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California State University

San Bernardino

VISUAL LITERACY FOR THE 1990'S

A Curriculum Development Project Submitted to

The Faculty of the School of Education

In Partial Fulfillment of the Requirements of the

Degree of

Master of Arts

in

Education: Elementary Option

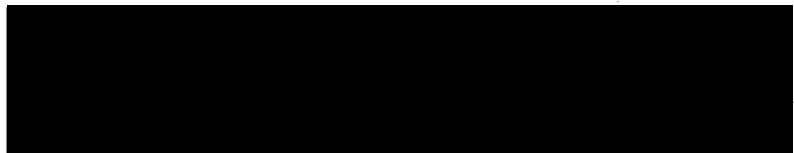
By

Lynda S. Meral, M.A.

San Bernardino, California

1991

APPROVED BY:

A large black rectangular redaction box covering the signature of the advisor.

Advisor: Dr. Charles Funkhouser

A black rectangular redaction box covering the signature of the second reader.

Second Reader: Dr. Gary Negin

Abstract

VISUAL LITERACY FOR THE 1990'S

Lynda S. Meral, M.A.

California State University, San Bernardino, 1991

Art education is an important link to motivate students in all areas of the curriculum. The purpose of interdisciplinary instruction is to provide opportunities for every student to experience the interdependence among different subjects. Connecting the visual arts with the study of science, mathematics, social studies, and language arts facilitates understanding of the curriculum. Students also have an opportunity to transfer concepts to other subjects. Teachers using interdisciplinary art programs achieve high levels academically with significant gains in standardized tests (HEW - supported Arts Project in American Schools, 1979). Students will also have fewer absences. Interdisciplinary programs help students to experience success and develop self-esteem (Fowler, 1980). The arts lead students to imaginative, investigative solutions to problems, rather than reproducing "right answers." Judgment is necessary; thus, the arts inform choices, declare values, and put events into perspective. Consequently, aesthetic

learning and values add significantly to an individual's educational experience. This project addresses the need to integrate art instruction into the elementary school curriculum. The possibilities of the art curriculum are endless and left to the teacher's imagination. Instruction will not merely enhance skills, but also provide a nonverbal, intuitive, open-ended approach to learning. Interdisciplinary instruction extends lessons beyond the existing curriculum. The recommendations stated in this project could increase the usage of art instruction by non-art trained teachers. The lessons are presented by subject, and will not only teach artistic skills, but increase retention of other subjects (HEW supported Arts Project in American Schools, 1979).

This project is dedicated to:

Bill Carey,

for all of his encouragement

and slogans such as

"inch by inch, anything is a cinch"

and

to my mother and step-father,

Blanche and Leonard Crane,

for their love and financial support.

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CHAPTER I

INTRODUCTION

Man has been making art as far back as rock and cave paintings. As he looked at pictures, his ability to read and think was developed by symbols inscribed on the walls. Progression of civilization dictates, as never before in history, the need to decipher symbols and communicate more effectively. Society demands it. We are, however, inundated with evidence and public awareness that our children are not attaining the goals indispensable to society. Learning strategies and concepts in school systems need analyzing to achieve effective high standards necessary for continual growth and expansion for the future. Fortunately, modern civilization offers solutions to problems concerning educational alternatives. Many teachers are flexible and can make changes in their curriculum strategies, and it is in this spirit that this study is made.

Try A New Face, a report by the United States Department of Health, Education and Welfare (1979) stated that integrating art into the basic subjects to acquire greater understanding of the accompanying subject facilitates comprehension and retention on a permanent basis. Federal, state and private funds support interdisciplinary projects in school systems throughout the

nation. Success on standardized test scores have increased considerably. Reese (1980) defined Plato's interpretation of art as, "the activity or object of any making or doing controlled by movement down from theory to practice, and contrasting with the upward movement toward theory" (p. 26). Reese (1980) also explained Aristotle's conception of art as "one of three branches of knowledge" (p. 26).

Aquinas, the philosopher-theologian, understood art as "right reason in making things." His position was "three factors are closely associated with the beautiful: harmony, perfection, and brilliance. To associate the beautiful with harmony and unity is reminiscent of Aristotle" (p. 25).

Cousins (1981) proclaimed democratic institutions have the ability to "grow and respond to the complexities and upheavals of the modern world. In the past half-century, more social and political change has come about than had been experienced in the previous five hundred years." In a free society, people can rise to meet all their challenges. "Answers take shape out of values. The extent of our commitments to these values, and the urgency we attach to them, will govern the final result. Freedom works best not when it pursues easy goals, but when it seeks out ever more difficult ones" (p. 33). Cousins (1981) continued to stress that:

"Second only to freedom, learning is the most precious option on earth. It enables us not just to survey experience, but to preside over it. It elevates existence, in Whitehead's celebrated phrase, to an "adventure of ideas" (p. 21).

Young people today want more say in decision-making about their lives. "They see themselves not just as receptacles for instruction but as essential participants in the educational experience" (Cousins, 1981, p. 37). Learning through the arts help students develop creatively through hands-on involvement, and therefore become participants in the classroom environment. Lynn (1987) in Basic Education Issues, Answers and Facts, argued that it "is doubtful whether this nation can remain the world's leader in technological inventiveness without investing in the creative development of its young minds" (p. 4).

Wachowiak (1985) revealed that students often have a tendency to rely more on either an imagery or linguistic approach to problem solving. These individual differences are evidence for the need to facilitate the use of imagery and to offer modes of instruction suited to both types of learners. Supplementing instruction in all subjects with visual representation prompts understanding. Art experiences in the elementary schools are justified when

they contribute to the aesthetic, discriminative, and expressive development of every child. It has unquestionable merit as a unique avenue to mental, social, and individual growth. When learning through the arts is taught purposefully, the lessons promote students skills in basic learning, perceiving, and analyzing. Students become receptive to alternative solutions to problems.

Cousins (1981) pointed out art is a way of getting through to the human subconscious, enabling people to have a greater sense of their uniqueness and fragility. Cousins (1981) further stressed "No matter how intensive or prolonged our formal schooling may be, we are only partly educated if we are unable to think abstractly. The truly educated person knows how to make correlations; he can anticipate the connections between causes and effects; he understands the function of qualifiers; he is not intimidated intellectually by complexity" (p. 27).

Eisner (1981) contends that traditionally, the arts have been taught as an addition to the basic curriculum, not as part of the basic curriculum. This will continue as separate instruction until the notion is dispelled that the arts do not enhance cognitive development. In the cognitive process, the function of the senses are crucial. In a visual and graphic world, combining art and theory

facilitates new understanding and knowledge about ourselves.

I propose that an interdisciplinary approach to the arts is incorporated for the future. The purpose of the review of literature is to seek a rationale for a new approach to visual literacy--the teaching of all subjects through the arts.

CHAPTER II

REVIEW OF THE LITERATURE

Interdisciplinary Strategies

The Visual and Performing Arts Framework (1989) for California Schools outlined several suggestions for relating the arts to one or more subject areas. Examples were social studies units focusing on art objects produced by different cultures, such as Mexican, Asian and Black Americans. These folk art objects are used for study because they reflect cultural values, styles, levels of technology, and are a source of authentic materials.

A social studies unit in the elementary level may consist of studying the art of Mexico. Children examine objects or photographs of Mexican masks, suns, pottery and basketry. The students make simple bowls, clay suns, and bird or animal figures that demonstrate traditional clay sculptures. Unique visual and tactile features are observed. Values are reflected in the art objects, such as symbols of power, love of family, relationships with nature, observance of rituals, celebrations, and religious beliefs. To extend the lesson into a Language Arts activity, students write descriptive similes and metaphors and read stories pertaining to Mexico. Later, students compare two works of art from different cultures, such as Mexico and Japan, and

write about their similarities and differences. A unit like the one described connects arts, social studies, and language art into a creative interdisciplinary lesson. The possibilities are endless and left to the teacher's imagination and enthusiasm. "The idea of a curriculum in which the arts are allowed equity with other subjects is persistent and currently receiving increasing attention as school districts look beyond traditional basics toward a balanced education" (p. 139).

The English-Language Arts Framework (1987) for California Public Schools encouraged several teaching styles. According to the Framework, multimodal approaches to teaching promote more meaningful learning. "Visual learners, for example, respond readily to paintings, art objects, collages, signs, movies, or student-produced art" (p. 20). "Kinesthetic learners find the lesson easier to understand when they use models, illustrations, time-flow charts, flip books, costumes, food testing, or personally designed journals and poetry books" (p. 20). Most teachers unnecessarily rely on auditory methods for teaching language arts, but more creative approaches will reach out to all types of learners.

