (5) "contentual" aspects of cognition and "competence motivation"; (6) immersion in subject matter areas; (7) mutuality and communion in the creative process; (8) a structural-cognitive approach toward learning; and (9) the production of "effective" surprise.

Recently, considerable interest has been focused upon "open" and "closed" systems of education through the publication and circulation of two Association of Supervision and Curriculum Development yearbooks, *Perceiving, Behaving, Becoming* (3) and *New Insights and the Curriculum,* (4) and also such volumes as *Creativity and Its Cultivation,* (1) and *Creativity and the Individual* (31). According to Harold Anderson, the "open system" permits originality, experimentation, initiative, and invention; it constitutes the propitious environment for creativity (2:123-129). On the other hand, the impersonal closed system is concerned little with originality or invention. It is more interested in acquiring a body of knowledge or memorizing facts and finding answers to questions already solved by someone else (2). Torrance and Myers have also been concerned with "openness" in the teaching milieu of childhood. In December, 1961, these investigators published the results of a study entitled: "Can Teachers Encourage Creative Thinking?" (24:156-159). Questionnaires were distributed to 114 teachers of children in public and private schools in fourteen states. Teachers were asked to seek conscientiously to apply such principles in their classrooms as treating questions and imaginative ideas with respect, showing pupils that their

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ideas have value, occasionally having pupils do something for practice without threats of evaluation, and relating evaluation to causes and consequences. Teachers supplied anecdotes to accompany their answers. An analysis of questionnaires caused Torrance and Myers to characterize noncreative teachers. Such teachers were authoritarian, defensive, dominated by time, insensitive to pupils' intellectual and emotional needs, lacking in energy, preoccupied with information-giving functions, intellectually inert, disinterested in promoting initiative and self-reliance in pupils, preoccupied with disciplinary matters and unwilling to give much of themselves in the "teaching-learning compact." (24:159) As a group, these teachers could not accept the above principles which were "advocated to enhance the dignity of the individual child." So it is seen that noncreative teachers valued concepts of time (not timeliness), orderliness (but not necessarily logical thinking), respect for authority (but not respect for the potentialities of the individual), the child's responsibility to the group and to the teacher (but not especially the teacher's responsibility to the child or the group's responsibility to the child), the preservation of their self-image (but not the enhancement of their pupils' self-image), the importance of information (but not the importance of information-getting skills). So, if the teacher becomes a facilitator of original thinking lessons, he must be the anithesis of this "noncreative" teaching image described by these two investigators.

In addition to an "open" educational situation at school, the child needs an "open" and permissive cultural milieu in his home. Attebury (5) reported a recent study involving thirty-eight children from permissive homes and thirty-eight children from strict ones. Cases were matched according to sex, age, and intelligence quotient. A descriptive model of a strict home included such factors: good habits were approved and bad habits punished, baby feeding was pursued on a regular schedule, children were encouraged to have good table manners and regular bedtime hours, quarrelsomeness and boisterousness in games and activities were disapproved. On the other hand, in "permissive" homes, children made more decisions for themselves, developed an inner sense of self-direction and freedom, scolding was eliminated, children chose their own clothing and worked out their own quarrels. In this experiment, the creative imagination of each child was measured by raters noting children's activities during a free play period and a dramatic play period with dolls, by judging on original story, and by evaluating another one created from ideas in pictures. The experimenters concluded that one third of the children from permissive homes were highly creative, spontaneous, and original, but only one in twenty children from "strict" homes reached this high level of creativity. Thus, freedom was considered as essential for the emergence of a creative personality (5:6-7).

