Encouraging Creativity Through Creative Thinking Skills

by

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Introduction

In Winter 1997, I served on a county-wide committee with two teachers of the gifted evaluating student art portfolios to determine which students met the criteria for creativity. A child earning 90 percentile or above on this assessment would be one step closer to qualifying for the gifted program services under the state's recently expanded criteria (Georgia Department of Education, 1995). Using an assessment form created by the Clarke County School System called Product/Performance/Portfolio Assessment (see Appendix A), we scored the products using a rubric as well as student answers to interview questions to evaluate the thinking behind their work (see Appendix B).

The committee visited three elementary schools and reviewed portfolios comprised of artwork made in the art room and the regular classroom. I discovered that most entries were readily identifiable "projects" that were more a reflection of creative teaching than student creativity. While most efforts were well executed, in my opinion, only one could be considered independently creative.

As an art teacher, it was assumed that I was an informed resource for the school system to recognize creativity in elementary school aged

children. I felt confident that I knew how to identify creativity in children's artwork. However, I walked away from that experience questioning my role as an art educator and what I require of my students in their art assignments. To achieve worthwhile art learning in my elementary art classroom, I realized that I must require my students to work beyond the implementation of art techniques and art elements and principles and reach within themselves to solve design problems using their own ideas. I needed to broaden art assignments and provide my students with more learning opportunities involving creative thinking.

Purpose of the Study

Creativity is not specifically listed in the Georgia Quality Core Curriculum for Visual Arts (1987), yet it is assumed that creativity is being promoted in the art classroom. This leads to the question: If we as art teachers claim to promote students' creativity, are we actually teaching in a way that encourages that creativity? Within the creativity literature, there has been a concentration on research identifying characteristics of the creative person (Csikszentmihalyi, 1996). While informative, this criteria does not provide insight about teaching all of the children who walk through the doors of the art room. Teachers need to understand more about what types of activities encourage creativity and what our role

might be in that process. This applied project will address the research question, "What creative thinking skills can be taught to enhance children's art making?" To advance this goal, this project is an effort to demystify creativity and implement teaching strategies that promote creative thinking and creative art making.

The reason I chose to teach creative thinking skills to the two fifth grade classes at Chase Street Elementary School is because a majority of these students have had five years of art education. This knowledge has provided a foundation of art elements and principles of design and an understanding of many art material techniques and processes. In addition, fifth grade students have been introduced to a variety of artists and have had experience critiquing artwork of their own and others. I considered it a challenge to teach this age child creative thinking skills because Mendelowitz (1963) characterized them as entering an inhibited phase:

> During the nine-to-twelve period, pressures toward group conformity often result in the development of very conventional standards of artistic taste. This is therefore a good time to begin showing children unconventional examples of modern, historic, and primitive arts that are related to their growing skills and interests both in the fine arts and in crafts (Mendelowitz, 1963, p. 94.)

Defining Creativity

Part of the educational process is to produce individuals who are capable of creativity, but what is creativity? What makes a product creative? It is thought that to be creative an idea or product must be new or original. Two criteria are common in most definitions for judging creativity: novelty and appropriateness. Guilford (1986) defined creativity as an ability to generate unusual but appropriate ideas. Perkins (1988) defines creativity as both original and appropriate. Psychologist Csikszentmihalyi (1996) said that children cannot be creative because they have not had enough life experiences:

> Children can show tremendous talent, but they cannot be creative because creativity involves changing a way of doing things, or a way of thinking, and that in turn requires having mastered the old ways of doing or thinking. No matter how precocious a child is, this he or she cannot do (p. 155).

For the purpose of this project, creativity will be defined as a discovery that is new or original to the child, if not to the adult world.

The second aspect of creativity, appropriateness, is more of a challenge to define in the domain of art where there are no clear cut correct or incorrect answers. Amabile (1989) wrote that a creative product is defined by the domain of the field of study, if a product or idea

meets certain criteria. Appropriateness depends on cultural context and can vary depending on cultures and time periods. For the purpose of this project, artwork made by children will be considered creative if it has meaning and communicates an idea in an original way to the child.

Purpose of Creative Thinking

Being creative enables children to use their imaginations and enrich their lives. The importance of having students develop creative thinking abilities moves children beyond rote learning. The National Art Education Association visual arts education reform handbook, *A Priority for Reaching High Standards* (1994), states that student learning and the arts help shape students' perceptions and imaginations and goes on to say:

> The educational success of our children depends on creating a society that is both literate and imaginative, both competent and creative. This success depends, in turn, on providing children with tools not only for understanding their world but for contributing to it while making their own way (p. 4).

A well designed art program should provide opportunities for children to develop the creativity necessary for innovative thinking and problem solving.

Due to the current state government mandate of public school reform (Georgia House Bill 1187, 2000), for the first time, classroom teachers will

be formally evaluated by their ability to show improvements in their students' learning this year evidenced via standardized testing. What can art teachers do to contribute to increasing students' learning for understanding? By modeling and teaching thinking skills through the subject of art, art teachers can contribute to equipping students with additional thinking tools they can transfer to other content areas. Problem solving in art can teach students to work independently. This approach can benefit learning in other school subjects through active, analytical investigation--by observing, comparing, experimenting, evaluating and reaching one's own conclusions (Szekely, 1988).

The Role of the Art Teacher

As the art teacher, I see my responsibility as that of providing students with opportunities to not just view and talk about the work of adult artists but for them to experience visual art for themselves and to make their own discoveries. Through experiences that provide opportunities for children to express themselves visually, they can learn how to use materials and visual concepts to convey their own ideas and feelings. I view my role as that of a facilitator, to inspire my students to learn more about the world and themselves by prompting their thinking and problem solving skills, to get them excited about capturing their ideas

through various mediums, and to encourage them to strive to do their best craftsmanship. To accomplish these goals, the teacher must sometimes refrain from sharing their own creativity and instead invite students to explore a theme or idea. Teacher reflection on curriculum content and instructional methods are recommended for effectively teaching creative thinking skills (Brooks & Brooks, 1993).

Description of the Population

In 1995, a school choice plan was initiated in the Clarke County School System which allowed parents to select any elementary school in the entire county for their children to attend. As a result, Chase Street School currently serves an urban population. Ninety percent of the school population is classified by the State of Georgia as at-risk. Eighty percent of our students are on record for qualifying for free lunches, and an additional 10% qualify for a reduced lunch rate. Currently, Chase Street School's population is comprised of 68% African American children, 30% Hispanic children and 2% children from other races. The number of children who qualify for the gifted program is less than four per cent.

There are major challenges my students bring to the art classroom. The first challenge is limited life experience. Although many have experienced life vicariously through hours of watching television, having

watched a program about the ocean is not the same as seeing, touching, smelling, hearing, and tasting it for oneself. A second challenge is that many children shoulder personal problems and instability in the home environment. A third challenge is that English is the second language for approximately one-third of the school population and approximately one-half of these children have a minimal grasp of English. A fourth challenge is little outside accountability with parents and guardians which creates a halo effect of devaluing school. This results in a weak work ethic that impairs student ability to succeed in school.

Description of the School and the Art Program

Chase Street Elementary School, located in Athens, Georgia is the oldest of 13 elementary schools in the Clarke County School District. Established in 1923, the facility consists 16 classrooms in the main building, 4 modular classrooms, a media center, an activity building, and a cafetorium. This past summer, a regular classroom was converted to accommodate a 25 station computer laboratory. Since the inception of the art program with a full-time art specialist at Chase Street Elementary School in 1977, art classes were conducted in a modular unit behind the school. However, in June 2000, an additional wing was completed adding two rooms specifically designed for music and art instruction.

The art program at Chase Street Elementary School serves 26 classes each week. Two of these classes are fifth grade classes. Nineteen of the remaining classes serve pre-kindergarten to fourth grade students. Special education students in mildly mentally handicapped classrooms are mainstreamed in the age appropriate art classes. Three class periods on my schedule are designated as times available for collaboration with regular classroom teachers or the teacher of the gifted. Fifth grade students generally receive 60 minutes of art instruction each week.

Outline of the Applied Project

In this chapter, I provided a working definition for the term creativity. For the purpose of this project, artwork made by children will be considered creative if it has meaning and communicates an idea in an original way to the child. I also briefly discussed the importance of creativity in the elementary school curriculum. I described Chase Street Elementary School and the largely minority population I serve.

A review of the relevant literature will be presented and discussed in Chapter Two. Chapter Three will review the literature regarding creativity theory applicable to curriculum development. A curriculum focused on teaching strategies that promotes creative thinking appears in Chapter Four. This proposed curriculum will focus on the development of

creativity of fifth grade students expressed through visual images. To promote image building, students will be introduced to a variety of creative thinking techniques that provide opportunities for creative thinking and expression. The learning objectives, resources and materials will be listed and procedures and evaluations will be outlined. The lesson plans will conclude with reflections on teaching strategies for improving future projects. The final chapter provides a summary of this applied project, recommendations and conclusions.

Chapter Two

Review of the Literature

If more is understood about the creative process, the art teacher can more readily promote it in the art room. Wallas (1926) identified four steps in the creative process: preparation, incubation, illumination, and verification. In the preparation stage, one gathers information, thinks about the problem and contemplates ideas. In the second stage of incubation, the problem is not thought about consciously. While going about everyday activities, the mind continues to think about the problem on another level. The third stage of Wallas' model is illumination, the stage when ideas come together and suddenly a solution to the problem is discovered. The final stage of verification is when the idea is tested for practicality, effectiveness and appropriateness. The solution is elaborated on and fine-tuned, if necessary. If the solution is rejected, the entire process begins again.

Creativity is, therefore, not the mysterious product of the unconscious mind but, rather, the end result of many decisions made along the way. Rather than consciously thinking about the sequential steps of the process, the artist continues his work to completion. The "insight" may be remembered as a flash of inspiration, but it is really the accumulated

product of intense thought, preparation and desire (Perkins, 1981).

Can Creativity Be Taught?

Cognitive science has produced and tested many exercises that we can use to develop our creative powers. The consensus of many educators is that creativity can be learned (Osborn, 1963; Renzulli, 1973). "Just as we throttle our imagination," notes Alex F. Osborn (1963), a pioneer in the field of creativity enhancement, "we can likewise accelerate it. As in any other art, individual creativity can be implemented by certain 'techniques'" (p. 73).

Beyond a student-centered approach in selecting themes and creating a learning environment, there are tangible skills to assist the art teacher in motivating creativity in their students. Teachers can provide students with creativity techniques that are designed to assist in generating ideas. Familiarity with these techniques gives students a set of tools to use in their exploration of thoughts in new directions.

Validity of Teaching Creativity

Contemporary learning theory acknowledges human learning to be a constructive process. In the constructivist model of the classroom, the teacher values the student's point of view and encourages students to construct individual meaning (Brooks & Brooks, 1993). Each student builds

an individual cognitive structure different from all others and full of personal associations. "Meaningful learning . . . is essentially creative. All students must, therefore, be given permission to transcend the insights of their teachers" (Caine & Caine, 1991, p. 92). Giving students opportunities to be creative requires allowing them to find and solve problems and communicate ideas in novel and appropriate ways.

An Overview of Creativity in Art Teaching

At the beginning of the twentieth century, artist-teachers began to establish an art pedagogy based on the idea that children are artists (Efland, 1990). This teaching philosophy subscribed to the idea that the child has an innate desire to express himself/herself naturally. Believing that adult art and formal instruction would impair a child's creativity, this non-interventionist teaching philosophy was credited to Cizek, called the father of free expression. Further research into Cizek's lessons by Macdonald revealed that his claim to freedom was relative to the standards of Viennese schools of his time (Efland, 1990).

Lowenfeld has been said to have had more influence on art education theory than any other art educator in this century (Eisner, 1984). His book, *Creative and Mental Growth,* provided a basis for understanding children's art. He believed that the goal of art education was not the art

product but for the child to grow up creatively (Lowenfeld & Brittain, 1987). The goal of the art teacher was to provide stimulation, encouragement and an atmosphere conducive to open expression (Sevigny, 1987). As a result, many teachers resisted providing any structure or content in art programs, feeling that structure of any kind would stifle the child's innate creativity (Eisner, 1987).

Creativity viewed as undirected spontaneity is a misunderstanding of the creative process. This misunderstanding of the processes and conditions of creativity have sometimes led to criticism (Clark, Day & Greer, 1987). Creativity should be structured as a directed process toward specific goals. Marion Richardson, known for her visualization technique in art education, understood the balance between the natural desire students had to be creative and their need to learn art techniques to best express those ideas (Michel, 1999). After students are taught meaningful content and skills, they will be empowered to advance to personal creativity and make authentic, original artworks.

Creativity and Age Appropriateness

Each new development or creation starts from something else. When we are learning a new thing, we connect it with something else already there (James, 1983). Torrance asserts that the school has a strong

environmental influence on the development of creativity and he notes increasing and decreasing creativity in children as they progress through school (Earp, 1974, pp. 179-180).

One of Lanier's (1984) eight guidelines for selecting art curriculum content is that instruction should move from the familiar to the unfamiliar. To design curriculum that follows this principle, we must start with children's developmental abilities and understand that the thinking process cannot be separated from emotions, needs, attitudes and habits termed by Russell as "motives for thinking" (Hopkins, 1992).

Gardner (1982) refers to a U-shaped curve representing the stages of artistic development. The first section of the U designates the high level of creativity found among pre-schoolers when children freely combine different elements. The trough of the U refers to a stage called the period of literalness. From ages 10 to 13 children often limit their image making to copying others. Although the childrens' artwork is often described as conventional and preoccupied with realism, Gardner does not view this period negatively and instead sees it as an important developmental stage, stating that most children "exhibit a gradual improvement in their ability to respond to works created by others" (Gardner, 1982, p. 88). It is unclear if this trough is a cultural or biological phenomenon. The final

section of the U refers to the ability of some adolescents to achieve a higher level of artistic accomplishment. Unfortunately, not all students return to image making due to dissatisfaction with their lack of sophistication in technique.

The Creative Environment

While the possibility of creativity may be in everyone, the cultivation of it is another challenge. Victor D'Amico (1935) espoused that creative teaching is a matter of establishing an environment that evokes interest and stimulates individual expression and that it is not simply unguided freedom. Actualizing creativity depends on an environment free of evaluation and conformity (Ekvall, 1991). Characteristics of creative environments have been identified as providing: 1) sufficient resources to provide time and opportunity; 2) free exchange of communication between individuals; 3) a reward system that socially or economically rewards the creator; 4) privacy and non-interrupted time to be alone and think; 5) a climate of acceptance and nurture; 6) opportunities to form groups of common interest; and 7) education that rewards and encourages free inquiry as opposed to imparting known information or values (Fabun, 1968).

Creativity and Curriculum

The aim of building an art lesson is to create a situation in which children can invent (Szekely, 1988). Visual arts teaching objectives are mandated by the state and are outlined in the Quality Core Curriculum (QCC) in four areas: artistic skills and knowledge, connections, critical analysis and aesthetic understanding, and historical and cultural context. The QCC only serves as a skeletal structure and does not dictate to the teacher the focus of the art content. It is up to the teacher to select appropriate child-centered themes and topics to provide opportunities for meaningful learning. It is important to design lessons that are open and allow student choice.

The teacher makes educational content decisions based on an understanding of what will best serve the students. For optimal response, it is important to make informed decisions about what is worth knowing in the lives of the student population. By taking a personal interest in students, an understanding of what is relevant to them is revealed.