The History-Social Studies State Framework (1988) also supported using graphics, maps, pictures, images, films,

videotapes, charts and records. These materials help students to appreciate social studies, even if their dominant mode of learning isn't linear.

Unsworth (1986) claimed "education uses an 'outside-in' approach to learning; feed the kids facts and then require them to memorize, organize and return them in measurable tests" (p. 18). Interdisciplinary lessons provide new balance and tap the creative potential inside each student. Interdisciplinary lessons activate skills of question, search, experiment, imagination, and making connections between subjects.

What Do Our 17-Year-Olds Know? by Ravitch and Finn (1987) published the results of the first nationwide test of American high school student's knowledge of history and literature. The assessment asked 141 factual questions in history, and 121 questions in literature. The goal was to reveal what high school students knew about significant events, individuals, and trends in American history. The literature portion asked about major novels, plays, poems, mythical allusions, biblical references, and writers. A national representative sample of eleventh grade students were selected. The national average on the history portion of the assessment was 54.5 percent correct. On the literature portion, the national average was 51.8 percent

correct, a disappointing average on both subjects. The results were alarming. The challenged at the present time is what can be done to help a generation at risk? "The fault lies not in our stars nor in the children nor in the condition of modern life, but in specific institutions, practices, and policies over which we have control as educators, policymakers, citizens, and parents" (p. ix).

One of the recommendations the authors suggested was to teach history to "include a sense of the life of the times" (p. 205). Facts or events should not be taught in isolation. Art, music, architecture, religion, philosophy, politics, people myths, folktales, and geographic knowledge give a richly detailed understanding of simultaneous events. Combining history, language arts, and art enriches the curriculum for all grade levels of students. Higher scores can be achieved using interdisciplinary art lessons.

Dewey (1921) strongly suggested, "any person who is open-minded and sensitive to new perceptions and who has concentration and responsibility in connecting them" (p. 380). He further suggested we "go below the surface and find out the connection of any event or object, and to keep at it" (p. 380). He continued, "more specifically, the demand for a 'total' attitude arises because there is the need of integration in action of the conflicting various

interests in life" (p. 381). Devore (1972) contended:

This requires a new mentality, a different way of perceiving. It requires that all men involved in determining the questions and their answers have knowledge and tools adequate to the task. It means a comprehension of the concept of system and the understanding that everything affects everything else. The new mentality requires a comprehension of problems and issues in terms of systems, interactions and interrelations. The goals of education should be to provide individuals with the means to find order in a complex universe and to attain the knowledge, skills, tools, attitudes and values required to participate successfully in the future. (p. 21)

Devore also stated: "The disciplines of knowledge... stress the unity of knowledge rather than fragmentation into highly specialized compartments" (p. 28).

Mental and visual stimulation is seen through many medias, such as television, movies, magazines, cameras, and billboards. Nelson (1975) suggested that "perhaps 90% of the stimuli to which we respond each day is visual or auditory, not written" (p. 525). "We must realize that our media-saturated age requires visual as well as verbal skills of everyone, and that verbal skills are so interconnected

that one cannot be properly taught or utilized without the other" (p. 526). Nelson also stated:

More recent efforts seem to work toward the interdisciplinary study of art processes and toward the development of new conceptions and new theory in close harmony with related work being done in psychology and education, i.e., creativity, perception, personality development and curriculum. (Keel, 1965, p. 41)

Johnson (1965) reiterated her pleas for creativity within the interrelated program when she cited Piaget's view that "we need to reintroduce into the framework of teaching that aesthetic life which the very logic of an education based upon intellectual authority tends to eliminate, or at least, to weaken" (p. 53). Keel (1965) implied that by adopting this interdisciplinary approach, it would lead to "the development of the creative arts--visual, musical, dramatic, literary--in elementary education" (p. 44).

Piaget continued, "You cannot teach concepts verbally; you must use a method founded on the child's activity" (Lickona, 1971, p. 9). Then through the child's activity within his physical and social environment, the basis for learning takes place (Morgan, 1970). Ripple (1964) in Piaget Rediscovered, felt:

The principle goal of education is to create men who

are capable of doing new things, not simply of repeating what other generations have done--men who are creative, inventive, and discoverers. The second goal of education is to form minds which can be critical, can verify, and not accept everything they are offered. The great danger today is of slogans, collective opinions, ready-made trends of thought. We have to be able to resist individually, to criticize, to distinguish between what is proven and what is not. So we need pupils who are active, who learn early to find out by themselves, partly by their own spontaneous activity, and partly through material we set up for them; who learn early to tell what is verifiable and what is simply the first idea to come to them. (p. 5)

Coladarci (1955) felt that after the educational needs of the child have been identified and appropriate activities have been prescribed by the school, the child, realizing the activities will help him reach those goals, will not only learn but will develop a liking for the activity.

The work of May (1967) suggested that if children learn to use the tools, the media, and the processes involved in the creation of the arts, they would transfer this creative process to writing and speaking.

Golub (1973) in Written Language Development and

Instruction of Elementary School Children, concluded that since the instruction of written language involves such complex thinking, which in turn involves a multiplicity of stimuli, the direct teaching of creativity should be provided for the pupils. Johnson (1965) stated:

According to Langer, the child acquires the visual language of art in much the same way that he acquires a verbal language when he imitates and plays with sounds in learning to talk. As he "catches on to the language," he devises the forms that become the roots from which art and creativity spring. Langer states that the child works with symbols in art which he devises from his own intuitive mind and that the formation and use of these symbols are one of the primary functions of man--as natural as eating or walking. She refers to symbol-making as a fundamental process of mind that goes on all the time. In fact, most thinking during the life span is in terms of or involves the use of pictorial elements. (p. 51)

Johnson (1965) also suggested that "in a few years, the child's senses will be dulled, while fears and lack of confidence will supplant his self-reliance and faith in his abilities. Imagination will be tempered by realism and gradually suppressed until it becomes almost dormant"

(p. 54).

Therefore, a creative approach to teaching all subjects should be considered using an interdisciplinary program.

Major (1983) asserted:

On the one hand, society asks for creative thinkers with original solutions to the world's problems, and on the other hand, it denies young people the kind of education that can bring forward these same creative thinkers. A materialist approach to education resources is more prevalent than ever. The old sentiments of "back to basics" and "the arts are frills" are again heard, more often than not, in political arenas when budgets are debated. (p. 7)

The arts suggest many benefits to the students. Some of the learning factors are:

1. Perception is improved through:
 - (a) greater use of the senses
 - (b) perception of the self to others--leading to sensitivity to others.
2. Awareness of the environment, relationships and connections is improved by:
 - (a) distinguishing patterns and aesthetic relationships
 - (b) openness to experience

- (c) observation and recall
 - (d) assessing feelings and attitudes.
3. Concentration is improved through:
- (a) motivation
 - (b) increased arts practice
 - (c) focused on activity
 - (d) a supportive classroom climate.
4. Uniqueness of thought style is improved through:
- (a) individualized learning in the arts
 - (b) extending thought (in a variety of ways)
 - (c) starting from where students are
 - (d) allowing different ways to act and solve problems
 - (e) observation of the art of others.
5. Expression is improved through:
- (a) gathering information in preparation for problem-solving
 - (b) having time to plan and select materials
 - (c) discovery of artistic problems
 - (d) thinking about problems
 - (e) opportunities to choose, modify and examine solutions; encouragement of self-direction towards unique solutions; and experimentation with alternatives

- (f) use of a variety of problem-solving methods
 - (g) implementing solutions and sharing them with others.
6. Inventiveness and problem-solving are improved because:
- (a) the unique solutions of each student are encouraged.
7. Confidence and self-worth are improved through:
- (a) a positive classroom climate
 - (b) having individualized and alternative judgments accepted
 - (c) increased awareness of others' accomplishments
 - (d) development of artistic capabilities and skills.
8. Motivation is improved through:
- (a) the intrinsic motivation of the arts
 - (b) positive teacher attitude and positive peer criticism
 - (c) individualized choice
 - (d) starting from where students are and their resulting confidence in the activity
- (Major, 1983).

The interdisciplinary movement began as an offshoot of

art discipline before instruction in the arts were completely understood. Art supporters recognized the need for unity and strong organizations to lead the battles for acceptance into the school curriculum. An ongoing struggle still exists, but with the help of federally funded organizations and local funding, supporters have gained grounds.