A second aspect of developing an original person is concerned with sensory encounters and the selection of a "feasible" world. Recently, two curriculum guides, one issued by the Denver, Colorado Public School staff, and one circulated by the curriculum department of Castro Valley, California, consider sensory experiences as vital toward enhancement of individual growth. Pupils have realistic experiences with scents such as smelling the eucalyptus tree, cinnamon bark, or fumes of hot carmelized candy, and other visual, auditory, gustatory, tactile, and kinaesthetic experiences are undertaken. One aspect of sensory experiences is the development of a sensory awareness in a child confronted

with a mechanized, jet-propelled world. A second aspect which is frequently overlooked is the selection of a "feasible" world for the individual. The philosopher, Alfred North Whitehead spoke of the nurture of an original personality as embodying "a concrescence of actual entities," or *immanent* creativity (14:211). According to Whitehead, *immanent* creativity was "concerned with a drive toward production of new creatures, an urge toward novelty (14:211).

In order to achieve this unity, however, the inappropriate factors were eliminated if they were "inappropriate for the production of an organized unity." Whitehead spoke of creativity as being a surge or a push, a warring diversity in man and the universe. In order for this "new entity" to come into being, this warring diversity has to be transferred into a harmonious unity" a discordant multiplicity in chaos" (14:211). Whitehead indicated that the urge toward novelty was built into the universe. Creativity is cyclical and rhythmical; it is periodical with a balancing of the input of experiences through sensory impressions with an output through the individual's self. In developing the "feasible" world advocated by Martin Buber (27) Whitehead would have the teacher help pupils to select proper materials and procedures by "pruning out the unessential stuff, the 'inert' and focusing on the important learning ideas." This is a delicate task for the artist teacher. He must help the child in this "creative thrust," but he must also provide for an exploratory, manipulatory, investigation of the environment. A basic problem for the teacher is the recognition of this "creative thrust" not merely toward the continuance of the old or "status quo," but also in the grasp toward new entities, ideas, and aspects of experience. Or, in the words of Whitehead, "the infinite variety of specific instances which rest upon the unrealized womb of nature." Freshness is contrasted with oldness; there is a "creative advance into novelty" (14:215-216).

The development of sensory awareness is part of a "growth of environmental consciousness" and helps the pupil to have realistic encounters with environmental objects. Dewey expressed this as the interaction between an organism and the environment; others, have spoken of the "life space," the particular area where the person has had an interaction or relationship between himself and the world. Sing-nan Fen spoke of a certain blindness in human beings, our "egocentric predicament." Many persons are environmentally bound and insensitive to much of our existence. An old oriental poem expressed it this way (16:86):

> Long we live on the mountain
> Fain are we ignorant of it.

We also have an old aphorism which expresses the same idea, "Familiarity breeds contempt."

In order to help this "creative advance into novelty," the pupil needs to develop a sense of wonder and curiosity. He needs to look at his environmental world with a fresh viewpoint. As expressed in "Renascence" by Edna St. Vincent Millay. (21)

> The World
>
> is high.

Martin Buber stresses this selection of an "effective world" and indicates that the teacher "fails the recipient when he presents the selection to him with a gesture of interference," Buber considers the release of powers as offering the true knowledge of the external world. A teacher helps the child to select an "effective world" by the "raising of a finger, or a questioning glance," but not through compulsion and interference (8:90).

Children need time to stand and stare, to wonder, and to ask questions. Such questioning curiosity may be developed through newer inquiry techniques such as those developed by Suchman (33) and his University of Illinois associates through inquiry training, or perhaps more divergent thinking qualities may be encouraged through allowing children to ask more open-minded questions. Trabue has expressed this by saying, "What we should strive for are inventiveness and creativity, a shifting of emphasis from acquiring to inquiring" (34:62). The spirit of inquiry or curiosity is also an additional aspect of the "open" versus the "closed" classroom which was previously described. The "closed classroom leads to convergent, conforming actions and such stereotyped questions as how many pages must my book report be, or how do *you* want me to do this assignment? The "open" classroom, on the other hand, encourages inquiry, critical thinking, discovery, and is more action-oriented (15:67-71).

The skill of questioning is an art which can be developed, but if one would develop creative beings, he should learn this art. In the words of Richard Loughlin, "To question well is to teach well" (20:481). In his article, "On Questioning," published in the *Educational Forum* of May, 1961, Loughlin offers ten guidelines which can improve questioning skills. For example, in order to stimulate critical thinking, the teacher might ask, "To what extent?" "How?" "Under what circumstance?" "Why?" and "Compare and contrast" (20:481). The educator or adult leader also may encourage other students to add comments by asking: "What's your opinion of that answer?" or, if a student is having difficulty in answering a question, the teacher as a facilitator might say, "How can we help_____(Jimmy) out? (20:481-482).