Summary

Instead of focusing solely on art techniques, thinking about creative thinking must be emphasized to meet a student's need to be expressive. "School art needs especially to explore how art ideas are generated, how to

harvest ideas, and how to keep records of them and select ideas on which to act" (Szekely, 1988, p. 14). While some personalities are said to be more innately creative than others (Csikszentmihalyi, 1996; Gardner, 1982) some believe that creative characteristics can be developed in children willing to develop them.

Relevance of content is of utmost importance when designing a student-centered curriculum. Piaget said that the human mind was a dynamic set of cognitive structures that help us make sense of what we perceive (Piaget, 1952). As these structures grow in intellectual complexity, we mature as we gain experience. Developmental stages of children are somewhat determined by biological age but are also determined by life experiences that the child has had. Children arrive in the art classroom with a variety of experiences, and the goal of the teacher is to teach every student, not just teach to the majority. By being flexible and adapting curriculum tasks to students' beliefs, teachers can help students begin to find individual meaning in art lessons.

Chapter Three

Creative Thinking in the Curriculum

Amabile's (1989) model of the creativity intersection and her research on creativity brings together three major components (see Figure 1). In order for creative activity to occur, all three components must be in place. The components include domain skills, creative thinking and working skills, and intrinsic motivation.

If a person is to be creative in art, he or she must be knowledgeable about art, be able to make art, and be familiar with the language of art. Creative contributions are built on the knowledge and efforts of those who have gone before. It is essential to teach art content to form the basis for creative activities by providing students with the opportunity to learn information, techniques and strategies and then encourage them to use this knowledge in new ways. The third component of Amabile's (1989) creativity intersection is intrinsic motivation. This type of motivation underlies an individual's willingness to experiment, to try new ideas, and to explore new paths rather than to simply seek the quickest route to any kind of closure. The second component in Amabile's (1989) creativity intersection, creative thinking and working skills, is the focus of this project.

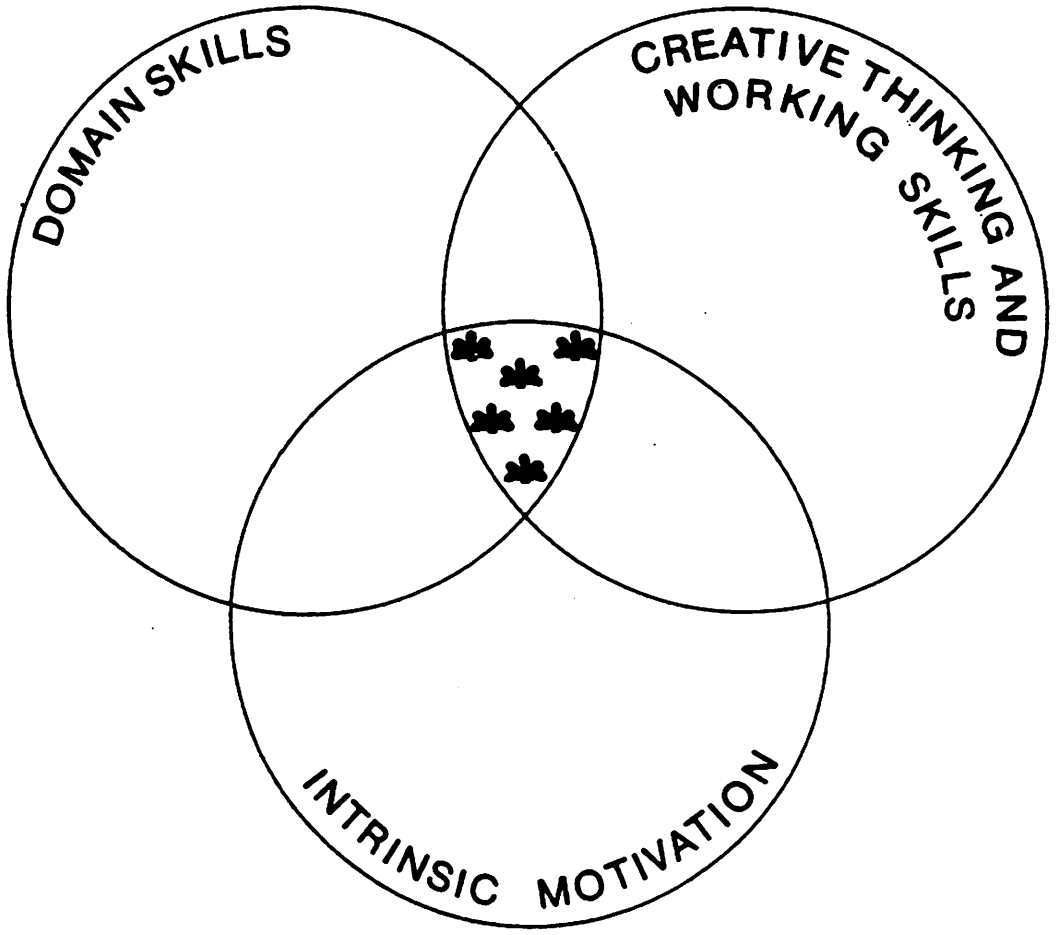

Figure 1. The creativity intersection is where a child's domain skills and creative thinking skills overlap with his or her intrinsic interests and is where the child is most likely to be creative.

Note. From Growing Up Creative, (p. 63), by T. M. Amabile, 1989 New York: Crown Publishers, Inc.

Many of the creativity techniques designed to assist individuals originated in industry where the creation of new ideas is essential to maintaining a business. This chapter describes a model for teaching creative thinking skills and a variety of creativity techniques and how they work. Art teachers can adapt these strategies to teach students creative thinking and working skills to encourage their original ideas in art making. Having skills may not always be sufficient, however. Students must also be taught how to use these skills, when to use them, and under what circumstances they might be useful.

Creative Problem Solving

Creative problem solving is a model designed to facilitate and describe the creative process. Developed over the last 25 years, creative problem solving was originally developed by Osborn (1963) and elaborated by Parnes (1981) and later by Isaksen and Treffinger (1985). Creative problem solving is made up of three components divided into six stages (see Figure 2). The three components are: 1) Understanding the Problem, 2) Generating Ideas, and 3) Planning for Action (Isaksen & Treffinger, 1985). These components are implemented in six stages: 1) Mess-Finding, 2) Data-Finding, 3) Problem-Finding, 4) Idea-Finding, 5) Solution-Finding and 6) Acceptance-Finding. Each step of the creative

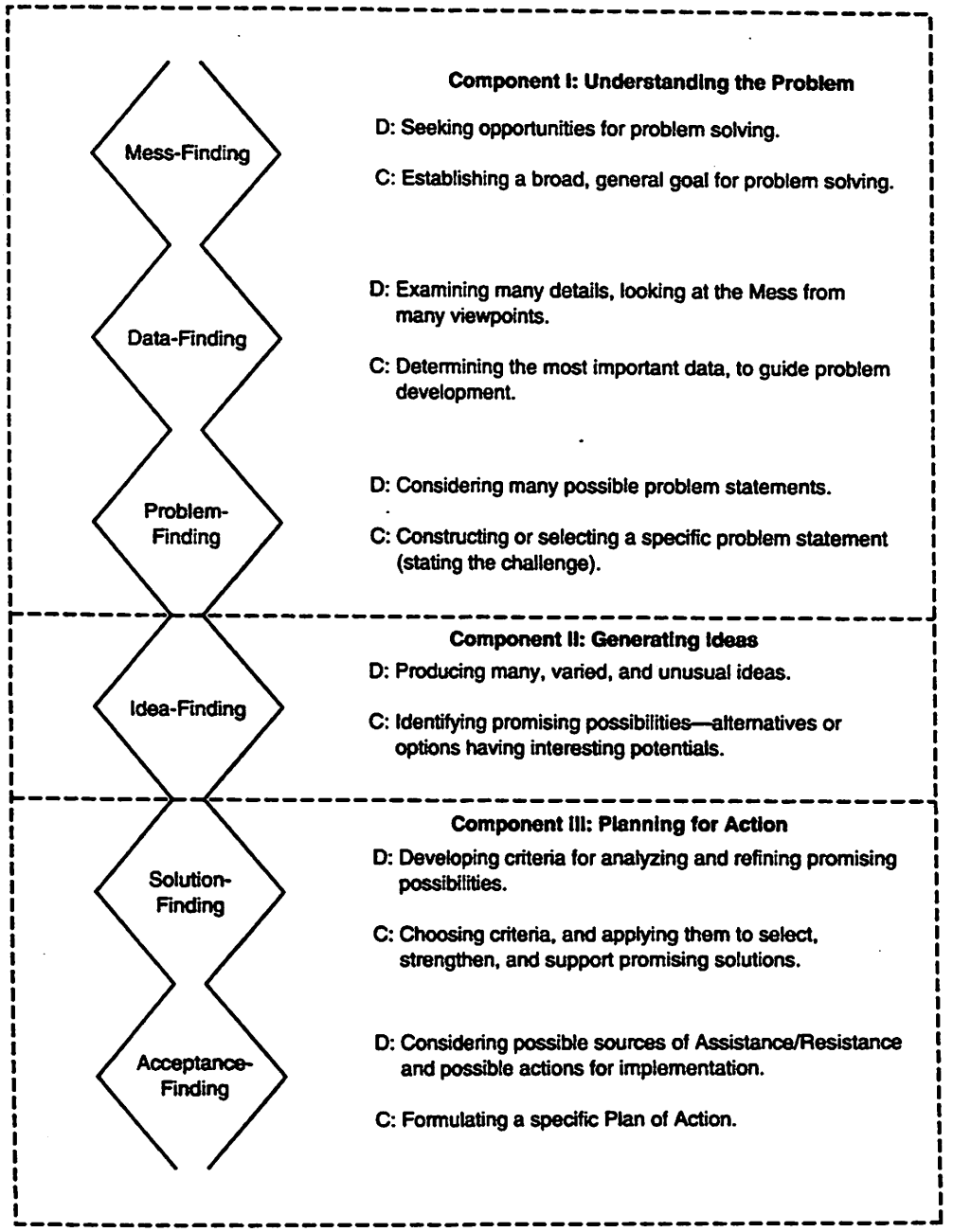

Figure 2. Three main components and six specific stages of Creative Problem Solving

Note. From Creative Problem Solving: An Introduction. (p. 19), by D. J. Treffinger & S. G. Isaksen, 1992, Sarasota, FL: Center for Creative Learning, Inc.

problem solving process involves divergent and convergent thinking. At the beginning of each stage, many ideas are generated, but then they are evaluated and only the promising ideas are brought to the next stage.

Mess-Finding, Data-Finding and Problem-Finding are all considered parts of the general component "Understanding the Problem." In this stage, information is focused to define the problem. Idea-Finding correlates with the second component, "Generating Ideas." In this stage, many responses to the problem are generated and considered. The final two stages, Solution-Finding and Acceptance-Finding, can be grouped together to form the last general component, "Planning for Action." This is where the solution to the problem situation is selected and implemented. Individual steps of the process can be taught to students through exercises and prompting questions provided in *Adventures in Real Problem Solving* (Puccio, Keller-Mathers & Treffinger, 2000).

The Incubation Model of Teaching

The Incubation Model developed by Torrance and Safter (1990) (see Figure 3), is a design for organizing the teaching of creative learning skills. The model considers both rational cognitive processes and "supra-rational" (Torrance & Safter, 1990, p. vii) processes that underlie moments of "insight, intuition, revelation" (p. vii). The goal of the model is to provide

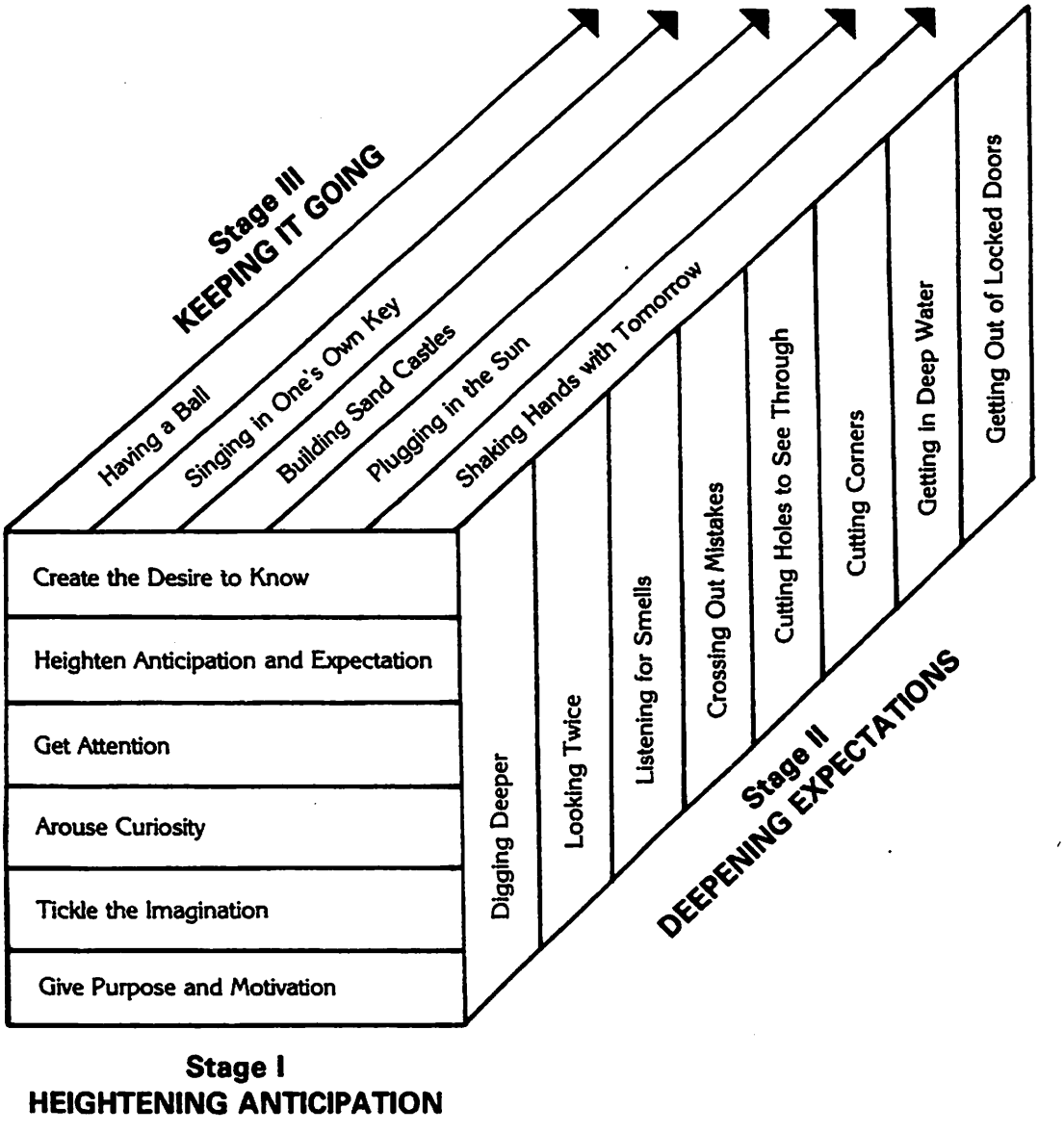

Figure 3. The Model for Creative Learning and Teaching has three stages for facilitating the suprarational thinking processes.