In 1963, the U. S. Office of Education founded the Arts and Humanities Program (Fowler, 1980). This was the first program at the federal level created specifically to meet the needs of the arts in education. New federal funds were used to appoint state art directors. The Elementary and Secondary Education Act was passed in 1965. For the next four years, hundreds of millions of dollars underwrote the costs of art programs in school systems nationally. These funds were mainly spent towards programs of a cultural enrichment nature.

The National Arts and Humanities Foundation Act was passed in 1965, and its influence initiated two new programs. The National Endowment for the Arts and the National Endowment for the Humanities; both supported education in the arts, and created another program that centered on combining professional artists and school environments. The Artist-in-Schools Program gained

increasing popularity when the two emerged in 1968 (Fowler, 1980). John F. Kennedy Third Fund said:

The arts are increasingly being given parity with other subjects of instruction and comprehensive arts in education programs are being supported by tax levy and other public and private funds. In addition, these programs seem to be demonstrating a remarkable staying power in times of social stress and financial crisis. (Quinn & Hanks, 1977, p. 204)

Weinstock (1981) pointed out, although the benefits are measureless, the irony exists that "the average elementary school devotes only about four percent of its time each academic year to the arts. Half of all secondary schools in the United States offer no instruction in art or music. In those that do, less than twenty percent of the students are enrolled in these courses, and for less than one year" (p. 7).

Karpati (1984) focused on possible answers why the arts should be integrated with other subjects in elementary education. "The arts should be taught in an integrated manner because of their similar basic characteristics, in that all are languages of communication, sets of signs structured according to rules that show similarities that can be conceptualized easier if compared" (p. 14). Karpati

(1984) also maintained that more research efforts on assessing programs is needed, in order to see "whether interdisciplinary teaching actually results in interdisciplinary learning." Also to determine "what kinds of methodological approaches are most appropriate for different age groups" (p. 19). Karpati (1984) cited other researchers investigating interdisciplinary learning. Woods (1978) has well-proven the positive appeal of art training on reading abilities. Daleki-Forseth (1980) has shown similar encouraging results in mathematics and art (Karpati, 1984).

While education research discovers beneficial effects of interdisciplinary teaching, classroom strategies still promote old patterns. Eisner (1984) pointed out curriculum strategies are slow to change, and questions the relationship of research to practice. Eisner (1984) continues, "those who are best informed about educational research seldom use the fruits of their labors eight to make practical decisions or to shape institutional policy within the institutions where they work. The story for teachers and school administrators is largely the same as it is for professors" (p. 448). Practical decisions are described as "the things that teachers and administrators do when they formulate educational aims, plan curricula, manage a class

or a school, teach a lesson, motivate a group of students or staff, and attempt to discern what progress they have made" (p. 447). Educational research refers to "correlational and experimental studies of the type typically published in the American Educational Research Journal" (p. 447).

Interdisciplinary strategies, also have other considerations that need to be studied. Programs involving several teachers and personnel need greater organization and management skills (Armstrong & Landi, 1990). Gulman Elementary School in Baltimore, Maryland, integrated studio art, art history, library science, social studies, and computer literacy into one unit on ancient civilizations. Fifth grade social studies lessons include a comprehensive history of ancient Egypt, Rome and Greece. "The knowledge of ancient art history is essential in understanding past cultures, how they lived, what they ate, and what they wore" (p. 38). Through reproduction, slides, filmstrips, and discussion, an accurate account of history is present to students. In the library, students used encyclopedias, reference books, and nonfiction collections to find research topics they have chosen. Computers are used to organize information presented at final presentations.

Art materials corresponding to topics need to be in

abundance. Students manipulate clay, paint, paper-mache, paris craft, hammers and nails, along with recycled materials such as boxes, boards, containers, and newspapers. The students make a variety of drawings, paintings, sculptures, maps, and dioramas for display. During the final exhibits, students dress as Roman soldiers, Greek gods, and Egyptian mummies. Planning is a primary element in integrating courses. Students' level of interest are heightened when encouraged to learn from each other, and work independently.

Another example of an interdisciplinary strategy is making "Big Books" (Watson-Newlin, 1990). The large, oversized book contains: (a) simple storyline, (b) sing-song rhythm or a rhyme, (c) predictability, (d) repetition, (e) large illustrations, and (f) large and clear lettering. These guidelines help students write and illustrate original stories. Illustrations are created using cut paper, markers, colored pencils, and tempera paint on construction paper or tagboard. Simple lettering is added using stencils or freehand after completion of illustrations. Finished pages are laminated and connected for protection. "Big Books" are a "big" accomplishment for exploring creative writing and art with young children (pp. 42-43).

Neu (1990) asserted that courses and programs

collaborating art and other subjects, are beginning to develop around the country. Columbia College in Chicago offers a Masters program in Interdisciplinary Arts Education. This degree is the "first of its kind in the Midwest and has become a model for several inter-arts graduate and undergraduate programs in the country" (p. 31). State universities in California sponsor Summer Art, a two-to-four week residency program which offers skill development in individual arts, and stresses interdisciplinary exploration. Teachers can accumulate undergraduate or graduate credit.

In our contemporary society, "most people in the United States currently spend two-thirds or more of their waking hours in activities other than work." Our culture provides us with vast amounts of "free time (Quinn & Hanks, 1977, p. 181). If the adult individual of tomorrow is to live to enjoy a creative, humane, and sensitive life, the education system must alter foundations which currently place great stress on work and labor only. Such an educational realignment needs to promote the arts for satisfaction and fulfillment. Recent social, political, and technological changes have prompted major reinterpretations of the relationship between work and leisure and the individual's life-style. The arts help to understand life in a more

meaningful way.

It is difficult to examine the role of art in the schools without noting art's connections to the content of other disciplines. Anderson (1990) stressed:

Art education can no more be kept apart from the rest of the curriculum, than art can develop apart from the context of life experience. Art cannot be kept in a tidy and separate box. It needs to move outward, to merge, embrace, inform, fuse, synthesize, energize and co-opt other content areas. And no other subject can do all of these things so well. Authentic art experiences can grow from the study of those other content areas that embrace the context of a student's world. (p. 4)

Visual Aesthetics

The arts have become more important to the American public during the 20th century, although the realization of the existence of the arts is still not part of the awareness of a "a large number of our citizenry" (Rockefeller, 1977, p. 38). Over the years, arts educators have aimed their efforts toward a variety of goals by preparing packaged programs, educating classroom teachers in the arts, providing art supervisors, artists in the schools, and

integrating the arts into other areas of the curriculum. Careful research, materials of good quality, guidebooks, and texts expertly written are of little use without a willing teacher using them. A major hindrance to the arts education programs in American public schools has been the cultural attitude that the arts are only leisure activities, are the province of the rich, and are not necessary to education. However, present goals of arts education may be shifting. The Rockefeller panel report on the arts in education, Coming to Our Senses (1977) noted changing attitudes:

Panelist Francis Keppel, former United States Commissioner of Education, pointed out that since his days in Washington, a shift has taken place: educational funding can no longer be justified in terms of growth or quantity, but on the ground of quality. "If we can teach knowledge about aesthetics--how to hear, how to see, how to feel, how to make judgments of quality--then we have provided the basic argument for coming to the aid of arts education," he said. But, he warned, we cannot go any faster than the quality of our teaching will permit, and that means we must move more slowly. (p. 214)

Changes in education take more years than most people

imagine. A broad base of support from administrators, teachers, artists, parents, students and the community is important for the acceptance of the arts in education. The establishment of the Alliance for Arts Education, with state committees to help develop arts education needs at the local level, is an excellent foundation. Financing for all education programs is a complicated process. Although the Federal government allocates funds for specific areas, state legislatures only respond to publicized demands. The Rockefeller panel suggested that "arts education must move from having no enemies to having more and more ardent friends in order to win a position in which it can realize the potential we believe it holds for the individual and for the nation" (p. 242).

Art education has greater meaning than to identify potential artists. Visual education, or visual literacy, must continue so students will not be at the mercy of the public who impose artistic, moral and political conventions. Brothwell (1976) stated:

We must see art both as an expression of some inner mechanism of one individual in relation to his biology and environment, and at the same time as an aesthetic matter which deserves to have wide repercussions in any society. We all have some responsibility for the art

within our own community, which means that at an individual, educational and group level, particularly in this chaotic world, we neglect art at our own peril. (p. 17)

Visual education may not create a generation of aesthetes. However, teaching recognition, definition, and art concepts is a giant step in aesthetic education. The willingness to analyze art objects using visual terminology is an aesthetic attitude. This attitude is called "appreciation" or an educated visual response (p. 68).