Ruth M. Strang has also advocated questioning as an aid to original thinking as any situation might suggest numerous possibilities. Therefore, the teacher should quietly stimulate pupils to ask and to answer thought-provoking questions. Strang quoted someone saying that the creative person "has ideas like a dog has fleas" (32:217). This same quality of questioning and developing a curious attitude toward life was discussed by Mork who illustrated the teaching of a science lesson on rockets and satellites through "asking and guessing." He feels that originality in science is an undeveloped resource, as schools tend *not* to develop ingenuity, resourcefulness, and originality, as the step of the "guess" answer is rarely used (22:86-91).

Mary Alberta Collins has suggested another use of the inquiry method, one appropriate for an English classroom. Her suggestions appear in an article entitled, "Teaching Usage Through Use of Scientific Inquiry." (10) In the experiment described, pupils entered the classroom hearing the overture from "My Fair Lady." They listened to the verse, "Why Can't the English Learn to Speak?" Then, the students and the teacher listed such questions as: (1) Can speech make you a prisoner of the gutter? (2) If you use proper English, are you regarded as a freak? (3) What *is* proper English? (10:335-337). Members of the class also used some of the laboratory techniques suggested by G. Robert Carlsen in his article, "English for the Ur gifted" (9:329-333, 337). An important phase of such training is the testing of hypotheses and the drawing of conclusions.

The questioning aspect of the educational process leads into the next aspect of originality growth, the development of imaginative power (11). In imagination the learner builds an inner life, one of reflection and meditation. He develops a

power to recombine elements into new combinations. This development of imaginative power is being enhanced through the use of original-thinking exercises designed to encourage this recombining element of thinking. Torrance, Myers, and associates at the University of Minnesota; Guilford and others at the University of Southern California; Getzels and Jackson, and Osborn, as well as many others have been working on original-thinking lessons through creative thinking tests and exercises, specific creative thinking training through brainstorming, and through the use of numerous other techniques.

Although they were principally concerned with the education of the gifted child, DeHaan and Wilson (12) have described creative writing lessons designed for the measurement of the original, creative talents of fifth- and sixth-grade pupils. Exercises were given weekly for a five-week period and included: (1) developing expressive sentences; (2) writing a story from descriptive phrases; (3) composing a paragraph from a sentence; (4) writing an experience; and (5) creating an imaginative composition. Classroom teachers utilized a five-point scale for judging these products based on the following criteria: (1) originality of ideas, (2) depth of understanding of emotion or situation, (3) choice of expressive words, (4) conciseness of expression, (5) developmental logic employed in sentences, (6) good paragraph organization (when appropriate), (7) well-planned plot (when appropriate), and (8) maintenance of a point of view (12:176).

Robert C. Wilson also suggested several additional ideas in this yearbook, *Education for the Gifted,* which might foster original creative thinking and writing. In making these suggestions, Wilson assumed that abilities involved in being creative are universal, that these abilities are capable of being increased by training, and that it is one of the school's legitimate functions to provide such training (36:109).

In order to develop sensitivity to problems, Wilson suggests the use of the senses on observation trips. He also encourages pupils to develop imaginative power through attempting to answer such questions as "What would happen if pills were developed which would substitute for food?"; if "everyone in the world were suddenly to become deaf;" or "if everyone always told the truth about everything?" or, "if the ocean dried up?" (36:120). He also offered numerous suggestions for developing the flow of ideas which included such exercises as: "Write as many things as you can think of that are square in shape;" or, "List all nouns you can think of that might bring you comfort if you were hot." Again, he suggests such a thought question as: "Old light globes are usually thrown away. How many uses can you think of for an old light bulb?" (36:121).