Note. From The Incubation Model of Teaching: Getting Beyond the Aha! (p. 8), by E. P. Torrance & H. T. Safter, 1990, Buffalo, NY: Bearly Limited.

students with experiences that will encourage them to identify problems or gaps in knowledge, think about them in new ways, and take time for incubation. The Incubation Model considers the types of activities that will enhance a person's creative thinking before, during, and after a lesson. It is a model designed to be used in conjunction with content. Sample lessons include both a creative thinking skill objective and a content objective. Along with creative thinking skills of fluency, flexibility, originality, and elaboration, Torrance and Safter identify other skills that may be addressed, including: highlighting the essence through the production of abstract titles; keeping open through resistance to premature close; emotional awareness; putting ideas into context; combining and synthesizing; visualizing richly and colorfully; using fantasy; using movement and sound; unusual visual perspective; internal visualization; extending or breaking through boundaries; using humor; and getting glimpses of infinity (Torrance & Safter, 1990, p. viii).

The first stage of the Incubation Model is "Heightening Anticipation." The purpose of this stage is to "prepare the learners to make clear connections between what they are expected to learn and something meaningful in their lives" (Torrance & Safter, 1990, p. 7). This stage may be thought of as a warm-up process, piquing student interest and tying the

activity to prior knowledge. It might include activities that ask students to look at the same information from different viewpoints, respond to a provocative question, become aware of a future problem, or make predictions. The aim of the activity is to arouse student curiosity, focus their attention, and give them purpose and motivation for the activities to follow.

The second stage is called "Deepening Expectations" (Torrance & Safter, 1990, p. 9). This stage, which might be considered the body of a lesson, requires learners to process new information and address the puzzling situations raised in Stage One. Students may be asked to gather information, reevaluate results, process familiar information in new ways, or identify important data.

In the third stage, "Going Beyond," (Torrance & Safter, 1990, p. 11), students are asked to do something with the information and/or skills they have encountered. They may give personal meaning to the situation, make predictions for the future, use information as fantasy, or solve real problems. Activities may be extended over several days to allow time for incubation.

Many lesson models contain stages similar to those described in the Incubation Model: a readiness phase, a phase for processing information,

and an application phase. Unique about the Incubation Model is its use of each phase of the lesson plan to enhance student content knowledge as well as creative thinking skills. Thinking about a careful sequence of building student interest, processing new information, and applying information and skills over a period of time allows for ideas to develop and can be a useful planning strategy for teaching content and skills (Torrance & Safter, 1990).

Divergent Thinking Strategies

The most common definition of divergent thinking include those types of thought discussed as part of Guilford's (1967) Structure of Intellect Model: fluency (thinking of many ideas), flexibility (thinking of different categories or points of view), originality (thinking of unusual ideas), and elaboration (adding details to improve ideas). Fluency is often the basis of activities designed to improve divergent thinking; the more ideas you have, the more likely it is that at least one of them is a good idea (Guilford, 1988).

It is important that students see how divergent thinking fits into the whole of creative thinking. Divergent thinking alone is not creativity. Creativity entails finding a problem or issue worth addressing, generating ideas for addressing it, and evaluating the ideas generated. It is important

for students to understand that just having a lot of ideas is not sufficient. They must also be able to choose from the ideas the ones that are most original, most interesting or most promising (Guilford, 1988).

One approach to teaching divergent thinking is the Talents Unlimited Model (Schlichter, 1986). In the Talents Model, students are taught that when the task calls for "productive thinking," they should do four things. 1) Think of MANY ideas (fluency); 2) Think of VARIED ideas (flexibility); 3) Think of UNUSUAL ideas (originality); and 4) ADD TO your ideas to make them better (elaboration) (Schlichter, 1986, p. 364.)

Another way teachers can encourage fluency, flexibility, originality, and elaboration thinking is through their comments and questions. For example, asking "How many can you think of . . ." encourages fluency. "What are some different kinds of ideas?" or "Try to think of ideas that solve the problem in a different way" both encourage flexibility. Comments such as "Try to think of something no one else will think of" are designed to elicit originality, while "How can we build on this idea?" encourages elaboration (Starko, 1995, p. 195).

Brainstorming is the name Osborn gave to his technique for stimulating a divergent thinking strategy and is based on four rules (Osborn, 1953). The first rule is deferment of judgment. According to this

principle, it is important not to evaluate any ideas until a number of them have been produced. Osborn compared the process to driving, noting that it is inefficient to drive while pushing on the gas and brake pedals simultaneously. A second rule is that "free-wheeling" is welcomed. Suggestions that appear to be farfetched can open a new point of view that may lead to a workable idea. Third, a quantity of ideas is sought because a large number of ideas seems more likely than a small number to yield a good idea. The final rule is that combination and improvement of ideas are sought. This rule suggests that many good ideas can be found by building on, or combining, previous ideas.

Usually, participants work in groups with a leader/recorder to keep track of ideas and monitor rules. "The leader's first job in setting up a session is to process the problem" (Osborn, 1953, p. 172). This guiding principle is that the problem should be broken down into simple sub-problems rather than one complex problem. One of Osborn's suggestions for improving divergent thinking is that of using idea-spurring questions such as, "How can we simplify? What combinations can be utilized? What adaptations can be made?" (Parnes, 1967, p. 35). When individuals or groups are generating ideas and suggestions begin to slow, the questions can point to a new direction or point of view.

Eberle (2000) took some of Osborn's key questions and arranged them into a memorable acronym, SCAMPER. The questions cued by each letter are helpful with rearranging or manipulating known information and facilitating divergent thinking for creative imagining. The "S" in SCAMPER stands for "substitute." It suggests that we ask questions such as "What could I use instead?" "C" stands for "combine." It asks, "How can I combine parts or ideas?" Many common products are the result of combinations. This process could be used to recombine parts of familiar objects in new ways to create a work of art. One example of combination is Picasso's use of this technique to create, "The Bull," an assemblage of a bicycle seat and handlebars.

"A" stands for "adjust." It suggests questions like, "Could we adjust a quality for the purpose of suiting a condition or purpose?" Often creative solutions to problems come from an adjustment of an old idea. "M" can have several meanings. To "modify," we ask, "Could we change the form or quality slightly?" "M" can also stand for "magnify" or "minify." "How could I make it bigger, stronger, more exaggerated, or more frequent?" Minifying allows us to ask, "How can I make it smaller, more compact, lighter or less frequent?"

"P" stands for "put to other uses." We ask, "How can I use this in a

new way?" "E" is for "eliminate." It asks, "What can be eliminated or omitted?" "Are all of the parts necessary?" Artists often strive to eliminate unnecessary lines or shapes to create more simple images. "R" stands for "reverse" or "rearrange." It suggests questions such as "Could I use a different sequence, interchange parts, or do the opposite?"

Parts of the SCAMPER acronym can be used any time students need to generate ideas or solve a problem. This generalized checklist gives students a set of tools to use when they are struggling to find an idea or to improve the ideas they have. It is especially helpful with an assignment to create an invention or three-dimensional art projects.

Another strategy for generating creative ideas is "attribute listing" (Crawford, 1954, 79). In this technique, the problem (or product) is divided into key attributes that are addressed separately. In an art class, students may use observation skills to identify key features of a particular style of painting. As students become adept at identifying key components, they can then begin to consider the effects of changing one of them. Later, they might experiment with mimicking a particular style, then choose some aspect of the style to change. To prevent spending valuable time with a variety of attributes that are not critical, students can be asked to differentiate between characteristics that are common and

those that are unique (Stein, 1974). A variation of attribute listing, morphological synthesis, combines two attributes in the form of a grid. Similar to a graph, a list is made of attributes in a column and another list of attributes is made in a row. Each square in the grid would represent a different combination of a new creation.

Lateral Thinking

Lateral thinking is defined as "seeking to solve problems by unorthodox or apparently illogical methods" (de Bono, 1992, p. 52). De Bono contrasts vertical thinking, in which the thinker delves more deeply into familiar or typical paths of thought, and lateral thinking, which tries a different perspective. De Bono believes that it is possible to increase lateral thinking through the systematic use of strategies that stimulate alternate paths of thought.

One tool to use lateral thinking is *po* (de Bono, 1970). *Po* is a language tool that acts to relax the tight patterns so easily formed by the mind and provoke new patterns of thought. When *po* precedes a statement, it indicates understanding by the writer or speaker that the statement is not true. However, the speaker would like to consider the statement because it might open new ways of thinking. In many ways *po* is comparable to a young child's "what if" or "just suppose" (Roukes, 1982)

statement. Reversal, exaggeration and distortion statements are used to provoke thinking and help students find new perspectives. This concept has been used in art activities designed to enlarge or reduce images creating new, original images (Roukes, 1992).

Another lateral thinking strategy is to cue thinking using the creative pause. The pause is not prompted by a problem to be solved. The creative pause is used randomly and is an opportunity to deliberately think through a task to decide if it may be approached in a better way (de Bono, 1992).

Using Analogies

Several theories of creativity emphasize the importance of bringing together remote ideas in order to stimulate a new point of view or synthesis (Rothenberg, 1990). One effective tool in this process is the use of analogies. Analogies are generally focused on the types of ideas produced rather than the number of ideas generated.

In analogical thinking, ideas from one context are transferred to another in a search for parallels, insights, fresh perspectives, or a new synthesis. Creative people have transformed and been inspired by the ideas of others throughout time. Fashion designers use key ideas from one era and merge them with the materials of another. Synectics is an original

word coined to mean "the joining together of different and apparently irrelevant elements" (Gordon, 1981, p. 5). Synectic methods are metaphor/analogy-based techniques for bringing different elements together in a search for new ideas or solutions. The basic processes of Synectics are "making the strange familiar" and "making the familiar strange" (Prince, 1968, p. 4). Three basic uses of Synectics in the classroom are 1) stretching or practice activities, 2) activities designed to help students investigate previously learned content from a new perspective (making the familiar strange), and 3) activities designed to help students understand new content by tying it to something known (making the strange familiar) (Gordon & Poze, 1972).

To make the familiar strange, you combine something familiar with a new problem or situation in order to solve the problem or come to an understanding. To make the strange familiar, you also combine something new or strange with something familiar, this time to gain new insights or perspectives on the already familiar idea. These two processes are facilitated through the creation of various types of analogies through direct analogies, personal analogies and symbolic analogies.

According to Prince (1968), direct analogies are the most simple type of comparison. In a direct analogy, individuals look for parallels between

one idea, object or situation and another. Students will be most successful if they first practice describing the connections in an analogy selected by the teacher before they begin to create their own. Students first learning to make direct analogies should start with simple comparisons between similar objects and progress to more abstract processes.

Direct analogies can be made between emotions and a variety of objects and then be used as a tool for creating visual images. Roukes (1982) in *Art Synectics,* uses different types of analogies to stimulate art activities. One of Roukes' activities suggests that items be collected and displayed in a box with many compartments to create an "emotion box" (p. 68). Other projects use strategies ranging from personal analogies to magnification, combination, and distortion to stimulate new points of view in the visual arts.

In personal analogies, students are asked to become the object in their thinking. Unlike creative dramatics, the student does not act out the part but rather imagines what it would be like to be in a specific situation to gain greater understanding and new perspectives. Personal analogies can provide the basis for solving a design problem. For example, "If you were a chair, how would you feel?" "How would you like to feel?" "How could the chair be redesigned so that it could feel that way?" Taking on

the identity of the object may allow the designer to view the situation in new ways.

Symbolic analogies, or compressed conflicts, bring together words that are opposed ideas and force the user to consider two opposite ideas at the same time. Sometimes they may be complete opposites such as happy/sadness or cold/heat. Other times, they may be more complex relationships such as a shameful/hero. Compressed conflicts frequently have broad, abstract applications and can be applied to many varied situations. Due to the level of abstraction required, compressed conflicts are most appropriate for students in later elementary grades and above (Starko, 1995).

Students must be able to recognize analogies before they can create them. They must be able to generate ideas in a structured situation before they do so alone. For example, students should have experience in understanding how others have used analogies in design or cartooning before attempting to use these devices in original ways.

Visualization and Creative Dramatics

Visualization involves creating mental images of something that cannot be seen or does not exist. Creative dramatics brings ideas to life using physical activity. One of the characteristics of visualization is that

clear visual images are frequently accompanied by powerful corresponding emotions. This combination can make visualization a potent learning tool, but one that must be used with sensitivity and caution (Bagley & Hess, 1987). Art educator, Marion Richardson used a visualization technique she termed "word pictures" (Richardson, 1948, p. 13). Richardson used verbal descriptions of local scenes in her native England, and students relied on their visual powers to depict her words.

Visualization can be used to reinforce art content. Students will need prior knowledge and careful guidance if their images are to effectively increase their content knowledge. Visualization guided in this way is called "guided imagery" (Starko, 1995, p. 232). Effective visualization requires the teacher to have a written or mental script of the images to be portrayed. Guided imagery that is focused on content can enhance students' creative expression because they feel as if they have had the experience themselves. Bagley (1987) suggests that imagery can also be used in creative problem solving. One exercise suggests visualizing the problem in a former era. Another asks participants to visualize aspects of the situation enacted by an animal. In each case, the visualization is used to trigger new ideas and/or points of view.

Finke (1990) discusses the use of imagery in the invention process.

Finke has conducted numerous studies where people were asked to visualize combinations of a cone, a sphere and a hook. Their task was to change the arrangement of the forms until they discovered an image that gave them an idea for an invention. One result of Finke's research was that subjects were more successful at devising creative inventions when the task was somewhat restricted. If an individual has a limited number of images to consider, it is possible for them to explore each one more fully.

Students involved in creative dramatics explore ideas with their bodies as well as their minds. In role play, students typically take on fairly realistic roles in order to solve a problem. Creative dramatics often moves also into fantasy; students can become melting snow, stalking animals, or the walls of a building. Creative dramatics, like role play, differs from theater because it is not scripted, rehearsed and performed for an audience.

Creative dramatics activities can be divided into three stages: warm-up, dramatic activities and debriefing. Warm-up exercises are used to warm up both the brain and body. Physical and mental stretching activities provide a transition from other class activities and allow muscles to loosen. Movement exercises are designed primarily to help students

gain control of their bodies and become aware of how their bodies move (Singer & Singer, 1985).

Dramatic activities may include movement exercises, sensory awareness exercises, pantomime, and other forms of storytelling. Sensory awareness exercises are used to increase students' awareness of their five senses. Students can be asked to eat imaginary food, listen to imaginary sounds, or feel imaginary textures. Limiting one of the senses often can enhance the others. For example, the opportunity for students to feel a variety of textures while they are wearing blindfolds can sharpen their ability to imagine other textures (Starko, 1995).

The most familiar dramatic activities involve pantomime and other forms of story-making. Students are asked to use their bodies to portray situations with or without the use of dialogue. Most dramatic activities may require a planning as well as an acting phase. Discussion will be needed before the activities can be presented successfully. A debriefing session for students to discuss what they did, how they felt, what worked, what didn't work and what they might try another time. Creative dramatics can provide the impetus for content discussions in art. Like visualization, they can bring an enhanced understanding, especially of the emotions underlying problems or events.

Summary

Creative thinking techniques along with the new perspectives, emotional insights, and enthusiasm they can generate, can be a valuable asset to the visual arts program. All the techniques, knowledge and skills will not ensure that an individual rises to the challenge of creativity. Amabile (1989) states that "people will be most creative when they feel motivated primarily by the interest, enjoyment, challenge and satisfaction of the work itself . . . and not by external pressures" (p. 54). If this belief is true, developing classroom structures that support intrinsic motivation is an essential element in developing creativity in students.