Hurwitz and Madeja (1977) declared emotional and sensory responses must also be considered as part of aesthetic awareness. Naming lines, textures, shapes or colors is an intellectual process, while any subjective response uses personal judgment only. If the viewer understands art concepts, and accepts a negative personal response as valid, then there is an educated visual response combined with a value judgment. Awareness of feelings and sensory responses has been the focus for many aesthetic education projects. CEMRAL is a well-known aesthetic education program for grades Kindergarten through sixth. The CEMRAL program made not attempt to teach all concepts inherent to the arts, but focused only on student aesthetic reaction.

Hurwitz and Madeja (1977) supported aesthetic education and suggested:

The students work with the materials to perceive, analyze, talk about, produce/perform, judge, value, and react aesthetically to the works of art and the environment. These activities will lead them to experience the insights fundamental to a lifetime of decision-making based on increased aesthetic awareness. (p. 130)

The ability to identify art concepts, might alleviate the viewer's personal inhibitions when responding to art forms. Hurwitz and Madeja (1977) declared that as "children learned to use language as a means of pointing to alternative ways of studying a painting, they would eventually changer their perceptions of art from narrow, customary ways to broader or more aspective ways" (p. 59).

Lynes (1954) felt that it is important to visually recognize the aesthetics of the environment, and not confine aesthetic responses to art forms alone. After all, from the environment and personal experience, the artist derives inspiration. The incorporation of the popular arts of the culture, folk arts, and other vehicles of visual expression in teaching aesthetic awareness serve at least two purposes. First, education that begins with the student's interest and

level of understanding is more effective. Second, recognizing art in everyday life helps to dispel the notion that art belongs only in museums. Few people feel confident enough in their own aesthetic judgment to defy popular fashion. Lynes (1954) wrote:

It is in the nature of our economic system not merely to meet demand but to create it. One of the ways that demand is created is by changing people's tastes, or at least inviting them to change, and by making the pressures to give up what seemed good yesterday for what would seem inviting today so strong that they are almost impossible to resist. (p. 4)

If art is called the expression of values, and values modify one's ideas depending on the subjective preferences of individuals and cultural preferences, then, "Art is the only language we possess whereby we can vividly transmit our values to others" (Rader, 1960, p. xxiii). Feldman (1967) felt that:

Evaluation, criticism and judgment art shaping factors in value. The chief goal of art criticism is understanding. We want to find a way of looking at art objects which will yield the maximum of knowledge about their meanings and merits...In sort, we want to understand the causes in the work of the effect it has

upon us. (p. 451)

Kepes (1965) believed visual education is valuable in providing a foundation for critical choices, and forestalling educational decisions made on economic basis alone. If the public is never exposed to a broad variety of aesthetic possibilities, the "norm" is probably going to be whatever is habitually seen (p. 95). Kepes (1965) suggested:

If we want to nurture a more exacting norm in the child from the beginning, we must offer him only exacting visual nourishment and he should be exposed to superior examples to such an extent that he will be completely filled with them, for unavoidably in his daily life, he will constantly meet with the inferior. (p. 17)

New understanding and judgment is needed in aesthetic awareness today, not simply imitation of past art values. Feldman (1967) declared, "We do not seek the same values, but the same capacity to support values" (p. 481).

Broudy (1972) suggested the "untrained perceiver" has no awareness of aesthetic qualities being portrayed by art form and is morally vulnerable (p. 170). He pointed out the difference between experiencing an emotion, and contemplating the image of an emotion. One who is untrained in seeing images in art, dramatizations of plays, or

listening to stories, is apt to identify with the activity, and therefore, not able to maintain an objectivity about emotions. The ancient Greek tragedies contained some horrid atrocities, but the audiences were drama-literate. Feelings being expressed by actors were accepted as statements on morality, heroism, and other human qualities. Broudy (1972) pointed out, "If people are not trained to make aesthetic associations with works of art, then there is a moral hazard."

Ecker (1967) distinguished between two types of judgments: The psychological report, and the value judgment. The psychological report is almost always preceded by the words, "I like it..." or, "I don't like it..." Such reports cannot easily be discussed or challenged (p. 46). Ecker (1967) continued:

A value judgment, on the other hand, certainly can be challenged because it invites further discussion or argument which seems legitimate...The paradigm for value judgments of art would properly include (1) a statement, such as "That is a good painting," and (2) reasons for saying so. It would seem that this process of justification is at once the evidence and the act of appreciation. (p. 6)

A teaching strategy originally proposed by Ecker has

been suggest by Hurwitz and Madeja (1977).

Initially, the student learns to distinguish between psychological reports and value judgments. Finally, the student's contact with various art forms is broadened in order to enhance his ability to justify the merit of an object or event, whether he likes it or not. We would not in this text recommend classic criteria for what is beautiful and what is ugly and what is good art and what is bad art. What is implied here is that the nature of art appreciation lies in the process of perceiving rather than in learning various criteria on which to judge art. We think this is consistent with the changing nature of the art forms, as well as with what a school should be teaching relative to the visual arts. It is inconsistent to study art forms in any static format since the forms themselves are continually changing. Therefore, the implication for art appreciation in the school in the 1970's is that one can teach about the critical process, but the student ultimately will have to formulate his or her own criteria based on knowledge of the elements that make up the work, the techniques used by the artist, and the context in which the work was created. (p. 12)

Hurwitz and Madeja (1977) presented four steps in an analytical method for the critical process. Beginning with (a) perceiving the work of art, (b) describing the work of art, (c) becoming conscious of the qualities of the work and analyzing its substance, and (d) making a qualitative aesthetic judgment. These steps parallel the four stages of art criticism proposed by Feldman (1967).

I divide the performance of art criticism into four stages: Description, Formal Analysis, Interpretation, and Evaluation or Judgment. One could break down these categories further; to some extent they overlap. Nevertheless, they entail fundamentally different operations, and their sequence proceeds from the specific to the general. That is, we focus on particular visual facts before drawing conclusions about their overall meaning and value. (p. 466)

Description, according to Feldman (1967) is simply taking notice of what is visible without attaching inferences whatsoever. In the case of abstract works, shapes, colors, or direction might be named, as well as spatial relationships. The materials used and textural effects by the artist should be noted.

Feldman (1967) continued that formal analysis is discovering relationships among objects named; organization

of shapes, areas of color, contours of form, texture, and relative locations in the space of the work. Formal analysis goes from objective description to statements about how the viewer perceives forms. For instance, if some part of the work appears to move forward, if space is shallow or deep, if some form gives a sense of movement, then the ways in which we perceive the elements is intruding on a more literal description.

Interpretation is the formulation of a hypothesis or "idea which seems to relate the material of description and formal analysis meaningfully" (p. 472). There may be more than one hypothesis that will serve as an interpretation of the work. The critic or teacher interprets a work for a specific audience, such as small children. The critic interpret a work for himself based on individual cultural background and experiences. A mature person of broad experience is able to give an interpretation of greater depth of meaning than the naive viewer of art. Feldman (1967) suggested that even the mimetic theory ("It looks like...", "It reminds me of...") can be meaningful if carried to a sophisticated level (p. 492).

Evaluation or judgment of the work means "giving it a rank in relation to other works of its type" (p. 479). Judgment, then, will depend on the critic-viewer's having

seen many works of art, and not simply judged on the basis of a few works done in one style. Different historical styles may be compared successfully, if the viewer recognizes that the artist were expressing different values.

Arnheim (1974) insisted that a work of art must be faced as a whole entity first of all.

What is it that comes across? what is the mood of the colors, the dynamics of the shapes? Before we identify any one element, the total composition makes a statement that we must not lose. We look for a theme, a key to which everything relates. If there is a subject matter, we learn as much about it as we can, for nothing an artist puts in his work can be neglected by the viewer with impunity...By making visual categories explicit, by extracting underlying principles, and by showing structural relations at work, this survey of formal mechanisms aims not to replace spontaneous intuition but to sharpen it, to shore it up, and to make its elements communicable. (p. 8)

It is important that analysis of elements in a work of art not override the total aesthetic response. Approaching a work by means of finding all the blue pigment, or identifying the tracery of lines would deny the aesthetic

value of the work. In general, aesthetic education must include both sensory response and intellectual analysis. The intellectual response depends upon the viewer's perceptual knowledge.

McFee (1970) referred to aesthetic judgment as a qualitative response to those aspects of art beyond the literal, or identifiable aspects. This type of aesthetic judgment is the goal toward which aesthetic education moves. The other type of aesthetic response McFee (1970) defines is the analysis of formal or literal qualities and elements in the work. This interaction may be equated with Feldman's four stages of art criticism. In all cases, however, art educators agree that the education of students' abilities to perceive, analyze, and define may be increased; and as a result of this type of education, students' aesthetic judgments are broadened.