This author also suggested that fluency in creative writing might be encouraged by having children write for twenty minutes each morning on whatever subject they might choose (36:121). He indicates several ways in which teachers might make a deliberate effort to obtain uncommon or unusual responses or new ways of doing tasks. In presenting reports in relation to social studies, pupils are told to utilize any method "*other* than reading or telling the class." These include "dramatizations, quiz sessions, opaque projectors, tape recorders, interview techniques" (36:122). Pupils might "sell" a book to their classmates. Others might listen to a poem and "brainstorm" appropriate or clever titles for it; then, they can select the most popular ones.

In this same yearbook, Wilson also offered an ingenious method for measuring

originality in relation to the writing of a poem. All pupils were asked to write a poem on the subject, "Spring." They looked out of the window and wrote down all of the things seen which would *not* have been evident on a rainy day. If pupils wrote something which no one else noticed, the score was 10; if two or three pupils observed the same object, the score was 5; if four or five people saw the thing, the score became 3; if 5 persons noticed it, the score was 1. Pupils were given four minutes to observe the phenomena and events from the window and four minutes to write their impressions (36:122).

An additional creative writing lesson was designed to measure "uncommonality as a factor of creative thinking" (36:123). This lesson consisted of the writing of "squiggle stories." Each student drew three lines with colored crayon on the upper part of a sheet of paper, and papers were exchanged with partners. The person getting a "squiggle" drew a picture using the lines. Each child named his picture and wrote a story about it. Three requirements were given for the story: (1) something must happen; (2) it must happen in sequence; and (3) it must have a definite ending or punchline (36:123).

Another aspect of creating an original mind might be discussed through the use of two terms "contentual" depth of cognition and "competence motivation." Deutsch utilized the term "contentual aspects of cognition" (13) to describe the actual content of the child's knowledge and comprehension. He cites examples of "contentual equipment," as including the "language symbolic system, environmental information, general and environmental orientation, and concepts of comparability and relativity appropriate to the child's age level" (3:5).

"Competence motivation" as used in this context will describe motivational aspects associated with learners who are competently trained to utilize their thinking abilities in a positive, growth-oriented manner. For example, a secondary teacher might use the Encyclopedia Britannica film, *People of a City,* as a stimulus for writing an original story. The teacher, through the use of this film; motivates the pupil to write an imaginative story. However, if the student does not know story format; if he can't spell or punctuate his writing; if his vocabulary is sparsely collected, he may be motivated somewhat, but such motivation lacks competence. The author cannot create an original story because he lacks the facilitating skills and is delimited in verbal communication. We lack competence motivated abilities in many other ways. For example, a teacher may play Grofe's "Grand Canyon Suite," but pupils may have developed little auditory discrimination or auding ability. Martin Buber expressed this tendency in the words: "The waves of the aether roar on always, but most of the time we have turned off our receivers" (8:11).

One of the problems involved in developing original persons from the culturally deprived population segment of our communities is that of "stimulus deprivation" (13:5). Children in a slum culture or in the central core of many of our metropolitan cities have had a "disadvantaged environment," and an over-all restricted range of experience. As expressed by Deutsch, the child is "probably further away from his maturational ceiling as a result of this experiential poverty" (13:5). Some recent experiments in New York City offer some hope for widening the experiential range of this "culturally disadvantaged" child. As one facet of New York City's Demonstration Guidance Project (23), a cultural enrichment program supplemented guidance activities. Pupils visited art galleries, saw Broadway plays, listened to symphony

orchestras, attended the Metropolitan Opera, and visited universities in the area. This is an example of one type of a program which can be utilized to aid the "culturally disadvantaged" child. When such children have the contents of their experiential reservoirs raised, they have additional materials out of which original compositions can be created.