If art teachers are to enhance characteristics associated with creativity (independence in judgment, willingness to take risks, and perseverance in self-chosen tasks), we must create classrooms that increase student autonomy. If we ask students to be creative, we must provide broad learning opportunities for students so they may begin to develop their own ideas, judgments, and interests rather than always pursuing paths forged by the art teacher.

Chapter Four

A Curriculum to Encourage Creativity

Introduction to the Lessons

In this chapter, I will describe and reflect on learning experiences my fifth grade students experienced during this applied project. The curriculum that follows concentrates on teaching strategies utilizing creativity techniques to promote creative thinking and art making. The creativity exercises integrated into the lessons were based on research presented in Chapter II and III of this applied project.

While I included learning objectives for these lessons from the Quality Core Curriculum (QCC), the success of the end-product was secondary to the process of implementing creative thinking. Students were encouraged to explore their own ideas without concern for one particular outcome. Students were also encouraged to honor their ideas by requiring of themselves their best craftsmanship in communicating those ideas. A variety of mediums were explored including drawing, painting, clay, collage, assemblage, and costume design. Although there were parameters in materials available in each assignment, discernment of selection of materials was emphasized.

As an art specialist who serves approximately 350 students, I have a

regular schedule to teach each class for one hour each week. In addition, I have three collaboration periods per week that allow me additional times to work with classroom teachers and their students. With the support of the classroom teachers, these collaboration periods were occasionally used to enable students additional time to complete these applied project lessons beyond the one hour a week art class. Those students who were highly motivated also came to the art room an optional time directly after lunch forgoing their recess time.

Themes for lessons were based on student interest, developmental level, and availability of supplies. Collaboration with the fifth grade teachers with science and social studies guided selection of content with two lessons. In addition, the need for students' participation in a dance grant presentation was the impetus for the costume design assignment. Each assignment is presented in a lesson plan format. Components of the lesson plan include creative and learning objectives, lists of resources and materials used, and procedures of each lesson followed by the evaluation. The following lessons were interspersed with the regular curriculum. The lessons are listed in the sequence that they were presented. Consideration was given to students who know English as a second language. Concluding each lesson plan is a journal entry entitled Reflections which focuses upon

those aspects which could be used to improve future lessons.

Lesson One: What If . . .?

Creativity and Learning Objectives

Students will:

-be introduced to the lateral thinking technique of provocations and the use of po.

-illustrate an answer to the question "What If . . .?"

-review the vocabulary words "focal point" and "illustration,"

Resources

-One box filled with magazine pictures depicting nouns and a second box with magazine pictures depicting verbs

Materials

-Scrap paper

-Pencil

-12" x 18" drawing paper

-Markers

Procedures

-Begin by asking students if they are familiar with common phrases: "the man in the moon," "when donkeys fly," etc. Ask students what might

happen if these things really did exist or happen.

-Select one magazine picture from the noun box and one picture from the verb box and make a what if question. Ask students to try and answer the question and compare their different answers.

-Have students write a column of nouns and a column of verbs side by side. Ask students to create a what if question by combining a noun with a verb.

-Explain to students that the purpose of this exercise is to open up their thinking to new possibilities.

-Ask students to answer their what if question by illustrating it on paper.

-The answer to the question should be the focal point of the illustration

Reflections

This exercise was a shock to most students because I was asking them to write nouns and verbs on paper as if we were in a language arts class. The inevitable question, "Aren't we going to make something today?" was announced in an irritated voice. I have held discussions before in previous art classes and any writing I had asked them to do came at the end of a project. When I showed students my illustration of a what if question it seemed to clarify the concept of the assignment. The

lesson was based on language, so the non-English speaking students had to have the discussion translated to them by the bilingual students.

While I circulated around the room, I glanced at the possible combinations on students' lists. Some students were quick to accept the first combination they created from their list instead of reviewing all the possibilities and deciding what might be the most outrageous illustration possible. Some students seemed uncertain about what to do with this assignment. In retrospect, the introduction of the lesson explaining the value of this exercise could have been expanded. I could have spent more time on the interactive practice session with the magazine pictures of nouns and verbs combinations asking students to make the what if questions and answers. This would have helped students be more sure of their own efforts. It surprised me which students dove right into this exercise, understood it, and based their illustration on the what if question. This exercise gave me insights about each students' willingness to take risks.

The concept of judging the value of different combinations and selecting one to illustrate was of interest to me. When I asked one student how she decided, she answered, "Well, I like elephants so I picked that first. I wondered, "What if elephants could iron? Then they wouldn't have

to be so wrinkly." Her first idea was the one that she decided to illustrate because it seemed to complete the assignment. Her list of nouns and verbs offered other promising possibilities, but when I asked her about them she wasn't interested in pursuing them. This indicated to me that she was not deeply invested in this activity, and I needed to restructure the lesson to make it more beneficial to all of the students.

The next time I present this lesson, I could improve it by providing more structure for students. I could ask that students write five nouns and five verbs. From these, students could be asked to make three combinations, review them, and illustrate the one they like most.

Lesson Two: Paintings With Attributes

Creativity and Learning Objectives

The students will:

-be introduced to attribute listing, a divergent thinking tool

-review the artwork of Impressionists and Post-Impressionists

-identify how a light source is portrayed in different artworks

-use paint and brushes to create a painting

-learn vocabulary word: "attribute"

Resources

-Art reproductions of The Artist by Jan Vermeer, Pool of Waterlilies by Claude Monet, Le Cirque (The Circus) by Georges Seurat, Mont Sainte-Victorie by Paul Cezanne

-Living with Art by Rita Gilbert (1992). New York: McGraw Hill, Inc.

-Calendar reproductions of Monet's artwork

-Calendar photographs of landscapes

-Plants from the garden

Materials

-Chalk to sketch

-Tempera paint

-12" x 18" sheets of paper

-Water buckets

-Paintbrushes and Styrofoam trays

-Paper towels

-Paint shirts

Procedure

-Show the students the Vermeer reproduction first to show contrast with Impressionist work. Ask them to use their observation skills to answer four basic questions: 1) How is the paint put on the painting? ("realistically," "blocks of color," "the light is coming from behind the curtain") 2) What are the colors the artist chose? ("earth tones," "muted," "dark", "contrasting") 3) What is the subject of the painting? ("indoors," "people are the focal point") 4) What is the mood of the painting? ("quiet," "sad feeling")

-Show the students the Monet reproduction and ask them to answer the same four questions: 1) How is the paint put on? ("choppy," "they used a little brush," "blurry," "different colors side by side") 2) What are the colors the artist chose? ("realistic," "colors from the garden," "a variety") 3) What is the subject of the painting? ("outdoors," "landscape," "people are not the

focal point") 4) What is the mood of the picture? ("happy," "good," "spring time").

-Give a brief history of the painting movement, Impressionism. Formed in 1874, the Impressionists was a name given to a group of painters by an art critic. Impressionists attempted to paint what the eye actually sees--they were after the true visual impression, not the color that the brain tells you that you see. One distinguishing feature of an Impressionist painting is individual brush strokes of varying colors, side by side, with no blending. Close up it looks as if it is a lot of jumbled daubs of paint. Further away your eye mixes the colors to produce a recognizable subject with effects of light. Monet is known as the artist who best typified this style of painting.

-Explain to students that they have just made a list of "attributes" or qualities of each painting (Gilbert, 1992).

-Show the students the Seurat and Cezanne reproductions and explain to them the Post-Impressionist movement. Impressionist painters influenced these painters. Their work was generally light and bright with color. Painters of this movement include: Van Gogh, Cezanne, Gauguin, Seurat.

-Ask students what qualities in each painting were changed by the postimpressionists by looking at the three categories of questions (subject matter, color palette, brushstroke, light source).

-Explain that students will pretend to be Post-Impressionists and change only one characteristic from the attribute list created for the Impressionist work and create their own painting.

-Explain to students that this is an opportunity to try something new: change the way to apply paint, use a realistic or nonrealistic representation, change the color palette, change the way to create a light source in their painting, or change the subject matter of the painting.

-Indicate that flowers were placed distantly, not centrally, so that students could get an impression of the colors

-Distribute calendar reproductions of Monet's artwork so that students can see up close how paint strokes were applied.

-Distribute calendar photographs of landscapes for student inspiration.

-Ask table captains to bring supplies to the table.

Evaluation

-Observe students planning their paintings with chalk

-Ask students what attribute they are changing to create a new style of painting

-Observe students as they work to see if they are approaching this painting in a new way by varying their brushstrokes, selection of color

palette, nonrealistic representation or subject matter

-Review the words attribute, Impressionism, Post-Impressionism

Reflections

This was a new activity for my students, and their hesitancy about how to approach it was evident in their starting over several times with their sketches. Students were to change only one attribute, but they were uncertain what to do. Four students used both sides of the paper, so I gave them a second sheet of paper. In hindsight, this concept might have been clear to more students if they had actually created an Impressionistic style landscape before they were asked to change one attribute of that style of painting.

Other students immediately went to work with their plan for their painting. Two students asked to sit outside the building so that they could sketch the trees, flowers, grass and building outside. Other students decided to change the natural color palette and mixed intense colors to use in their paintings.

Giving students chalk instead of pencils was effective because they couldn't commit to using too many details, and it kept their plans for their paintings open until they were ready to paint. I heard one student repeating in a low voice, "chop, chop, chop" as she applied short choppy

strokes to her landscape painting. It was evident that she was deeply involved in the activity because she was standing up as she painted, standing back occasionally, cocking her head to the side assessing her work, too busy to socialize. Other students who often are talkative were absorbed in the activity. A variety of approaches resulted in the activity including change of paint stroke, light source, subject matter, and color palette.

When it was time to clean up, I had difficulty persuading students to stop working and put down their paint brushes. Many of the students were close to completing their paintings and over half the class asked if they could forfeit their recess and return immediately after lunch to continue working. I wanted the students to maintain their enthusiastic momentum and agreed to meet them in the art room in 15 minutes when a majority of students completed their paintings.

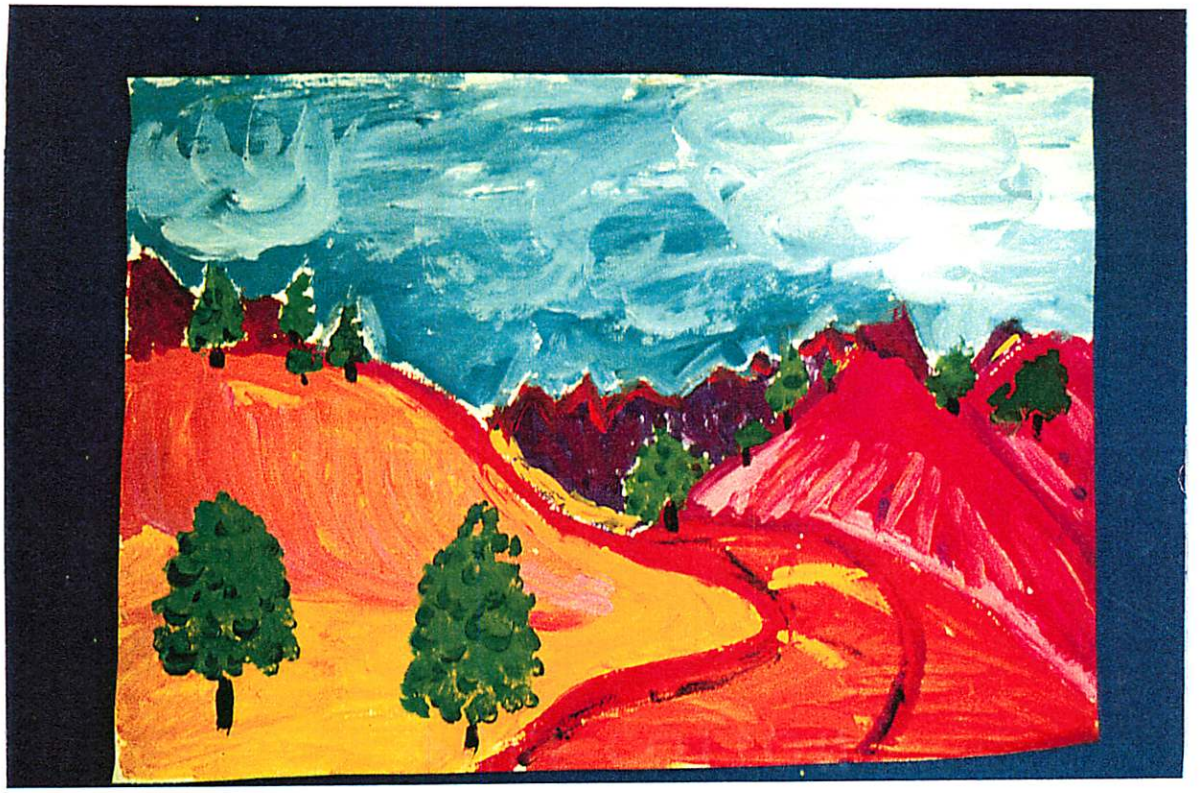

Figure 4. Landscape Painting. After becoming familiar with the creative thinking skill, attribute listing, students created artworks changing one attribute of the Impressionist style of painting. This student chose to change the attribute of realistic colors to nonrealistic colors.

Lesson Three: Visualizing Dragons

Creativity and Learning Objectives

The students will:

-understand the creative thinking skills called visualization and personal analogy

-visualize dragons as the teacher reads a Chinese dragon description

-draw a dragon based on visualization

-differentiate between folklore and facts

-learn about the link of dragons to dinosaurs

-learn that different cultures view dragons differently

-mix paint to create tertiary colors by mixing colors

-paint their dragon drawings

-review vocabulary words: "main," "details," "primary colors," "secondary colors," and "tertiary colors"

Resources

-Dragons, by Peter Hogarth with Val Clery (1979). New York: Penguin Books

-Copy of visualization script

-Asian Travels, compact disc

-Color wheel

Materials

-Colored construction paper, 18" x 24"

-Lead pencils

-Tempera paint

-Water buckets

-Styrofoam trays to mix colors

-Brushes

-Paper towels

Day One Procedures

-Have instrumental music playing as students enter the classroom and settle in their seats.

-Ask students to put their arms and heads down on their tables and close their eyes.

-Lower the music volume and without revealing the name of the animal, read slowly and clearly the excerpt from the book Dragons describing what a dragon resembles. Speak slowly and clearly but dramatically to allow time for students' images to develop.

-Allow time for the English as a Second Language (ESOL) teacher to read the script in Spanish to the Spanish speaking students.

-Reread the description and ask students to imagine each

characteristic pretending to give themselves the features read aloud to create the dramatic effect of "becoming a dragon" in their mind.

-Ask "What animal am I?"

-Discuss responses.

- A clue can be given that dinosaurs have often been thought to be very much like this animal.

-Ask students to share their knowledge of dragons with the class.

-Point out that no one is sure that they have actually seen a dragon but that different cultures have different beliefs about them being good and evil.

-Reveal that one of those beliefs is that a dragon has magical powers. Describe several of those revealed in the book.

-Direct students to think of a magical power that they could give their dragon. "Maybe it's one you wish you had."

-Ask students "What will your dragon be doing?" "Think of something unusual."

-Discuss responses with individual students.