Gotshalk (1967) stated that aesthetic values "can be adequately described in terms of intrinsic perception or perception (Greek: aisthesis) raised to a major activity valuable in its own right...In this view, aesthetic education would be primarily education in intrinsic perception..." (p. 11). Aesthetic experience and intrinsic perception is related to the mind imposing order or structure on the incoming stimuli. A student cannot impose

visual order on what is perceived unless the visual concepts are known. Knowledge of visual concepts would enable students to perceive and analyze what is imaged. Evaluation of art works by professional critics is based on a broad experience of seeing many different works and styles of art. Students will not necessarily have the broad exposure to art works for several years, but will learn to understand how value judgments are made with time. A general goal for instruction in aesthetic education is simply to increase the student's aesthetic awareness.

The objects used for studying aesthetic appreciation could include all kinds of visual phenomena. Gotshalk (1967) preferred works of fine art for aesthetic study because:

They are usually not intended merely for aesthetic attention and are accessible at times and places free from the distractions of practical and social life. Usually their chief superiority is that at their best, as well as in many other cases, they contain a far greater concentration of aesthetic values. (p. 12)

Hurwitz and Madeja (1977) believed that works of fine art are a good source for learning visual literacy and aesthetics, but the visual environment should not be ignored. The environment influences how fine art is created

and inspired.

Once the distinction between study in the natural versus the artificial environment is drawn, the study of all patterns and shapes in nature can be used as an adjunct of any sharpening of visual activity as long as it is used in supporting the study of art objects.

(p. 16)

Some works of fine art as self-expression are not readily understood. Gotshalk (1967) emphasized that there is a need to improve students' awareness because some artwork require greater effort from the viewer to be appreciated. Aesthetic education should encourage a general attitude of acceptance of the individual's right to self-expression, whether or not the viewer has any positive aesthetic interaction with the work of art. Gotshalk felt:

What surely is wanted everywhere in aesthetic education is growth of the learner's sensitivity. The aim is not to celebrate masterpieces, to promulgate art doctrine, to teach art history, but to awaken and enlarge the aesthetic response of individuals. Any emphasis achieving this result should certainly be most welcome, and all such emphasis should remain experimental and tentative. Student response rather than sacred tradition clearly should be the deciding factor.

(p. 13)

If works of art are to be used in aesthetic education, should there be a criterion for their selection? Hurwitz and Madeja (1977) suggested for very young children, five to seven years old, it may be sufficient simply to learn to see everything presented in the painting. A suitable beginning is to talk about the subject matter alone, to encourage looking at small details, and to become aware of expressions of mood or feeling. Young children are especially aware of minute detail and visual awareness is transferred into their own drawings and paintings. Textures and patterns begin to enrich their work, while subtleties of color, value and intensity also appear.

Hurwitz and Madeja (1977) gave suggestions for choosing works of art to be used in class discussions:

In selecting works for study, respect the natural preferences of children. Research can provide cues for selection. Williams and others have noted brightness, realism, familiarity with subject matter as bases for preference.

Select the work with care: The point of the discussion should be embedded in the specific character of the painting, sculpture, or the building.

Two or three examples are more effective than one

as all of us learn more quickly through contrasting images. Three Roualts will tell us one thin; a Roualt next to a Wesselman next to a Wyeth has something else to tell us...

The larger the projected image, the better.

Large-scale images make responses. (p. 53)

Over several years, a student understands a piece of art in terms of perceptual awareness, composition, color, depth, and so on; and thus find greater pleasure in seeing the work. Aesthetic response and judgment is identical with visual literacy (Dondis, 1973).

The first and crucial value lies in the development of criteria that extend beyond natural response and personal or conditioned tastes and preferences. Only those who are visually sophisticated can rise above fashion and fad to make their own choices and judgments of what is appropriate and aesthetically pleasing...

Literacy means participation and makes those who have achieved it less positive observers. In effect, visual literacy precludes the "Emperor's clothes" syndrome and makes of judgment a higher action than acceptance (or rejection) of a visual statement based on intuition alone. Visual literacy means increased visual intelligence. (p. 205)

According to Sharp (1976), by verbally responding to children's art, teachers help students to provide understanding in aesthetic qualities found in their work. Teacher training does not now include these skills. In fact, some early education literature advises a non-committal attitude towards positive commentary or criticism of children's art.

Sharp (1976) believed that two changes are necessary. First, the myth of the non-verbal nature of art must be dispelled and replaced by a thoughtful response to art, and second, new training must be provided for teachers to follow in their interchanges with children about art.

Nelson (1978) observed that teacher training for art education often includes only a few studio classes--more emphasis on "how to" than "why" (p. 485). The museums in Great Britain have assumed some responsibility for professional teacher training in the arts. If museums trained the teachers, a long-lasting influence could be felt throughout school systems, rather than the short-term influence of single encounters with museums and students.

Educational resources of art museums in America are being tapped more and more. Many museum programs are directed toward children, but almost no research has been done to estimate the effects of museum programs (Newsom &

Silver, 1978). A variety of educational programs exist in art museums throughout the country, ranging from learning centers in the museum itself, to teaching teams that go into classrooms on request. Since art museums must always be considered first and foremost as a repository for valuable works of art, there is a certain amount of restraint necessary for large groups of young students inside the building. Some small museums have decided that educational programs within the museum were so important that drop-cloths are used to cover paintings and sculptures so children can create art in the presence of fine art works.

The Cleveland Museum of Art has an audiovisual program within the museum for visitors (Newsom & Silver, 1978). Slides and tapes have been prepared by staff members. The criteria for the programs was to make a direct statement and be adequate teaching tools. Some slide-tape programs made for specific collections on loan have a short-term use. "On the other hand, slide-tapes that offer ways to look at works of art are never outdated. Among the most continually serviceable tapes, if not always the most imaginative, are those that stand in place of a lecture" (p. 114).

The staff of the audiovisual program in the Cleveland Museum indicated the use of their programs by teachers in the museum for self-guided tours of classes has been less

than expected. The museum instructors themselves use the programs frequently.

In choosing slide-tapes over film or video as audiovisual aids to the individual visitor, the museum director and staff considered cost (slides are cheaper than any other), and, much more important, their purpose. James Johnson, curator of the Department of Art History and Education when the audiovisual center was designed, has explained: "Good color slides afford ... concentrated study of art objects, especially in detail ... (and) moreover, can be employed as exercises in fixing attention, an appropriate prelude to an encounter with original works of art". (p. 116)

Unfortunately, for many children there may not be an encounter with original works of art unless they travel some distance away from home. Though seeing artworks by reproduction means is a step removed from a direct confrontation, it may be the only contact children have with artwork of substantial quality. Slides, films and pictures are excellent sources if it means greater student awareness of art and a beginning of personal aesthetic satisfaction.

"The human mind, once stretched to a new idea, never goes back to its original dimensions." (Wonder & Donovan, 1984, p. 275) Self-understanding is one of mankind most ancient pursuits. The quest for self-understanding marks the beginning of philosophy, and also begins the search for mind. Thinking is as natural and inevitable as breathing, but when trying to pin down what is actually done when thinking, it's easy to run into difficulties. Nevertheless, human beings are the only creatures who can think about how they think and learn. Brain scientists have developed ways to measure specific thinking activities. The EEG (electroencephalogram) indicates which side of the brain is in primary use during specific thinking tasks. Biofeedback equipment registers the electrical emissions from the left and right hemispheres of the brain. The voltage measured will change as a person performs right or left hemispheric tasks.

Fairly recent but now familiar research on how the human brain halves differ in function was first described by psychobiologist, Robert W. Sperry. Sperry's research was honored by a Nobel Prize for Medicine in 1981. According to Sperry, both the right and left hemispheres of the human brain are involved in higher-level cognitive functioning.

The left hemisphere specializes in verbal, logical and analytic thinking. Naming and categorizing are among its functions. The left hemisphere also processes symbolic abstraction, speech, reading, writing, and arithmetic. Concepts are reduced to general rules by the left hemisphere (Edwards, 1986).

In contrast to the left hemisphere, the right half of the brain functions in a non-verbal manner, specializing in visual, spatial, and perceptual information. Its style of processing is nonlinear and nonsequential, relying instead on simultaneous processing of incoming information, looking at the whole thing. The right hemisphere tends to seek relationships between parts of information and how they fit together. Perceiving information, searching for patterns or relationships that visually fit, and seeking spatial order and coherence are faculties of the right hemisphere. Ambiguity, complexity, and paradox summarize how the right hemisphere of the brain works.