In order to offer appropriate environmental information and assist in imparting aspects of the language-symbolic system of the "contentual aspects of cognition," the teacher must be dedicated to knowledge. Evelyn Wendt in an article, "Teaching As a Creative Process," outlines such important qualities as immersion, openness to experience, inspiration, and elaboration. Immersion stresses the importance of a sound knowledge of subject matter. Most creative artists spend years of disciplined practice learning the rudiments of their creative medium. Artists have discovered that creativity was aptly described by Dylan Thomas as a "laboriously churning process" (35). A significant aspect of immersion is "dedication." The teacher must feel that teaching is as important to him as the creation of a poem is to a poet.

Henry Adams said, "A teacher affects eternity, he can never see where his influence ends." In addition to the more inspirational aspects of teaching, the teacher of an original person needs to understand the function of elaboration which is the most difficult aspect of the creative teaching process. This requires skill, concentration, patience, perseverance, and the giving of one's self and time (35). In this most delicate part of the creative process, the elaboration phase of the creative act, lies a great responsibility for the teacher. Creation must be placed in a growth-oriented direction. Too often tactless criticism withers creative blossoms on the growing vine. On the other hand, lack of assistance on ways to improve a creative product, stunts the growth of the creator and he reaches a plateau, not a peak.

In his immersion in the teaching process, the teacher can persistently seek for enlarged depth in his knowledge of the subject area field. He must be a reading teacher as well as a listening one. If he is an English teacher, he may scan the literature for newer approaches and content. For example, the February, 1963 issue of the *English Journal* offers two thought provoking articles, one on American dialect (30), the other on vocabulary panels (25).

Teachers can also do many things to help pupils recognize the "glory and power of words." In an article on this subject, Ethel Oyan (26) indicates several ways to interest pupils in words. She suggests collecting a series of pictures which illustrate attitudes which you wish to develop such as kindness, good manners, and love. A series of words describing color, size, and numbers can be shown through the use of pictures. Illustrations of faces can be collected and words describing feelings of people can be discovered (26). Recently, Teachers College at Columbia University has published a little book for high school classes by Pauline Sherer and Neal Luebke titled, *Writing Creatively, Lessons for a High School Class.* This booklet shows many ways of promoting vocabulary growth in a creative manner.

A seventh aspect of originality development implies mutuality or communion. Some original thinking exercises can be developed through the team approach or by classroom groups. However, perhaps the greatest qualitative products develop through mutual relationships, the relation between the learner and teacher, a dialogue between two persons having original ideas, or even a mutual relationship between the artist and his critic.

A recent yearbook, *New Insights and the*

Curriculum (4), offers considerable space in a discussion of dialogues as one of the means of improving man's relationship to man. Dwayne Huebner quotes Berdyaev who emphasized the need for communion among people and an involving of persons through "participation, reciprocal participation, and interpenetration" (18:161). Buber utilizes the word "dialogue" to signify man's relationship with man (18:161). He indicates that compulsion in education means "disunion," "humiliation" and "rebelliousness." Communion in education means "being opened up and drawn in" (8:91). Last week a sixth-grade teacher related her techniques of working with "slum-culture" children. The principal gives her most of the discipline problems of the school, and she happily works with these children if she can teach them her way which is through communion between herself and the child, and communion between the class and herself. At times, an emotionally disturbed child, coming from a miserable home, arrives at school with hostilities and antagonistic feelings. He is so tormented that classroom learning is hampered. The child is sent on an errand, and the teacher quietly talks with the class by saying, "Ronald has had a bad time at home this last two days. Please excuse him. Will you help him to get along better with us?" When the child returns to the class, he is accepted, not rejected by others. This is a principle of inclusion and communion, not one of separation and loneliness.

One more illustration suggests the use of dialogue to improve excellence in the writing of short paragraphs by second and third-grade pupils. A student teacher asks pupils to read three science or social studies books. Then a child brings his book to a quiet corner of the room and the teacher and child discuss the books. Two or three other pupils frequently join the table as listeners while awaiting their turn to speak. However, a dialogue is held between the teacher and pupil. When the child feels that his ideas are clarified, he returns to his seat and writes his paragraph. The dialogue has made writing easier. Later, another conference is held with the pupil regarding the quality of *thinking* in the child's paragraph. After a critical paragraph has been written, the child is encouraged to write a creative story or poem: "How I Felt as a Lizard," or "My Home in a Mulberry Tree." This quality of dialogue presupposes a "mutuality of interaction." Two persons are turned to one another, observing, looking on, becoming aware, or issuing words which demand an answer (8:10-11).