-Respond by enthusiastically saying, "Oh! That sounds great! "I can't wait to see your dragon drawings!"

-Tell the children they may begin drawing when they have their

picture of their dragon in their mind.

Evaluation

- Move around the room to check to see how the children's dragon drawings are developing.
- Suggest to those having difficulty that they think of a letter in the alphabet to draw the skeletal letter of their dragon.
- Allow others still having difficulty to physically model their dragon. Ask prompting questions like, "How does it feel to be a dragon?" "What is your magical power?" "What are you doing?" "Where are you going?" "What color are you?" "How does your exterior feel?"

Reflections

This lesson required additional planning because the motivation for the lesson was the verbal script to inspire the visualization, and some students have little command of the English language. The previous week I contacted the ESOL teacher to translate the visualization script. I had considered using a bilingual student to read the script in Spanish but thought that it would take away from that students' concentration on the lesson. Luckily, the ESOL teacher was available to assist with the lesson introduction by reading the script to the non-English speaking students

Bilingual students assisted other students in translating questions they had for me about the assignment.

Once the drawing got underway, the students seemed unusually quiet. I attributed this to the novelty of the visualization exercise and the background music that helped set a mood. Despite my urging that they create an unusual dragon, some students did create some stereotypical responses. Other students seemed to delight in the freedom of the exercise and began creating independently. Some unusual responses included: a tunneling dragon, a seagoing dragon, a candy making dragon, and a wish giving dragon. Oddly enough, the artistically competent students were not the students who took risks in creating a different type of dragon. Instead, they created the handsome, competently drafted standard dragon seen in cartoons.

I announced to students that they would be painting their dragon drawings the following week. I asked them to think of the main color they would be mixing to paint their dragons. Review of the color wheel gave students a more clear understanding of this task.

Day Two Motivation and Procedures

-Have instrumental music playing as children enter the classroom to

reestablish the mood from last week.

-Ask students to approach the color wheel and explain how to mix two colors to create a third color.

-Remind students that they will be painting and ask them what the painting rules are.

-Explain that the table captains will be bringing the paints out along with water buckets after the introduction.

- Ask what interesting things students remember from last week about the history of dragons. Briefly reintroduce other historical aspects of the lesson not shared by students.

-Next, ask students to relax and place their arms and heads on the table if they would like and quietly let the music mentally draw them in and set the mood for the upcoming visualization exercise.

-Ask the students to close their eyes and visualize their dragon in action. Emphasize this instruction so that students can have the full experience.

-Remind students to "honor" their wonderful drawings and to do their best painting.

-Ask the table captains to pick up their paint and water buckets to distribute to their classmates.

-Students will begin mixing paints as they arrive.

Reflections

Some students were preoccupied with mixing paint since one of the objectives was to create secondary or tertiary colors. Despite preparations, some children did not make good decisions about using the paint in a respectful way. There were complaints about two students mixing the paint sloppily and splattering on others' work, creating conflicts with their classmates. I asked the two students to move to a separate table to share the paint. The messy painters were banned from the group for the rest of the period.

No instruction was given on how to apply the paint. Without prompting, several students creatively used paint to imply texture on their dragons. Other students painted in typical, bold flat color planes. Two students sitting beside one another began to add non-sensical symbols beside their dragons. When I asked them what these symbols meant, I expected them to reply that they were inspired by imagery from an Asian restaurant in town. Instead, they said it was "dragon language."

As work was completed, paintings were placed on the drying rack by each student. To avoid students being overly absorbed by the act of painting, I had to prompt some students by asking if they were finished. I

was sorry to see that one beautiful drawing got "lost" in the paint. Three students who had not completed this phase of working were allowed to finish after lunch during their recess.

The paints were collected by the table captains and returned to the supplies island. The newspapers were removed by classmates and deposited in a large trash can to avoid washed hands from playing in paint and becoming dirty again. Students took turns washing hands at the sinks and returned to their tables with the paper towels they dried their hands with to wipe off any paint on the table. Two students were selected to be in charge of recycling and carried trash cans around each side of the room to collect the paper towels. The bucket that holds the paint shirts was moved to the center of the room to allow the shirts to be returned with a minimum amount of traveling. The following week, markers and smaller quantities of paint were made available for adding selected details to their paintings..

I enjoyed using the visualization technique. The music helped to create an ambience that transported the students. In the future I will try this technique with a more open subject that is not as specific in content like descriptions of landscapes or poems of landscapes.

Dragon Visualization Script

Introduction

Since a lifetime in China that was both propitious and long might depend on accurate information about dragons, studies of them were highly detailed. A Chinese dragon normally had four legs, a long and sinuous body, with a snake-like tail but, other than in the case of the ying-lung, no wings.

Visualization Text

A dragon was said to have the following "nine resemblances": "The horns resemble those of a stag, his head that of a camel, his eyes those of a demon, his neck that of a snake, his belly that of a clam, his scales those of a carp, his claws those of an eagle, his soles like those of a tiger, his ears those of a cow."

Additional Information

Alternatively the eyes are described as those of a rabbit. And usually, instead of wings, a dragon had on his head a large lump, the ch'ih-muh, that enabled him to fly; lacking this, a dragon clutched a small baton, called a po-shan, that provided the power of levitation.

Source: This excerpt is from the book, Dragons (p. 53), by P. Hogarth and V. Clery, 1979, New York: Penguin Books.

Figure 5. Dragon. A script was read aloud describing a Chinese dragon and students illustrated the dragon using the visualization technique.

Lesson Four: Clay Pots

Creativity and Learning Objectives

The students will:

-be introduced to the lateral thinking process called the creative pause

-understand the importance of ceramics in the study of history and culture

-identify ceramics of the South Eastern United States Native American Indian and their characteristics

-create their own hand-built clay pot inspired by Native American Indian pots

-review vocabulary words: "score," "kiln," "additive," "subtractive"

Resources

-Native American Indian posters of pottery

-Slides of effigy pots created by Native Americans from the Southeastern United States

-Desert Flutes, compact disc

Materials

-Clay

-Jumbo gem clips for scoring clay

-Creative pause cards

-Styrofoam trays

Procedures

-Give an overview of the project. Explain that although students have worked with clay before, this time we are going to use the creative thinking skill called creative pause.

-Ask students to review the rules for handling clay in the art room.

-Show the poster of pottery made by South Eastern Native Americans

-Demonstrate and then ask students to wedge the clay to a workable consistency.

-Demonstrate rolling the clay into a small ball between your hands, flatten it, and cut it to make a 3" to 4" base in diameter, one finger thick.

-Make clay coils by rolling small balls of clay from the center of the ball outward until the coils are about 1/2" thick.

-Demonstrate circling the coil on the clay base, joining the two ends together neatly. Remind students to score the clay. Roughen the clay surfaces that are to be joined together using the opened gem clip.

-Demonstrate and explain how to make the pot curve outwards by placing the coil on the outside of the previous coil. Dramatize this procedure by holding your arms stretched upwards and outwards. To curve the pot inwards place the coil on the inside of the previous coil. Dramatize this

concept as well.

-Exercise the creative pause by purposely stop working and hanging up a sign with the words "creative pause." Pantomime the act of thinking by placing hands on hips, scratching head, and studying the pot. Dramatize the act of getting an idea by widening your eyes, snapping your fingers and nodding your head affirmatively. Take the sign down and continue working.

-Form the pot to replicate the basic head or body shape of the animal selected.

-Hang up the creative pause sign. Dramatize the creative pause process again, but this time shake your head no. Continue working.

-Store work in progress on Styrofoam trays and plastic bags.

Evaluation

-Observe students as they work with the clay to make sure it is wedged

-Observe students using the scoring technique as they work with clay to create a coil pot in the shape of a head or body.

Reflections

Working with clay is always a welcomed activity for students. The activity of building a coil pot is not a new one for fifth grade students, but

independently selecting a subject that the form will become, is. Most students couldn't wait to get their hands on the clay and were impatient while watching the demonstration. In the future, I will ask students to gather around the demonstration area so that students can watch more closely.

Students worked quickly through the wedging process so that they could begin creating. As soon as the coil making began, students began snickering but it soon subsided. Some students pinched too hard in an attempt to smooth the coils, resulting in thin walls. Soon after, the pot collapsed, and their frustrations over having to begin again was evident. On their third attempts, two of these students resorted to making a pinch pot form to create the basic shape they wanted. I decided to adapt the lesson for these students.

One student reminded us that she was one-quarter Cherokee Indian. She shared her family history with us, giving the project another dimension. In the middle of the lesson, one student stopped working and spontaneously started singing in a pleasant voice, "You gotta think! Think about it!" That was all that it took for others students to stand, swing their hips, clap to the beat, and repeat the same lyrics from an R&B oldie song. I laughed along with the students and wondered if thinking was taking

place. After several minutes of singing, I decided to intervene and began playing an instrumental tape with Indian flute music. The artist in me enjoyed the students' enthusiastic response to the creative pause thinking strategy. The teacher in me decided that after a certain point the students' focus needed to be redirected in an unobtrusive way.

Clean up is more time consuming with clay work so we began five minutes earlier. I stored the incomplete clay pieces on a shelf until the next meeting. Other students continued to work during a collaboration period later that afternoon. During that meeting, I asked students what they had thought of the creative pause thinking strategy. One student volunteered, "I do that kind of thinking on my own without making a point (consciously) of doing it." I clarified that the difference between the creative pause and subconscious thinking was that the former was random, and the latter was most likely because there was a design problem to solve. Students responded with a collective, "Oh." With practice, I think this strategy will be better understood and used.

Day Two Procedures

-Review the creative pause thinking skill. Distribute laminated tent cards that say, "creative pause."

-Ask students how to use the additive and subtractive process for this

project

-Use additional clay parts to show students how to build features onto the basic pot by scoring both pieces.

-Show students how to gently smooth out added pieces with your finger.

-Allow the completed pot to dry at room temperature.

-After pots are dried and fired they may be colored with paints or glaze.

Evaluation

-Observe that students are scoring pieces they are adding to pots.

-Observe that students are using the creative pause thinking strategy.

Reflections

I circulated around the room to make sure that students were scoring their added clay pieces before attaching them to the basic form. I discovered a few students did not score their added pieces so I reminded them that scoring was the best way for their work to remain intact throughout the drying, firing, and painting process. The students reluctantly began the scoring process. Some students were using the creative pause thinking strategy, but not everyone. It was a good learning experience because it gave students the latitude to sit and think and not necessarily do anything. I was pleased with the variety of ideas used with

the clay pots. Completed work was set on the bread rack to dry. After drying, the clay pieces were fired and later painted.

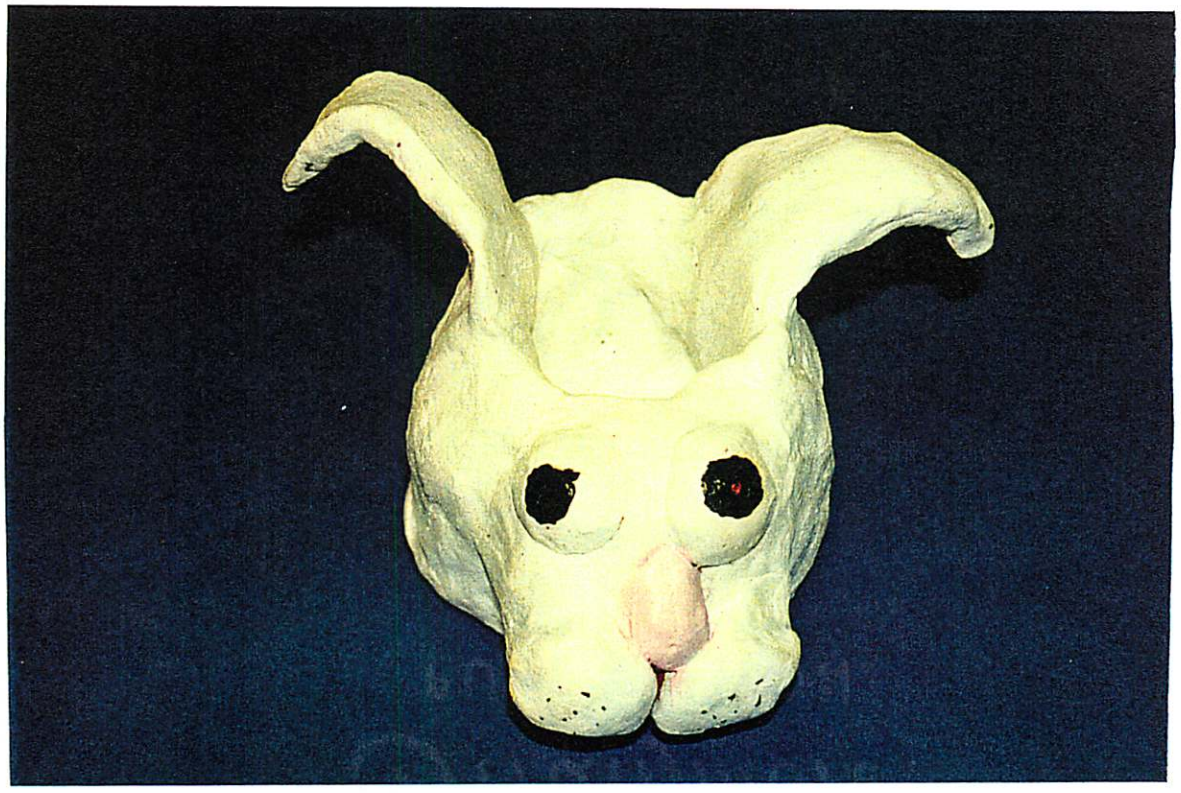

Figure 6. Clay pot. Students were encouraged to use the creative pause thinking skill in the process of modeling clay pots.

Lesson Five: Dramatic Costumes

Creativity and Learning Objectives

The students will:

-be introduced to creative dramatic activities

-research the Aztec culture

-learn the connection between the Aztec Indians and Mexico

-design and create costumes for a dance production

-review vocabulary word "silhouette"

Resources

Musicians of the Sun retold by Gerald McDermott, (1997). New York: Simon and Schuster

Make Believe Games and Activities to Foster Imaginative Play in Young Children by Dorothy G. Singer and Jerome L. Singer, (1985). Glenview, Illinois: Scott, Foresman and Company.

Ocean Waves, compact disc

Materials

-Copy paper 8 1/2" x 14"

-Pencils

-Crayons

-Felt

-Fabric scraps

-Glitter and sequins

Day One Procedures

-Give the students an overview of the upcoming assignment

-Do not show the illustrations of the book, but do read the story so students learn about the different personalities of the characters. Explain that there are characters that will be played by people that need costume designs: Sun, Wind, Night, Turtle, Alligator, Fish, Fire, Four Musicians and Water

-Explain the creative dramatics creative thinking technique and how it will help us get into character and assist us in costume design

-Explain that since this clothing is for the stage it needs to be exaggerated so that it can be seen from the audience. Ask students to ask their parents if they may bring in left over holiday decorations to use in creating their costumes. Ask students to ask their parents before bringing in old sheets, hats or scrap fabrics for costumes.

-Explain that since the story Musicians of the Sun is an Aztec tale, we are going to study the Aztecs to better understand their culture and have it inspire our designs. Make the connection between where the Aztecs lived

and where Mexico is.

-Move to the gymnasium area. Explain a warm-up exercise. Demonstrate mirroring movements with the P.E. teacher before asking students to participate. Explain that mirroring is where one person is the leader and stands stationary moving their body slowly. The second person stands close to the leader and follows their movements as if they are looking in a mirror.