Connecting both modes of cognition in the right and left hemisphere of the brain are large cables of nerve fibers called the corpus callosum,. These fibers connect the separate processes and, by this means, the two vies of reality are united, preserving a sense of being one person.

Philosopher and behavioral scientist Jean Houston,

director of the Foundation of Mind Research in Pomona, New York, declared: "A person needs to think in terms of images as well as words. He needs whole-body thinking to evoke more of his entire mind-body system. Verbal-linear-analytical intelligence is a small part of the intelligence spectrum. There is also visual-aesthetic-plastic (working with the hands) intelligence, but that is usually not acknowledged in the schools" (Williams, 1977, pp. 11-12).

Bronowski (1978) made clear the idea that mind and body are developed separately belies the nature of the physical body. The function of the senses through the mind form a unit only when action is demanded of it. This action is not an action of the brain--but of the total person. "Vision, visual, visionary" and "image, imagery, imagination" are words related to the creative process (p. 10). All of these words symbolize a connection to the eye and with the sense of sight. Imagination is a word which derives from the making of images in the mind. The intellectual activities of man are eye-conditioned.

Leach (1984) acknowledged an important principle throughout life is learning to put what the eyes see together with what the hands do. Hand-eye coordination begins with most infants as they watch their hands while they play with them. Hands are the three-month old's

favorite toy. They move, feel, and are always available. This is the most vital stage in learning the fine motor skills which makes the human baby so different from any other creature. Soon the fingers are a source for gathering more information to discover textures and sensations. Discovering fascinating properties of different objects by touching and stroking prepare the child in fine motor skills development for control and understanding.

In the cognitive process, the functions of the senses are crucial. Cognition is the process through which the organism becomes aware of the environment (Major, 1983). Cognition is becoming conscious of noticing, recognizing, and perceiving. One of the fundamental misconceptions in education is the distance placed between cognitive learning and affective learning. Typically the affective domain is second in importance to the cognitive (Eisner, 1988).

Jeanne Bamberger commented on perception and basic skills:

I would like to posit the notion that basic skills and intuitive knowledge are, at best, the same--that is, both refer to the reservoir of spontaneous internal strategies that underlie and cut across knowledge specific to any one domain. They are the processes by which an individual makes sense of the world around him or her, determining the quality, value, and meaning of

his or her immediate experience. By basic skills I mean, then, those internalized cognitive mechanisms that an individual uses to construct reality--to differentiate and aggregate, to determine "same" and "different" to select for attention, to find and build patterns and other relations. Most important, these skills also determine the nature of the interaction between an individual's immediate sensory experience and descriptions of it (both his or her own and those of others) in any of the various modes and media; gestures, words, graphics, numbers, the formal descriptions of physics or computer language. (Major, 1983, p. 10)

A report of the Canadian Conference of the Arts stated:

The arts are essential for all general learning. Learning theorists have shown that learning is based on cognition: the steady growth of mental concepts. Concepts can be learned non-verbally (that is, through the arts) as well as verbally (that is, through language). thus , the arts are cognitive processes which are allied to, rather than different from, academic subjects. Through the arts, the student has a specific way of knowing. He comes to know things in an emotional way: he feels about things and this leads

him to a kind of innate "grasping" of knowledge. Aesthetic knowledge is not linguistic knowledge: it is direct knowing rather than "knowing about" something. It leads to his increased ability to understand life through metaphors, symbols, and analogies. The student develops his own artistic criteria and this leads him to his own choices. Thereafter he comes to the sub-learnings of preference, judgment, and justification. Arts education is based on perceptual ability (seeing, touching, feeling, hearing, tasting and smelling) and to perceive is to think--and to think requires concepts. (Courtney, 1979, p. 17)

Ann White Lewin believed that from 1975 to 1985 more general theories of intelligence emerged than in all previous years. Theories such as multiple intelligences, mediated learning experiences, and techniques to enhance both serial (left-brain) and holistic (right-brain) thinking revealed in part how the mind functions. "Nonetheless, there is still a long way to go in understanding how the brain develops. Further understanding will most likely occur in small steps, in the meticulous work of a brain surgeon, in the prolonged treatment of a learning disorder by a clinical psychologist, in the detailed pedagogy of a new teaching method" (Brookes, 1986, p. xiii).

Eisner (1988) analyzed the role of the senses in concept formation and concluded that all concepts are basically sensory in character. "There is no competent work of the hands that does not depend on the competent use of the mind. The mind and senses are one, not two" (p. 31). Concept formation requires the ability to perceive "qualities we are able to experience; color, texture, smells, sounds that permeate our world" (p. 31). The development of the sensibilities does not only provide access to the qualities of the environment. According to Eisner, it is through the content of such experience that two very important cognitive operations can be performed: recall and imagination.

"Recall, or remembering is the ability to reconstruct in our mind's eye images encountered earlier. The ability to remember, therefore, is significantly influenced by the qualities of the world we are able to experience in the first place. What has been noticed is more likely to be recalled. What has not been experienced cannot under normal circumstances be remembered" (p. 31). The ability to remember is clearly a critical aspect of cognitive capabilities, but to remember without the ability to imagine leaves us with a static culture. To imagine is to create new images, that never were, but that might become. Images

function in the development of a new science, the creation of a new symphony, and the invention of a new bridge. It is a process critical for the creation of poetry and for innovation in our practical lives. But imagination, like recall, works with qualities that have been experienced. "Try to imagine something that you have never experienced. You will find that while you are able to imagine new forms of animals, autos, devices for seating, and the like, the components of these entities are qualities you once encountered. Our imaginative life is built out of experience" (p. 31).

Eisner (1981) stressed three features in concept formation. First, no concept can be formed without sensory information. Second, the degree to which the particular senses are differentiated has a large effect on the kind and subtlety of the concepts that are formed. Third, concepts formed without images are meaningless.

Eisner (1988) further concluded that cognitive activities through the arts make unique forms of meaning possible. "The arts are models of work that do emphasize the creation of coherent structure, that do encourage multiple solutions to problems, that do prize innovation, that do rely upon the use of judgment, and that do depend upon the use of sensibility. In short, the arts, a realm of

thinking typically neglected in our school programs, constitute our potentially most important means of celebrating thinking" (p. 32).

"Without opportunities to acquire multiple forms of literacy, children will be handicapped in their ability to participate in the legacies of their culture" (p. 33). The interaction of the senses enriches meaning. The arts are not mere diversions from the important business of education; they are essential resources. McKim (1972) asserted that:

One-sided education in the 3 R's, with few exceptions, results in massive visual atrophy. Any mental ability that is not exercised decays, and visual ability is no exception... To be sure, the 3 R's are not the sole cause of atrophy, there are also psychological causes. Perceptual loss is often caused by self-consciousness... Imaginative loss is also caused by parents who scold, "Stop imagining things." And drawing ability is stunted in a specialized society in which drawing is only what "talented artists" do. (p. 24)

While visual imagery is an obvious advantage in the arts, it also has a definite place in other areas.

Hadamard, a friend of Albert Einstein, received a letter

about the subject of mathematics. Einstein wrote: "The words or the language, as they are written or spoken, do not seem to play any role in my mechanism of thought. The physical entities which seem to serve as elements in thought are certain signs and more or less clear images which can be voluntarily reproduced and combined" (Hadamard, 1945, p. 41).

Finally, the philosopher Aristotle observed, "The soul never thinks without an image" (Restak, 1988, p. 240). Visual images of the mind are basic to creative and inventive thinking. Wonder and Donovan (1984) felt the ultimate goal in developing both sides of the brain is to live and work more efficiently, more easily, and in a more satisfying way.

Copeland (1970) described Piaget's educational philosophy for cognitive development at the "Jean Piaget Conference on Cognitive Studies and Curriculum Development" in 1964. "Piaget discussed four basic factors that contribute to intellectual development. They are (1) physiological development (2) direct experience with the physical world (3) social transmission (communication, teaching, etc.), and (4) equilibration or autoregulation (p. 12).

In 1928, one of Piaget's first major studies was

published called Judgement and Reasoning in the Child.

Copeland (1970) stated: "He received wide recognition from university centers in Europe and the United States during this period, but his early works were criticized because he drew conclusions from children's answers at the verbal level" (p. 9). Piaget reported:

I well knew that thought proceeds from action, but I believed then that language directly reflects acts and that to understand the logic of the child one had only to look for it in the domain of conversations or verbal interactions. It was only later, by studying the patterns of intelligent behavior of the first two years, that I learned that for a complete understanding of the genesis of intellectual operations, manipulation and experience with objects had first to be considered. (p. 9)

Webb (1982) also cited Piaget: "In order for a child to understand something, he must construct it himself--he must reinvent it" (p. 7). Therefore, "nothing is fully learned until it is experienced by the learner" (Betts, 1985, p. 45).