Another aspect of communion is empathy. This is a quality which man needs in his quest for humaneness. Buber expresses empathy in the following way: "Empathy means . . . to glide with one's own feeling into the dynamic structure of an object, a pillar, or a crystal or the branch of a tree, or even of an animal or a man, and as it were to trace from within, understanding the formation and motoriality of the object with the perceptions of one's own muscles; it means to 'transpose' oneself over there and in there" (8:97). True empathy as described by Buber has three aspects: first, a relationship between two persons; second, an event experienced by them in common; and third, the fact that one person "without forfeiting anything of the felt reality of his activity, at the same time lives throughout the common event from the standpoint of the other" (8:97). In order to develop empathy in future original authors, more relationships between man and man should be fostered. Persons need to put themselves in the other person's place, or as Atticus tells Scout in *To Kill a Mockingbird,* you need to "climb into his skin and walk around in it" (19:36). Most of us need to look at life from the other persons' viewpoint.

Another method of developing empathy in original minds is to acquire a skill in the asking of valuation questions. Examples of such questions are given by O. Othanel Smith in an article, "The Logic of Teaching in the Arts" (29). For example, in a study of *Cry the Beloved Country,* the teacher might ask; "Is the law just which says that a man should be hanged who accidentally kills another man who is frightened while robbing the man's house?" or, if it is in a history class, the teacher might ask, "Do you think it's a safe assumption that Jackson would decide today as he did a hundred and thirty years ago on the same issue?" Again, in a literature class the teacher asks, "Do you think it's true that another one can arrange for another's happiness?" or, in a physics class the teacher asks, "Is friction good or bad?" (29:180-181). Smith suggests three logical steps to be followed in teaching such appreciations including a set of criteria or rules for judging, a set of facts, and a judgment how well the facts satisfy criteria or standards (29:180).

An eighth aspect of developing more original persons has been called developing a "structural-cognitive" approach toward learning and involves one aspect of a cultural milieu favoring originality. Jerome S. Bruner has called our attention to the structural aspects of cognition in his volume, *The Process of Education* (6). Structural aspects of learning not only involve an understanding of general principles, but also learning attitudes are directed toward inquiry techniques, toward "guessing and hunches." An aspect of these structural patterns involves the excitement of discovery (6).

Charlotte Crabtree at Stanford University did an interesting doctoral investigation entitled "Effects of Structuring on Productiveness of Children's Thinking" (28). A second-grade classroom was divided into two groups using dramatic play as an aid toward understanding concepts in the social studies area. Program A, termed an "emergent structure," opened up extensive opportunities for children to explore ideas which they indicated, and children's interests were used as cues for conversation sequences. The teacher added depth to the content, but subject matter aids and resources were not supplied until children's cues indicated that materials were related to the study.

Program B, termed "predetermined structure," was more formally organized. The teacher rigorously limited the self-direction of the children's thinking and selected discussion topics. Concepts were frequently evaluated for conceptual accuracy. In both types of organizational patterns, the content was concerned with ideas involved in studying the harbor or airport.

In Program A, the "emergent structure," the teacher was "highly integrative." She supported the children's ideas, offered assistance in the development of their purposes, and helped them to define their problems. However, she supported independence and initiative in thinking processes. In Program B, "predetermined structure," the teacher was directive and issued commands, dominated discussion periods, gave evaluative responses to children's ideas, and emphasized logical, deductive reasoning processes in a circumscribed content area. Both methods opened with a discussion followed by a play period in a dramatic play center, but in the "emerging pattern" the environment was unarranged.

In the "predetermined structural" pattern materials were arranged which were realistic, not ambiguous. This study was principally concerned with divergent and convergent thinking processes, with the "emerging structural pattern," representing divergent thinking, and the "prede-

termined structural" pattern used to simulate convergent thinking processes.