-Turn on the fans to simulate wind. Explain that they are to feel the wind, become the wind, move like the wind. Demonstrate as you are explaining the activity.

-Ask four pairs of students to move like the wind using their whole body. The remaining students will make sketches of the students moving like the wind. The student pairs exchange places, and the second group sketches the students moving like the wind.

-Collect sketches and return to the art room.

Evaluation

-Observe students moving in safe ways, respecting their partners.

-Observe students moving their bodies like the wind.

Reflections

Students were excited about the upcoming theatrical performance. Since it was a small class, everyone will have a part and a costume. All students will submit designs for all characters. Students reacted well to the warm-up dance activity. Some students were inhibited about moving their bodies and felt more comfortable sketching designs. I still will encourage these students to try each exercise. Two students got wild and started spinning and bumping into other students shouting, "I'm a tornado!" I explained to them that it is not safe to bump into others and asked them to calm down.

Day Two Procedure

-Create a sun effect by setting up theatrical lights. Have them burning brightly when students arrive.

-Give half of the class large exercise balls while the other half of the class watches the students move slowly around the room with them. The second half can sketch the sun figures. Next, have the students exchange places.

-Turn off the lights when the heat and light become uncomfortable for students. Have students complete the details of their sun sketches.

-Turn off the lights to help create a night effect. Turn on the air

conditioner to help create a cool atmosphere. Ask prompting questions to students: "Is this a big or small character?" "Is Night strong or weak?"

-Ask students to imagine that they are huge, they are so big they cover the entire universe. Ask students to stand still and "become their character."

-Ask students to sketch the feeling of night.

Evaluation

-Observe students participating in the warm-up activities in respectful ways.

-Observe students working on the details of their drawings.

Reflections

Students were surprised to enter the art room and be greeted by the atmosphere of the sun. Students were good natured about the brightness and the heat, but some students soon complained they were uncomfortable. The second set of students only got to participate in this dramatic play exercise for about five minutes before we had to turn off the lights.

The night activity required students to imagine more of the atmosphere. In order to "become" the night, some students closed their eyes and attempted to walk about. This was not feasible, because other

students were nearby. By adapting the activity and asking students to remain stationary and "be the night" resolved this problem. Sketches progressed more diversely than I anticipated.

Day Three Procedures

-Do a warm-up exercise of rolling balls on the floor.

-Ask students to divide into five groups. Ask one group to be alligators, turtles, fish, water. Each has the responsibility of "becoming" otheir character. Let groups take turns performing while others sketch the animals. Ask the groups to trade places periodically.

Evaluation

-Observe that students are role playing

-Observe students' sketches of animals and water

Reflections

Students had little difficulty becoming the wind, sun, night, and water through dramatic play exercises. The animal characters were more restrictive in students' minds. Only a few students got outside of the cartoon stereotype of each. The sketches also reflected a misunderstanding of the assignment. Instead of drawing a costume for a

person to wear to become a turtle, they drew a turtle. I tried to explain to students that the challenge of costume design is to emulate the character. Rather than being a literal depiction, it can be a suggestion of what the character is. All that is necessary to get the message across to the audience is one or two distinctive features and some semblance of the silhouette of the character portrayed. I explained that the image of the character will also be achieved through movement. It is through movement that their personality will shine through. I reminded students that the challenge with costume design is that it fits the human body, yet disguises it. It must be light weight and comfortable, too.

Day Four Procedures

-Explain that you have categorized contributed materials brought in by teachers and students so that students can readily access them.

-Assignment of tasks will be decided by roles that were cast. For example, the fish will collect all the fish designs and select from them or combine them to create a costume design for the fish. Each character will select a student they can work well with to assist them with their costume construction.

-Remind students that designs are for the stage so exaggeration is an

important feature for the costume.

-Students will arrive at a plan of action to begin selection of costume design and selection of materials.

Evaluation

-Observe costume planning and materials selection

-Make sure all students have a partner to work with

-Observe students while they are collaborating

Reflections

Students were excited when they saw the materials and appeared eager to get started on this effort. However, the collaboration process seemed to become a social time with students picking up materials and playing and then returning them. Students were attracted to the decorative trims that were shiny. They did not think to select a base fabric on which to put them. One student who had been cast as the sun brought her own fabric and was steadily working with her partner. They made a pattern from bulletin board paper for a tunic and began to cut it out. Next, they worked on engineering a hat that would be like a disk, to replicate the sun. At first poster board was considered and then rejected because it was flimsy.

The Night team saw the progress the Sun team was making and went over to confer with them. The Night team was comprised of two boys, and they were attempting to get a crash course on sewing and fabrics from the Sun team. They listened and watched intently and then returned to their area to get busy.

The alligator and fish were floundering for ideas. Someone suggested that the alligator would be "cool" made from egg carton foam. The fish decided they could use that idea too, which made the alligator team angry. This material was not available for either one to use so it was a moot point.

Wind was steadily progressing with his plan to have streamers made from ribbons, acetate paper, and sheer drapery fabric hanging from his sweatshirt so that it would look like wind when he danced. Students "oohhed" and "ahhed" over his costume that he was hot gluing together. I commented to the students that Wind's planning and thinking ahead seemed to be working well for him. I asked him to explain to the entire class his theory behind his costume design, since he had incorporated the movement factor. Students packed up their work in progress for later in the week when a collaboration period had been set aside for fifth grade students to work. An additional session was required to complete the costumes.

Figure 7. Night Costume. Costume designs were inspired by creative dramatic exercises and the study of the Aztec culture.

Lesson Six: Mythical Heroes

Creativity and Learning Objectives

The students will:

-be introduced to the creative thinking technique of brainstorming.

-be introduced to the creative thinking technique of morphological synthesis.

-use gesture drawing to create a quick sketch.

-create a figure showing movement and action.

-learn the term, "morphological synthesis."

Resources

-Comic books

-Toy action super hero figures

-Greek Myths and Legends by Cheryl Evans and Anne Millard

-Star Wars movie clips

-Art reproductions; The Temptation of St. Anthony by Salvador Dali and Masterpiece by Roy Lichtenstein

-Calendar art of mythical creatures

-John Williams Conduct the Star Wars Trilogy, compact disc

Materials

-Drawing paper

-Colored construction paper

-Pencils and erasers

-Colored pencils

-Water colors

-Markers

Day One Procedures

-Give an overview of the assignment for students to create either a human or animal mythical hero that would assist in solving one of the problems in the world.

-Explain the concept of brainstorming and the rules: 1) criticism is rules out--no eye rolling, or other negative non-verbal language;

2) Freewheeling or far out ideas are welcomed; 3) Quantity is desired because the more ideas, the better the chance there will be a good one; 4) Combination of ideas is sought. This is also called piggybacking because one idea is slightly changed to another.

-Ask students what their idea of a hero is. Ask if they can name any heroes in fiction, the movies, or real life.

-Ask if any students watch the nightly news on television and what the

topics of the news are. Write these headings on the board. Under each category given, ask students to assist the class with brainstorming a list of the problems in the world.

-Ask the students to select a problem in the world with which they feel a personal connection. Remind students that their mythical hero needs to be designed to solve this problem.

-Show brief clips of the Star Wars movie.

-Show art reproductions.

-Briefly review Greek mythology.

-Distribute calendar art reproductions of mythical creatures.

-Distribute comic books and action figures.

-Ask the students to sketch gesture drawings of posable action figures.

Evaluation

-Make an effort to call on students around the room to get everyone involved and keep enthusiasm high in the discussion. Get as many ideas as possible.

-Ask prompting questions when students are reviewing the list to make their selection of a world problem.

-Ask students what problem their mythical hero will help solve in the

world. The hero should be shown in an action pose solving the world problem.

Reflections

Once the students grasped an understanding of the brainstorming process, more volunteers gave answers. While making the list, bilingual students interpreted for non-English speaking students. I was surprised at the seriousness and the variety of problems given ranging from homelessness to Beanie Baby shortages. Students were so eager to speak, jumping out of their chairs and waving their arms frantically. It was obvious that they must not get many opportunities to share their ideas.

In hindsight, I wished I had not introduced the comic books and super hero action figures because a tug of war ensued. In addition, I think these images limited students' thinking of what their mythical hero should look like pushing them into the Superman mentality. Showing brief clips of the Star Wars movie broadened possibilities again, but students wanted to leave the movie playing while they drew. I didn't think this would be conducive to thinking. Having anticipated this request, I compromised by playing the soundtrack from the movie in the background. Distributing calendar reproductions of mythical creations also helped students think

more broadly.

I noticed some students floundering, so I distributed a paper to each student and asked them to write answers to simple questions that I jotted quickly on the board. 1) What is the world problem your mythical hero helps solve or prevent? 2) What special power does your hero have to enable them to solve this problem? 3) In what habitat or environment does your mythical hero live? 4) What is their physical exterior so that they might thrive in that environment? 5) In what location is your mythical hero? The country? The city? The woods? The ocean? 6) What time of year is it? The bilingual students worked with the Spanish speaking students with this task.

One breakthrough accomplishment from these creative thinking strategies was the students' willingness to be patient while others were talking. Also, reflective thinking was evident by the depth of their solutions to their problems.

Day Two Procedures

-Ask the students broad prompting questions written on the board to review the assignment given the previous week

-Distribute a handout of a grid for a morphological synthesis explaining

that students should first fill in the empty boxes in both the left column and top row categories. Each box on the grid would represent a particular combination of an animal with a human head and an animal with a human body. Students can design a hero by choosing an appealing combination or by random.

- Call on specific students to physically act out their mythical hero enacting the good deed. Select students by reviewing their answer sheets to provide a variety of answers and poses.

-Ask students to guess what the good deed might be.

-Distribute all the answer sheets to students from the previous week

-Make materials available for students to select from them on an individual basis as needed.

Evaluation

-Circulate around the room to see if students need help completing the "morphological synthesis" grid.

-Look to make sure that students' mythical heroes are depicted in action poses and reveal clues of the problem they are solving

-Ask neighboring students to model for other students if needed.

Reflections

Students were familiar with the term "morphological" from videos and a current popular chapter book series, so the concept of a morphological grid was easier to get across to students than I anticipated. Some students who had already decided on an idea worked with the grid but then came back to their original idea of what their mythical hero should look like.

Play was definitely an integral part of this assignment based on the students' jovial mood in the classroom. One student took the role playing out of character and fell on the floor and began rolling and giggling which got everyone else laughing. I was surprised by how reserved other fifth graders were about role playing or modeling a mythical hero's actions. I chalked this up to a first time experience and reassured the entire class that any time you try something new that it can seem difficult but that after practice it won't be at all. Four students in particular were natural actors and threw themselves into their new identity.

As the student drawings began to develop, they reflected the playful atmosphere. Many of the ideas for mythical heroes were surprisingly thoughtful, but they were portrayed in a silly, cartoon-like style. However, I noticed that when color was added to their works, a majority of students

were meticulous about maintaining the original character of their image. As students completed their works, I asked them to write a simple statement about their mythical hero based on the image they created and on their answer sheets. One student created a hero that lived in the clouds who could extract germs from the air to prevent people from catching the common cold. Another hero could disguise itself as a tree on the street and make loud ringing noises that would alert the police if the neighborhood houses or people were endangered.

A brief discussion was held concerning the processes of coming up with an idea for a mythical hero. I asked students what had they learned using the brainstorming process for coming up with new ideas. Answers included, "Some people said things that I know of, but didn't think of at first" and "I learned that it's O.K. to share ideas." I asked students if there was anything hard about brainstorming. One response was, "It's hard to be quiet and wait your turn to talk when you know you have such a good idea, and then someone else says your idea first."

When I asked the students what they thought of the morphological synthesis grid, answers ranged from "I used it" to "It helped me add one new idea to my own idea." One student admitted, "It was too weird for me. I couldn't see a hero being made out of two animals or even part animal

and part person even if the Greeks thought of it first." One diplomatic student said, "If you were stuck for ideas and you needed help it would be good to use." Other students nodded their heads in consensus. In reflection, the morphological synthesis grid may have been better received if I had introduced it in the first lesson.

Students were willing to listen to others and reveal themselves through their own independent thinking. I interpreted this to mean that students were gaining an understanding of the art process beyond learning a technique and a one-two-three approach to art making. As students exited for lunch, several commented, "That was fun!" and "Let's do that again!"

MYTHICAL HERO
MORPHOLOGICAL SYNTHESIS GRID

This grid is a creative thinking tool to use to assist you with creating new ideas. Bodies are listed in the left column and heads are listed on the top row. Some of the boxes are already filled in. Other boxes are blank for you to complete.

Each square represents a combination of a head and body. To come up with an idea for your mythical hero, choose one category that you like from the left and one category from the top. Another way of choosing is to choose at random by closing your ideas and putting your finger on a box.

Illustrate your mythical hero in the process of solving a world problem.

BODIES HEADS

	Gorilla	Zebra	Man		
Baby					
Squirrel					
Giraffe					

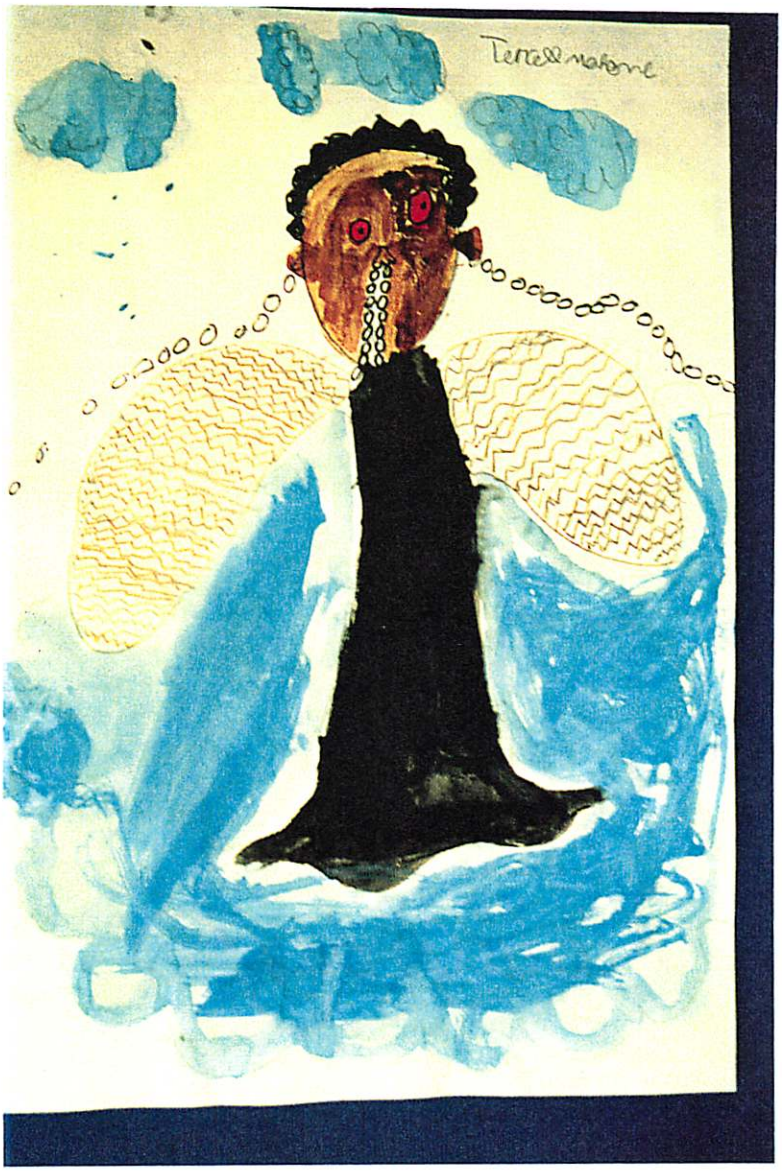

Figure 8. Mythical Hero. Students used brainstorming techniques and a morphological synthesis grid to create a mythical hero. This image combined the student's idea of an angel and a garbage bag to create "Anti-Germ Man." The image shows him preventing illness by extracting germs from the world through his ears and nose.