Gillian (1984) concluded that the ability to develop creatively requires specialized training through the senses:

The human being experiences reality as an integrated

whole: his senses are alive to input from the world; he reacts to this subjectively in his selective self-awareness; he integrates the information into his existing knowledge and ways of thinking; and thereby formulates his socio-cultural awareness into a way of understanding and interpreting his world.

These aspects of experience, his perception, self-awareness, learning and thinking, and socio-cultural awareness, constitute his relationship with and concepts of both his subjective and objective reality. (p. 6)

Pictorial Imaging

For centuries, man has attempted to explain how he is able to acquire knowledge about the world. Southall in 1962 wrote Treatise on Physiological Optics. He pointed out, in 1651 Hobbes believed that all knowledge in man's mind must first pass through his physical senses. Locke suggested in the 17th century that the human mind at birth (having had no experiences) is like a "tabula rasa," or blank slate, upon which all future experiences would be recorded (p. 562). George Berkeley in 1709 saw a discrepancy between the three-dimensionality of the world, and the two-dimensionality of man's retinal image of the world. He suggested that only the sense of movement and touch could supply necessary

information for the senses. The school of empiricism thus held a doctrine of associationism: the mind understand the relationships between things, that "A" is like "B" (p. 563). All knowledge comes through our senses, and the mind acts upon this incoming sensation, categorizing, accommodating, and associating the information. In the nineteenth century, Helmholtz declared, "The sensations of the senses are tokens of our consciousness, it being left to our intelligence to learn how to comprehend their meaning" (p. 533).

Rock (1975) further explained that the nativist doctrine of Descartes and Kant Held that man's mind was more than a tabula rasa. They maintained the idea of "a priori" knowledge of space and time, which the mind understands (p. 67). As the study of man's acquisition of knowledge became more widespread, scientists began to examine the neurological system Johannes Muller discovered there were different nerves for sensations, which then ascended into the central nervous system. He also found that there were unique neural systems which mediate different sense organ. This might explain why one can "see" colors when pressure is applied to the eyelids, or "hear" a ringing in one's ears when there is no actual sound wave (p. 17). Is perception learned, suggesting that children make perceptual distinctions from the cacophony of incoming sensory

experiences? These arguments contribute to a long-standing belief that perception is a function of thinking, or the actions of the intellect upon sensations received. Rock (1975) asserted:

That perception is to a large extent learned or that it develops is considered almost axiomatic by many investigators in the field in spite of a number of recent findings that establish the presence of various perceptual attributes at the moment of birth or very shortly thereafter. The nature of such learning is still held to be associative. (p. 16)

Perceptions at Many Levels

Arnheim (1969) questions faulty sensations received. The visual sensation of the car across the street is that the car is unrealistically small in size. "One can explain this by saying, as Helmholtz did... that the faulty image is corrected by an unconscious judgment based on facts available to the observer" (p. 15).

Here the problem is whether the theory is stating that the percept received from the retinal image is distorted, and this "misleading" percept must be re-interpreted by the brain according to the observer's prior knowledge or whether:

The theory says that the given perceptual situation

itself contains aspects that assign to the image of the car a relative size different from the one it has in the retinal projection. In the latter case, the cognitive feat is accomplished within perception itself; in the former, it is tackled after perception has delivered a rather deficient message. (p. 15)

Perception itself is intelligent: cognition, or understanding, can occur at the moment of sensation. Arnheim used the term "perception" to include not only the sensations received, but the images used by the brain when thinking (Rock, 1975, p. 243). Such spontaneous functioning of the brain indicates that perception is a direct experience. The view held by the Gestalt school of perception is that perception is not an acquired linkage of senses and intellect, but an intrinsic knowledge of the thing perceived. This is also a nativist theory, based on the idea that humans and some animals have innate perceptual capabilities at birth. "However, Gestaltists have not denied that perception may be effected by an individual's past experience" (p. 21).

Rock (1975) stressed the Gestalt movement presented a different hypothesis regarding perception. The basis of perception is not just the proximal stimulus, nor inferences imposed upon the stimulus, but by "certain

organizing events in the brain" (p. 19). An illustration is the changing perception of the Necker cube as shown in Figure 1. When the eyes focus on this figure for a length of time, the image appears to be a cube standing on its rear lower edge, as in Figure 2, and sometimes to be that of a cube resting on its base, as shown in Figure 3.

Since the image of the reversible figure, as it is called, can remain unchanged on the retina while the perception changes, it is clear that we cannot possibly explain such perceptions merely on the basis of mechanisms inside the eye. (p. 7)

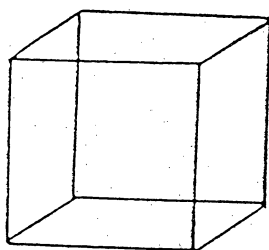


Figure 1

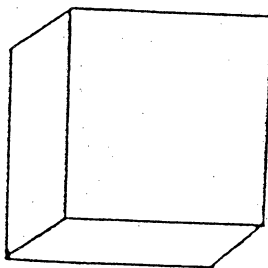


Figure 2

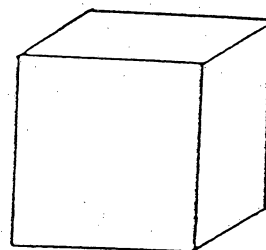


Figure 3

Various perceptions of the Necker Cube.

Gibson and Gibson (1955) suggested that there is a resurgence of empiricism among psychologists, who:

Seem to take for granted a discrepancy between the

sensory input and the finished percept and they aim to explain the difference... they accept the distinction between sensation and perception. The development of perception must then necessarily be one of supplementing or interpreting or organizing... Is perception a creative process or is it a discriminative process? Is learning a matter of enriching previously meagre sensations or is it a matter of differentiating previously vague impressions? (p. 33)

The second suggestion by Gibson and Gibson (1955) referred to a "specificity theory."

In this theory, perception gets richer in differential responses, not in images. It is progressively in greater correspondence with stimulation, not in less. Instead of becoming more imaginary it becomes more discriminating. Perceptual learning, then, consists of responding to variables of physical stimulation not previously responded to. The notable point about this theory is that learning is always supposed to be a matter of improvement--of getting in closer touch with the environment. It consequently does not account for hallucination or delusions or, in fact, for any kind of maladjustment. (p. 33)

The classical theory of perceptual learning, according

to Gibson and Gibson (1955), based its experiments on mistaken perceptions and from the study of illusions and distortions. This implies that the subjective quality of perception is studied, suggesting that the mind creates assumptions regarding sensations. If the mind is busy creating subjective enrichments only, then perception would be in "decreasing correspondence with stimulation" (p. 34). Original stimulation for organizing thought would be eliminated. This implies, too, that more sense information is received than can be processed. The development of perception becomes a development of interpretation and organization.

In one regard, this interpretation is what a painter uses. The artist's visual perceptions are extensive and detailed. It is necessary to select, interpret, and organize aspects of perceptions necessary for communication. This response is a creative process, but it does not deny the artist used a discrimination process first. Artists have excellent visual perception, better than most people, and this influences their ability to discriminate upon the properties of an object. Improvement in perceptual skills comes with practice. Perception tests conducted by Gibson and Gibson (1955) utilized "nonsense scribbles." The test required that a child be able to identify one particular

scribble from a collection of multiple assorted scribbles. "In this experiment, learning is taken to be an increase in the specificity of an identifying response, or in other words, a decrease in the size of the class of items that elicit the response" (p. 37).

The experiment has some correlation with teaching children to see specific elements of their environment, such as lines, patterns, and textures. Children learn to identify specific properties and elements, which they may not have observed prior to the teaching. Gibson and Gibson (1955) stated:

The results show clearly that the kind of perceptual learning hypothesized has occurred in this experiment. A stimulus item starts out by being indistinguishable from a whole class of items in the stimulus universe tested, and ends by being distinguishable from all of them. The evidence for this assertion is that the specificity of the S's identifying response has increased... The implication is that, for a child to identify the differences between it and other objects, or at least that when he can identify an object he also can identify its properties... Discrimination gets better with practice both with and without knowledge of results...