As described by Shaftel (28:128):

> Divergent thinking was expressed in those responses in which children created new patterns of play, organized material for new uses, imposed original ideas upon a field of play, or extended into it new organization and order. Such thinking was characterized by originality, spontaneity, and flexibility of response.

Shaftel reported that divergent thinking consisted of a mean of 48 per cent of observed thinking responses in Program A, the "emergent structure." Conversely, in Program B, "predetermined structure," only 18 per cent of the mean responses consisted of divergent thinking. The difference between the two groups was significant at the .001 per cent level (28:128). This study presents only one type of formalized experimentation on the structural-cognitive aspects of learning, but divergent-thinking experiences and experiments will probably be developed in many more classrooms as newer psychological discoveries are being made about the original mind.

The last aspect of building original thinking beings is one borrowed from Bruner who has stated that the "hallmark" of creative enterprise is "an act that produces *effective* surprise" (7:18). This quality of "effective surprise" is the one which differentiates original products which are bizarre or ones of the Bohemian type from those that are tending toward artistic unity. The word "effective" is significant for such surprise is not "off beat" or merely sensational and eccentric. "Effective surprise" has a quality of obviousness, a "shock of recognition following which there is no longer astonishment" (7:18). Perhaps, Bruner best represents "effective surprise" through discussing Henri Poincare's *Science and Method.* Here combinations are revealed which show an unexpected relationship between "facts long known, but long believed to be strangers to one another" (7:19). This surprise element consists of a "metaphoric effectiveness" which connects experiences which were far apart, but with "the form of connectedness that has the discipline of art" (7:20).

The January, 1962 copy of the *English Journal* discusses a modern poem by Sidney Keyes entitled "Greenwich Observatory," and one observed here "A single goggling telescopic eye" which "Enfolds the spheric wonder of the sky." These lines have freshness, but as related to the unity of the total poem the ideas are appropriate and not sensational. Another example appears in the March, 1962 copy of the same journal in a little poem by Harriet Mask entitled, "In a Teapot, Then." The opening lines of this poem are:

> In a tall grey house
> Of passionless propriety she lived
> Safe from all that life should show.

Here again the words "passionless propriety" are particularly appropriate to this portrait of an old maid from one Victorian family who was "single all her life."

A recent Synectics research group directed by William J. J. Gordon has reported that inventors show a recurrent reliance on the "commonplace" as a part of "creative departure." Some inventors were thinking of commonplace summer insects and developed a theory of acoustical insect control. In the words of Gordon, the Synectic process involves: "Making the strange familiar," and "making the familiar strange."[1] Forms of "effective surprise" grow out of combinational activity and such operations involve discernment of choice and an "intuitive familiarity" (7) regarding

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[1]Gordon, William J. J., *Synectics.* New York: Harper and Brothers, 1961, p. 33. As defined by Gordon, Synectics means the joining together of different and apparently irrelevant elements. Synectics theory applies to integration of "diverse individuals into a problem-stating problem-solving group." (page 3)

what combinations will be most effective. The success of such a creative object originating from various "combinatorial acts" is frequently controlled by a knowledge of correct techniques. Thus, the original person must have a grasp of the art form, a technique, and an ability to see relationships in disparate elements.

In developing an original person, our attention has been directed to the "open system" of education, sensory encounters with the environment, a sense of curiosity and discovery, the growth of imaginative powers and original thinking experiences, the "contentual aspects of cognition" and "competence motivation," immersion in subject matter areas, a mutuality and spirit of communion in creative endeavor, the structural cognitive approach toward learning, and the cultivation of abilities to produce products with a touch of "effective surprise." Perhaps, many of these aspects can best be expressed through the words of Robert Frost who at the age of 88 published this little portion of a verse in his volume, *In The Clearing* (17:74):

Lines 12-16 from "How Hard It Is To Keep From Being King When It's In You And In The Situation"

May more of tomorrow's children sit down to "take a drink of stars" and may we sit beside them on the bank in a spirit of mutuality and communion.

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