Lesson Seven: Found Object Sculptures

Creativity and Learning Objectives:

The students will:

-be introduced to the SCAMPER acronym, a divergent creative thinking tool.

-create a sculpture using found objects.

-review the terms additive and subtractive, sculpture, found object.

Resources

-Art reproduction of Bull's Head by Pablo Picasso

-Pin Head, found object sculpture by Beverly Mallon

-Scamper handout from Scamper by Bob Eberle, 1996. Waco, TX: Prufrock Press

Materials

-Found objects from nature or the home

-Telephone wire

-Glue

-Clothes pins

-Plastic grocery bags

Procedures

-Ask if students remember the slogan for recycling (Reduce, Reuse, Recycle)

-Explain that artists often make art out of things that they find

-Show Picasso's reproduction and ask students to identify the components.

-Ask if anyone had ever made something new from other things they had found. Only one response was given--they had put a blanket in a box for a kitten.

-Request students to look for things at home that they might bring in to create a piece of art. Remind students to ask their parents' permission first. Ask students to look in the junk drawer. Suggest students visit the neighborhood goodwill store and look for bargains to bring in.

-Take students on a hike around the school grounds. Ask students to look for items from nature to make a sculpture. Provide a plastic bag for each to collect their finds.

-Return to the art room in time to label each bag with student names.

-Show students Pin Head. Explain that I created the artwork from a swimming float and nails to create a wig. Encourage students to bring objects to class that they find in the home to create a sculpture using the SCAMPER technique.

Evaluation

-Observe students walking in pairs collecting nature items.

Reflections

The nature walk was a back up plan for those students who did not bring any items in by the following week to create a sculpture. Very little was found in our travels--a few crushed pine cones and some leaves. I will check at my house and my sister's plant nursery for additional items.

Since Earth Day is next month, I thought this would be an exciting idea for students to learn the SCAMPER technique. There are endless possibilities, and it is another way to get students to think of everyday objects as possible art objects. However, the students actually groaned when I introduced this topic. I explained that when I was their age, I made all kinds of things to play with out of boxes. One student asked me if I had been poor. I let them know that I did this as a creative exercise, not because I didn't have any toys. When I suggested students visit the Potter's House for junk, so many students began to snicker that the students who might have participated in the conversation did not. This concept got such a negative response, I will be surprised if any students brought in found objects next week.

Day Two Procedures

-Ask students to show what they brought in for the found object art project.

-Explain that a sculpture is a work of art that has three dimensions and has depth, height, and width.

-Explain that a found object sculpture must transcend the original objects

-Share items that you have brought to contribute to others' efforts

-Provide SCAMPER handout to help students begin looking and thinking at objects they have: What can they substitute, or use instead?
How can students combine items to make a new object? What can you adapt to make it different? Can you magnify or minify, exaggerate an object or make it smaller? How can you use this in a new way? What can be eliminated? Can you rearrange something to make it a more interesting sculpture?

-Ask table captains to distribute the craft glue, telephone wire, and clothes pins

Evaluation

-Observe student items brought in from home

-Observe students' efforts to work with items available in the classroom

Reflections

As predicted, only one person brought in found objects from home. The majority of the students worked half-heartedly with the nature items. Many students preferred combining items using the telephone wire because the glue required holding it for an extended time. Some students began decorating rocks they found on the nature rock using scraps of cloth and smaller rocks to create animals. I circulated around the room to see how students were working with the SCAMPER model. Some students avoided my eyes. One student asked me, "Why are we doing this? It's dumb to me." I decided to get the group's attention and save what I could out of the lesson. We reviewed the SCAMPER handout using the divergent thinking strategy questions. Students did volunteer ideas about how to alter materials we had in front of us, but no one seemed interested in actually making it happen. Next time we attempt this technique I will display brightly colored cards with one letter from the acronym with a key question on each.

We took a vote on who wanted to continue this project, and I decided not to continue the lesson next week. I felt disappointed that this assignment was not well received because I had done something similar years before with students, and many were successful with their work. In

the future, I will ask students earlier in the year to be on the lookout for interesting objects. This would allow us months to collect forms that were interesting to the students. In addition, I could send home a list of possible items to send to school by eliciting the help of parents. Next time I attempt this lesson, I will not refer to these found items as junk because I think that put a negative connotation on the assignment for students.

Scamper Techniques

S	**Substitute**	To have a person or thing act or serve in the place of another.
C	**Combine**	To bring together, to unite.
A	**Adjust**	To adjust for the purpose of suiting a condition or purpose.
M	**Modify**	To alter, to change the form or quality.
	Magnify	To enlarge, make greater in form or quality.
	Minify	To make smaller, lighter, slower.
P	**Put to Other Uses**	To have a person or thing act or serve in the place of another.
E	**Eliminate**	To remove, omit, or get rid of a quality, part, or whole.
R	**Reverse**	To place opposite, to turn around.
	Rearrange	To change order or adjust, different plan, layout, or scheme.

Both the *Thinking and Feeling Processes* and the *Scamper Techniques* have value for day-to-day living and learning. When used individually or in combination, the processes and techniques may be used for a variety of thinking and doing activities, such as preparing a menu, planning an instructional unit, redecorating a room, or revising the family budget. When considered as a means to improve life through the use of one's imaginative talent, *shouldn't everybody Scamper?*

Source: Scamper by Bob Eberle, 1996. Waco, TX: Prufrock Press

Lesson Eight: Ecology Posters

This art assignment uses the Incubation Model (Torrance & Safter, 1990) to teach creative thinking and to provide students with experiences that will encourage them to identify problems and think about those problems in problem solving ways. Students are asked prompting questions about their experiences with conservation of our environment. Next, students are asked to read through written facts about environmental problems and asked to select one focus that speaks to their own concerns. Students only begin to jot down a few passing ideas before the time is up. Between art lessons, students are asked to incubate about possible solutions. The following week, students are asked to come up with a slogan and image that work together to create a poster that would motivate others to be more ecologically minded. Students are encouraged to be original, use humor, and play off of common phrases when thinking of a slogan. This lesson not only encourages creative thinking, it also increases the students' knowledge about conservation.

Creative and Learning Objectives:

The students will:

-use the Incubation Model to solve a graphic arts design problem

-use an analogy chart to assist them with writing a slogan

-become familiar with the vocabulary graphic design, slogan, white space, eye level, advertisement, graphic design artist

-learn the concept of K.I.S.S. (Keep It Simple Silly) in respect to graphic design and compare and contrast it to a painting composition

-create a quick sketch of their idea before using the poster board

-plan the poster composition for maximum effectiveness

-learn to center lettering and make it uniform and easy to read

-create the illusion of depth by coloring the foreground and background by using high contrast colors

Resources:

-Conservation pamphlets

-Fifth grade science textbook

-Slides of ecological posters from previous years

-Instrumental tape of music with animal and nature sounds

-Encyclopedias

-Magazine advertisements

-Analog Chart Handout

Materials:

- Newsprint 18" x 24"

- Poster board, 18" x 24"

- Pencils, pastels, paint, markers, paper, glue, colored pencils

Day One Procedures

- The "heightened anticipation" stage involved asking students prompting questions about their personal experiences with ecological conservation. This was a warm-up exercise to pique students' interest and focus their attention on the next activity

- In the "deepening expectations" stage, I asked students to read through well-illustrated government pamphlets designed for children and discuss this issue with classmates. This gave them additional data and statistics about ecological problems, and students were asked to evaluate both the old and new information. I also encouraged students to read through their science textbook and look for articles in the newspaper.

- During the "going beyond" stage, students were asked to begin thinking about one specific environmental problem and possible solutions to prevent its escalation. Through personal meaning, students were to begin thinking through possible solutions to this real life problem. Students were encouraged to discuss these issues with friends and family outside of school.

- Show slides of ecological posters from previous years

Evaluation

-Use student responses to prompt questions to determine how well students listened to the discussion and their level of involvement.

-Allow students discussion time with classmates

- Observe students focus on initial sketches to determine their level of comprehension

Reflections

The students had some knowledge about ecological problems based on their responses from personal experience. Recycling was common in the home and school, and recent water shortages were noted. One student mentioned conserving the use of paper so that fewer trees would be cut down. The conservation pamphlets mentioned additional problems like chemical dumping and oil spills polluting our water supply. In our discussion, I urged students to select one problem area that they felt very strongly about and for which they themselves would like to spend time thinking about solutions. I reminded them that this is how artists select the ideas they want to spend time working on. I mentioned to them that

their assignment was to think about the problem outside of class and come up with ways to solve the problem. It is the solution to the problem, not the problem itself, that is to be the subject of the poster.

After students were given paper, I noted that several students had not comprehended the assignment because they were sketching the problem, not a solution. I reminded the entire class that the poster needed to be positive and be a call to action to others, and state a solution to the problem and not negative, stating the problem. I showed slides of several posters from previous years for assignment clarification. I asked two questions: 1) What is the problem? 2) What is the solution to the problem? I wanted to visually emphasize that the focus of the poster was on the solution with an action message such as "Be A Good Citizen--Recycle" and not simply, "Don't Litter". By asking students and not telling them the answers to these questions, they had to become active participants, and the assignment became more clear.

Day Two Procedures

- Remind students that the assignment is to create a poster using graphic design principles that urge someone else to take positive action towards an environmental problem.

- Ask students to name a slogan they know ("Just Do It!" Nike products). Ask students what is the purpose of a slogan? ("To get you to remember their name and to get you to do something").

- Hand out magazine advertisements with slogans and ask students to circle them. Ask students to place a check by the white space in each design.

- Ask students to write down the actual solution to their problem so they can look at the words and play around with them until they can come up with an idea for a slogan.

-Provide students with an analogy chart with the various conservation issues in one column and names of children storybook characters, common phrases and well-known song titles or phrases in the second column. to assist them with slogan writing. Students need to fill in the blanks on the chart with their own ideas. By combining one issue and one character or song title to create an analogy, students will be able to begin to create an idea for their slogans.

-Instruct students that the slogan and the image need to work together. The slogan will be the jump point for a simple image depicting it.

-Discuss composition principles.

- Ask students to quickly sketch (on an 18" x 24" piece of paper) the slogan first, leaving room for the visual.
- Give students poster board and direct them to transfer their sketches of their images.
- Discuss how to center a slogan by adding the letters and dividing by two.
-Play instrumental nature tape for atmosphere.

Evaluation

-Use the magazine advertisement assignment to gauge students' understanding and identification of the slogan and composition
-Circulate around the room so that children who need feedback on their slogan get it before becoming frustrated
-Look to see that sketches of the visual image are simple and include white space

Reflections

The analogy chart was an excellent tool to expedite writing of slogans because it enabled students to work independently. In previous lessons, I made a similar assignment without the chart, and I talked with students individually about their slogan ideas. It was inefficient and time consuming. With the analogy chart, students had the independence to fill

anything in the second column that reflected their thinking and personality. Surprising combinations resulted in slogans that were, in my opinion, more clever than years before. One example was, "Raise the Roof for The Birds--Hang a Birdhouse."

Writing slogans are a challenge for most of the students in my classes but they are especially difficult for both the bilingual and non-English speaking children because they do not have an understanding of the English language sentence structure. The bilingual children translated the slogan assignment to these students. They often produced a broken English statement or a very simple statement that did not qualify as a slogan. The bilingual students spent time assisting the Spanish speaking students in writing their slogans, taking them away from their own work. In past years, I have allowed children to write their slogans in Spanish, but I got feedback from other teachers they preferred I not do that.

Some children cut out their sketch and words and moved them around on the poster board before finally committing to their placement. After students calculated the placement of words some students carefully sketched them. Other students who were hasty in their work were reminded to approach this step slowly.

An unusual encounter relating to this assignment took place three

days later in the school cafeteria. A student came to me and told me that she had been thinking about the poster assignment and her composition. She said that she realized that sunny day clouds and rainy day clouds were different. She told me that she had been watching for a rainy day cloud because she needed one in her picture. She explained that her problem was that there had not been any rainy days so she decided to go to the library and look it up in the encyclopedia. She said that now she knew how to make the cloud and asked me if she could come into the art room during her recess to work on her poster. I was thrilled that she had been thinking about her art assignment outside of art class and told her that I would be glad for her to come to the art room.

Day Three Procedures

-Emphasize the importance of creating a slogan that is attention getting

-Show new magazine advertisements with simple slogans and simple images to get across the point that they must work together to create an effective design.

-Reintroduce the concept of "Keep It Simple Silly" (KISS)

-Review the importance of the placement of words, the placement of the image on the poster, and the white space.

-Demonstrate ways to create the illusion of depth on the poster by coloring the foreground and background in high contrast colors.

Evaluation

-Observe students as they create a sketched image to accompany their slogan and transfer it to the poster board to make sure everyone is making progress.

-Make available visuals from calendars or encyclopedias to assist those students who need assistance with creating an image.

Reflections

Students began to work at different speeds at this point of the assignment so it was important that I had previously set up tables to make materials available to students when they were ready. This freed me up to interact with students who had difficulty with this assignment. Even though there was structure to this assignment, this level of independent thinking was a challenge for several students. Several had delayed selecting a focus area and still had not created a slogan. These students had not taken the time to use the analogy chart but once they did, they settled on an idea and began working consistently.

Other students had sketched their slogan and image and worked

responsibly. There seemed to be a high level of concentration and commitment to the project because I observed few students off-task. The selection of materials was unobtrusive as students got up to get what they needed. A majority of the quiet talking that I overheard were students conferring with one another about the project. As an extension of this lesson, a public service project was created for those students who completed this assignment before others. This lesson was a substantial one and rewarding assignment for many of the students. These posters were completed by the first of April and displayed to commemorate Earth Day.

ANALOGY CHART

The list below can be used to help generate ideas to illustrate slogans about important ideas. On the left side is a list of issues relating to ecology. Some of the spaces are blank for you to fill in your ideas.

On the right is a list of stories, song lyrics, and popular phrases. The blank spaces are for you to fill in your ideas.

Select one issue and combine it with an idea in the right column. You can pick any two--they don't have to be directly across from one another. This combination will give you a starting place to get an idea for a slogan.

Look at all the combinations and select three you like. Take time to think about them. From those three, choose the idea to illustrate that you like the best.

Ecology Issues	Stories, Songs, Phrases
Air Pollution	The Three Bears
Water Shortage	"I Belive I Can Fly" (lyric)
Erosion	Goosebumps Mystery
Endangered Wildlife	"Talk to the hand!" (phrase)
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

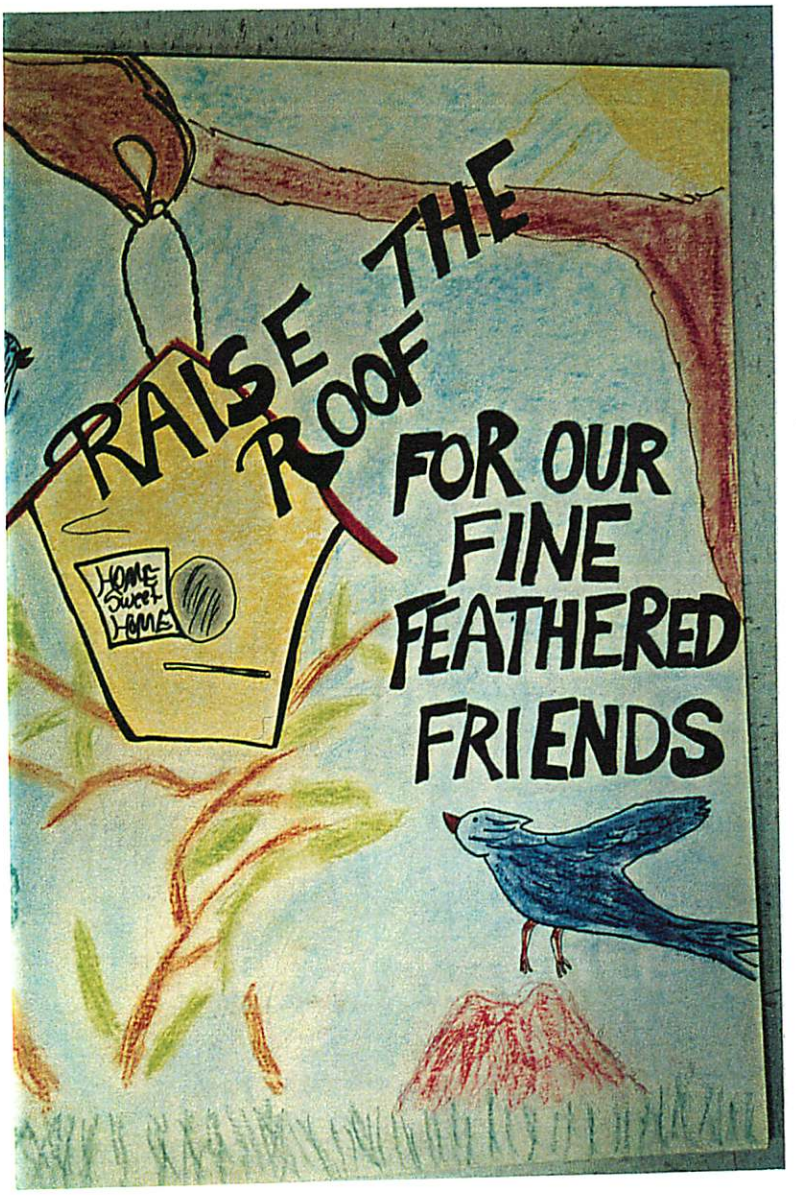

Figure 9. Ecology Poster. Students used the creative thinking tool, an analogy chart, to generate possible slogans and illustrations for a graphic design assignment.

Chapter Five

Summary, Recommendations and Conclusions

Along the journey of this applied project, I have learned much about myself as a teacher and the children who were my fifth grade students. Traditionally, students identified as gifted in my school were the only students regularly exposed to higher order thinking and creative thinking skills. The population of gifted students at Chase Street Elementary School is less than four per cent. Ninety per cent of the students at Chase Street Elementary School are classified by the state of Georgia as at-risk. However, all students can benefit from developing creative thinking skills that encourage independent ideas. The types of questions teachers pose to students greatly influences the depth students search for answers. By offering broad assignments, students began to move beyond art techniques and develop problem solving abilities. Creative thinking skills can serve these students as learning tools that have real life application. It is important for students to understand that not all questions have one correct solution.

The school-imposed structure limiting student art instruction to only one hour a week was overcome. Integrating social studies and science curriculum with art curriculum provided opportunities to collaborate with

the fifth grade classroom teachers. This collaboration justified additional art time to my colleagues for our fifth grade students. Another result of our collaboration was that for the first time in my seven year tenure, teachers came early to pick up their students to interact with them concerning their progress. Later, the fifth grade teachers sought me out to discuss with me their thinking about the art assignments.

The lessons designed for developing creative thinking skills revealed to me additional insights to my students' personalities and learning styles. The students in the past who were not self-directed became more independent. Conversely, I was surprised that often the competent artists were hesitant in taking risks. Their ability to prioritize the process of thinking through an independent idea over the outcome of a refined end-product was a risky prospect for them. Many students overcame this hurdle, while one student showed minimal growth with the open-ended assignments. I surmised that this student felt that his identity as "the artist" was in jeopardy. His artistic strength became a creative block preventing him from expanding his creative thinking repertoire. One challenge for both the teacher and students was that many of the creative thinking skills were based on language. Bilingual students translated introductions to assignments and class discussions for those students with

limited English proficiency. These students were paired so that handouts and worksheets could be understood and completed. The visualization script had to be translated and presented in Spanish by the English as a second language teacher. The artwork often transcended the limited verbal skills of all students.

As the art teacher, I learned to yield control of driving the lesson, instead encouraging student contributions which often altered the direction of my instructional strategies. By asking questions, students were allowed opportunities to share their own understanding of concepts before I provided additional information. Open-ended questions led to an exchange of ideas instead of teacher-directed answers. My ability to direct inquiry and guide discussion improved. I learned to increase the wait time for students to respond to questions and worked with others on elaborating answers. This effort enabled more students to participate in discussions and refine their ideas.

I gained insights on how to structure creative thinking lessons. Initially, I learned that too many choices can be overwhelming to some children. By asking students to select the ideas that they liked most, the number of ideas they had to consider narrowed. The ability to identify problems and solve them became possible for a majority of students. Also,

starting small with one or two hour assignments gradually introduced creative thinking strategies to students. Students were willing to take risks on tasks they were unsure of because there was a minimal investment of time. After introducing each creative thinking skill through definition, demonstration, and examples, I practiced each skill with students before asking them to work independently. Encouraging words and individual interaction with students reassured them that they could be successful with their own ideas.

The greatest stride I thought students gained was an increasing ability to be self-directed. A majority of students grew in their abilities to generate and make choices by testing first one idea, then another. The ability to be discerning in their evaluation of choices progressed and was evident in their artwork. Students also further developed classroom discussion skills. Students with limited English skills rarely volunteered during discussions, but they did respond when called upon. Almost all of the students exhibited mutual respect by listening to each other's ideas. This respect fostered an environment that promoted the students' willingness to reveal their own independent thinking. This diligent effort, or self-motivation, could partly be attributed to students choosing their own direction for assignments.

Another factor fueling motivation was the content used to introduce creative thinking skills. Timely connections to events in the classroom, the school and the world helped to make these issues real and meaningful to students. The introduction of the topics of nature, ecology, Native Americans of the Southeastern United States, heroes and Greek mythology, and the Aztec culture captured students' imaginations and maximized their interest. Only the found object sculpture project failed to spark real interest with the students.

Students demonstrated a sense of ownership of the classroom, demonstrating greater responsibility by independently accessing materials and cleaning the room at the end of the class time. Students' contributions to the discussions and the content also revealed ownership. Often these contributions resulted in surprises that could be described as fun and playful evident in the climate of the art classroom and the style of the artwork. When students approached me to say that they had been thinking about their assignments and wanted to talk about their ideas, it was another indication that they were taking ownership of their learning.

My first recommendation for implementing a curriculum promoting creative thinking skills begins with accessing resources that are within the school. Beyond written materials, the art teacher may want to seek out

other teachers in the school who are interested in working with their students developing creative thinking skills. Teachers with gifted certification have had specific courses that emphasize curriculum, methods and materials for teaching creative and critical thinking skills. Observing other teachers working with students using creative thinking skills can give the art teacher insights on directing discussions and developing assignments using these skills with art content.

The teacher must establish a creative environment in the classroom in order for creative thinking to flourish. Providing opportunities for inquiry through open-ended questions invites multiple perspectives. Modeling acceptance and nurturance will set the tone for encouraging a free exchange of ideas. The teacher needs to affirm students who take risks and explore original ideas. The teacher needs to become adept at mediating students' contributions, sometimes taking a "silly" idea, and directing the class to explore its worthwhile relevance.

Many of the creative thinking skills are based on language so students' mastery of language should be considered and teaching strategies adapted to the population being taught. In addition, age appropriateness and developmental ability must be considered when selecting creative thinking techniques. Brainstorming, visualization, and attribute listing are

appropriate and user-friendly beginning with elementary students in primary grades. Creative thinking skills, such as analogies and lateral thinking, requires student maturity to think more abstractly. The Incubation Model of Teaching can be taught to younger elementary age students through lessons that focus on individual, sequential steps. Effective creative thinking lessons provide students choices within a framework of structure. Creative thinking skills should be introduced on a small scale and built sequentially. Explaining skills, demonstrating skills and practicing skills with students will lay the foundation for students to work independently.

My final recommendation is that the art teacher practice creative thinking skills with their students with the understanding that an investment of time is required for both the teacher and the students to grow more comfortable using them. Many students will need practice with creative thinking skills before they are successful. I would encourage the art teacher to continue to repeat creative thinking skills by weaving them throughout the art curriculum . By integrating creative thinking skills into the planning of every art lesson, these skills become more than an add-on and instead become a basic element of the teacher's and students' repertoire.

My intent for this applied project was to examine creative thinking skills and teaching strategies to enhance creative art making by fifth grade elementary school children. I wanted to broaden my teaching skills beyond creative teaching and empower students with their own knowledge of creative thinking. By providing opportunities for student creativity, the art teacher opens unlimited possibilities for authentic art learning for students. Not all students immediately embraced the creative thinking assignments. However, that does not mean the art teacher should not have the expectation that all students will eventually rise to the challenge.

Future goals for my research include further exploring the content that best lends itself towards building a curriculum which has opportunities for creativity. A second goal is to refine my teaching strategies for encouraging creative thinking skills. A third goal is to determine how to evaluate creative art making. If students are asked to strive towards original images instead of duplicating or being inspired by adults' artwork, the criteria for what is quality art learning needs to be something other than slick, end-product aesthetic appeal.

All art teachers can offer opportunities for children to explore beyond art techniques and encourage them to define their own art

problems and discover their own answers. Creative thinking skills provide students the tools to help them accomplish this goal. The teacher should consider the important steps of analyzing curriculum planning and instructional practices through reflection to make this philosophy a reality in the classroom. Through creativity, children can begin to take ownership for their own learning and develop their own ideas about art.

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APPENDICES

APPENDIX A

PRODUCT/PERFORMANCE ASSESSMENT FORM

Clarke County School District
Program for Gifted Students

SPECTRUM

Product/Performance Assessment Form

Student's Name _____ Grade _____ Date _____

School _____ Spectrum Teacher _____

Product (Title and/or Brief Description) _____

_____

This Product/Performance represents the child's own work. (Must have signatures below.)

_____ _____ _____
Spectrum Teacher Parent Student

Directions: Circle the number beside each statement that best describes the student's product/performance and multiply the weight. Afterwards, add the total column for a final score.

Content: Exhibits In-depth Understanding 1 2 3 4 x 7 ____
(Student exhibits more depth and knowledge about the topic or subject than typical for age and grade.)

Elaboration: Detailed; Content-related 1 2 3 4 x 6 ____
(The product has extensive detail either in words or graphics, which adds clarity or effect and is elated to content. For example, a student's illustration might include lines to indicate texture, movement, patterns, or student's explanation might involve complex syntax and rich description. The elaboration, however, must add to the content.)

Divergence: Unique or Unexpected Idea 1 2 3 4 x 5 ____
(Student's product is atypical; unlike others of this age, it may reflect in-depth content or understanding through a very original or creative idea. Multiple examples of student's work stand out as unique but appropriate. The student's product seems surprisingly advanced for the age of the student; level of work is more typical of older students.)

Organization: Advanced, Unusual 1 2 3 4 x 4 ____
(Student's product shows evidence of insightful planning. There seems to be an organized approach to the assignment. There is evidence of a sequencing of the steps involved in the task.)

Materials: Clever or Resourcefully Used 1 2 3 4 x 3 ____
(Student uses provided materials in a different but appropriate manner; resourcefully uses materials in an unexpected way, such as making something three-dimensional when products are two-dimensional.)

Total Score ____

(See guidelines on the reverse side.)

Adapted from: Kingore, B. Portfolios: Enriching and Assessing All Students. Identifying the Gifted Grades K-6, 1993.

Description Guidelines:

These characteristics will be helpful when evaluating products and/or performances:

Achievement:
- Demonstrates in-depth knowledge/understanding of subject.
- Topic is thoroughly covered and relevant to content.
- Presentation - delivery, organization, pose, posture, personality.
- Technique - facility, phrasing, expression, emotional connection.
- Accuracy - authentic, valid, (memorization, timing, as seen in performance).

Creativity:
- Original, imaginative, intuitive.
- Resourceful use of materials in a meaningful way.
- Elaborate - extensive details which add clarity or effect.
- Communication - verbal, expressive, artistic proficiency.

Motivation:
- Persistence - perseverance and tenacity.
- Independence, self-directed.
- Culmination - thorough, interesting, focused.

Evaluation Scoring Guidelines:

Score 1 Inconsistent with Expectations

The student presented a partial, incomplete, or poorly executed product/performance that is difficult to judge for this feature.
- This feature had a single compelling example of poor practice or multiple examples of poor practice.
- This feature is inconsistent with expectations.

Score 2 Limited as to Expectations

Although some strength does exist, the student's product/performance is limited with respect to the expectations of gifted students.
- There is insufficient information or evidence in the product/performance to judge consistency with the expectations of this feature.
- This feature is somewhat inconsistent with expectations.

Score 3 Consistent with Expectations

The student's product/performance is somewhat consistent with the expectations of gifted students. Such a product/performance is clear and complete but not outstanding.
- This product/performance reflects an above average interpretation of the task for this feature. There is real evidence of strength but not at an exceptionally high level.
- An apparent "strength" in this feature of the product/performance does not significantly enhance the overall product/performance, however.
- This feature is somewhat consistent with expectations.

Score 4 Compelling Evidence of Excellence

The student's product/performance represents compelling evidence of having met expectations of excellence.
- This feature was evident in this product/performance at exceptionally high levels.
- This feature of the product/performance was sufficiently strong that the overall product/performance was enhanced significantly.
- The teacher judges this product/performance to be among the best examples observed for this grade/age level.

Adapted from: Kingore, B. Portfolios: Enriching and Assessing All Students. Identifying the Gifted Grades K-6, 1993.

APPENDIX B

SUGGESTIONS FOR INTERVIEW QUESTIONS

Suggestions for Interview Questions
Product and Performance Assessment

1. Tell me about your work, picture, project, etc. How did you choose to do this? Why did you decide to do this?

2. What are you thinking about this project now? How would you change it or add to it if you were starting over now?

3. Tell me how you did that. What steps did you take to get to the final product?

4. Tell me how you made that. Why did you make it this way?

5. What did you do to figure that out?

6. How did you get the idea for this?

7. How did others help you with this?

8. How much time did you spend on this? When and where did you work on it?

8. What did you learn while you were doing this? How are you going to use what you learned?

9. Is there anything you are trying to communicate with this product/performance? What do you want others to learn from it?

9. Tell me about what you would like to make/do/research next.

10. Have you done similar projects before? Tell us about some of those.

11. Do you have any plans for another project? What would you like to do next?