The notion that learned perception is less and less determined by external stimulation as learning progresses finds no support in these experiments. The observer sees and hears more, but this may be not because he imagines more, or infers more, or assumes more, but because he discriminates more. He is more sensitive to the variables of the stimulus array... Perhaps the dependence of perception on learning and the dependence of perception on stimulation are not contradictory principles after all... if one is concerned instead with the practical question of whether training can affect favorably a man's perception of the world around him, a very productive field for theory and experiment is opened up. (p. 40)

This experiment supports the idea of intelligent perception. Gibson and Gibson (1955) continued:

Perception is not a process of matching to a representation in the head, but one of extracting the invariants in stimulus information. Constraints in stimulation can be useful, and adaptive development depends on more effective pickup of this information rather than less dependence upon it. Although our concepts increase in number, richness, and complexity as we grow older, it does not follow that our percepts

become more and more reflections of our concepts. We do not perceive less because we conceive more. If we did, it would be maladaptive for getting information about what is doing on in the world around us. (p. 449)

Because artists are people who attend highly to visual appearances, they define and use many basic concepts concerning the visible world. Individual awareness is highly generalized--specific details of things are unseen. Rock (1975) suggested:

Failure to perceive every nuance of a complex figure when there is no special reason for doing so can undoubtedly be attributed to failure to attend to such nuances... it would seem that without a special set to attend to a given detail, the overall or global shape of the figure receives the subject's attention. (p. 313)

To direct perceptual attention to specific details, the instructor should identify what is to be perceived, learned, and transferred. Verduin (1967) referred to the concept being taught as, "a description of the properties of a process, structure, or quality stated in a form which indicates what has to be demonstrated or portrayed so a learner can perceive the process, structure or quality for himself" (p. 102).

If such details as the specific color of a shadow were given as an art concept, then visual awareness would become part of the person's perception. However, unless this concept is specified for the learner, it may never be noticed. Gombrich (1960) cited Ruskin's Elements of Drawing (1856) concerning visual awareness:

When grass is lighted strongly by the sun in certain direction, it is turned from green into a peculiar and somewhat dusty-looking yellow. If we had been born blind, and were suddenly endowed with sight on a piece of grass thus lighted in some parts by the sun, it would appear to us that part of the grass was green, and part a dusty yellow... by a series of experiments we should find out that the sun was really the cause of the colour... We go through such processes of experiment unconsciously in childhood; and having come to conclusions touching the signification of certain colours, we always suppose that we see what we only know, and have hardly any consciousness of the real aspect of the signs we have learned to interpret. Very few people have any idea that sunlighted grass is yellow. (p. 296)

Many artists spend solitary lives visually examining the world around them. Through the extraction and

examination of visual ideas, increased understanding occur. To see things from many angles, and under different conditions, help to form extensive mental concepts. Gibson (1969) stated that, "stimulation carries information about them, but only if it is examined over space and time. It is extraction of the information that characterizes perception; and it is increasing ability to extract this information that characterizes perceptual learning and development" (p. 14).

Consciousness Changes

Putting into practice what one has learned to see is an important part of organizing experiences. Although Bruner (1966) was not referring directly to teaching art in the following statement, I believe he was implying that lessons are best implemented by activities that help children understand their experiences.

I suspect that much of growth starts out by our turning around on our own traces and recoding in new forms, with the aid of adult tutors, what we have been doing or seeing, then going on to new modes of organization with the new products that have been formed by these recodings. We say, "I see what I'm doing now," or "So that's what the thing is." The new models are formed

in increasingly powerful representational systems. It is this that leads me to think that the heart of the educational process consists of providing aids and dialogues for translating experience into more powerful systems of notation and ordering. And it is for this reason that I think a theory of development must be linked both to a theory of knowledge and to a theory of instruction, or be doomed to triviality. (p. 21)

A picture is a direct aid to understanding, more readily than words. Gregory (1970) wrote that "perhaps man's ability to respond to absent imagery situations in pictures represents an essential step towards the development of abstract thought. Pictures are perhaps the first step away from immediate reality; and without this, reality cannot be deeply understood" (p. 32).

Rock (1975) asserted that simulation for accuracy in perceiving pictures as representations of real objects needs to occur in the classroom. Many investigations show that young children are able to identify objects correctly in pictures. These investigations are related to the cognitive processes, being concerned with recognition, association, abstraction, concept formation, and recall. Rock (1975) also stated that "in perception, the interest is in the representation of the world of objects and events that

constitute our physical environment. Thus the concern is with the perceived shape, size, distance, direction, orientation, and state of rest or movement of objects" (p. 24).

Kennedy (1974) explained the development of children's perceptions as follows: that children begin life as four-dimensional perceivers, registering the "events" of their environment rather than all the static appearances of objects (p. 64). Later they detect the shapes of objects, still later attaining two-dimensional perception.

Kennedy (1974) cited parallels in Bower's (1964) studies of infant identification of real objects versus photographs, in the form of projected transparencies.

Kennedy asserted:

Bower's study suggest that very young infants are controlled by kinetic of binocular information, and the pictorial information originating from a flat surface is treated as largely irrelevant.

When stereoscopic pairs were used, infants reached for the object as if it were existent. This information suggest that the motion parallax may be important in perception for very young children. Bower (1971) and Yonas and Hagen (1977) show that the younger the subjects, the more important kinetic information is

relative to static information, at least so far as size judgments are concerned. (pp. 58-59)

Pictures reflect everyday perception of the real world, but they are flat, or two-dimensional. The observer must be able to detect the information given by the picture, and yet comprehend the distinction between the two. Kennedy (1974) continued:

Nakagawa's ideas together with Bower's research suggest a three-step sequence: first, the young infant registers objects in motion and fails to connect a stationary object with the same object in motion. Second, the child recognizes objects that are static, like Bower's cubes, but not when depicted. Third, the infant, in a steadily maturing development of a capacity to recognize the same object in many guises, comes to recognize pictorial information, static information, and motion-carried information as being equivalent. (p. 64)

The ability to distinguish pictures seems to occur early in human development. Gibson (1969) declared:

I infer from the available evidence that differentiation of pictures objects is learned at the same time that distinctive features of the real object are learned. That is, the features will also be

recognized when they are present in picture... What about outline drawings or silhouettes, representations of objects which omit features inside the object? Must they be learned as paired associate matches or codings for the real object, as a kind of language?

(p. 400)

Hochberg and Brooks (1962) studied a 19-month-old child who had never seen a pictorial representation of any kind. The toddler's vocabulary was entirely learned by reference to the real, solid objects. Pictures, both photographs and line drawings were presented to him for naming, one at a time, and his responses were tape-recorded. The tapes were then scored by judges, who agreed that the identification of the line drawings was significantly better than chance. Gibson (1969) referred to the research by Hochberg and Brooks:

The results appear conclusive that this child was able to recognize both photographs and outline drawings of familiar objects without specific training. Recognizing a picture as a representation of an object is not, therefore, a case of learning a code by simultaneous association of the two, given reasonable fidelity of features or contours. (p. 400)

The theory proposed is that the eye must perceive edges

in order to perceive contour and form. Gibson (1969) thought that scanning along an edge develops later, but the edges of objects or of surfaces seem to be foci for perception from birth on. Gibson stated that "according to Hochberg, outline drawings (and silhouettes) are surrogates for edges,' not by a process of association, but by transfer from perception of objects, whether the latter kind of perception be learned or unlearned" (p. 401).

Depth perception in animals and human infants has been tested by Walk and Gibson (1961) and findings were described by Gibson (1969). Their studies utilized a "visual cliff"; a construction that simulated a drop-off situation. Two patterns were used on a board, one representing the actual surface plane, and the other represented as if it were several feet lower than the surface. The entire surface of the board was covered with glass, so that tactual and sound stimuli on the two areas were the same. The subjects were placed on the "normal" side of the board (p. 240), and enticed to move across the visual cliff side. Very few of the subjects were so enticed, and rather appeared to sense the danger inherent in falling. Gibson declared:

That depth at an edge is perceived by human infants by the time they can crawl, and by some animals at birth, has been demonstrated with the visual cliff.

The information arising from differential motion parallax at the edge appears to be important in this perception. It will be remembered that Bower (1965)... concluded likewise in a demonstration of size constancy. (p. 240)

Bower's (1971) experiment, referred to by Kennedy (1974) concluded that motion with projected still pictures was necessary with very young children for discrimination.

The pertinent question here is, can pictorially represented depth be recognized by school-age children?

Gibson (1969) contends:

Eliminating the edges of a picture, so that head movements do not reveal them against the background, should enhance the effectiveness of perspective and size cues within the picture. Indeed it does, as anyone knows who had looked at a photographic slide with the naked eye and then within a viewer. (p. 402)

Perception of pictorial depth is a factor learned through selected attention. Tests in texture variables concerning distance judgments were discussed by Gibson in 1969. The background areas of the slides contained varying patterns and densities of textures, that became smaller in the distance as shown in Figure 4.

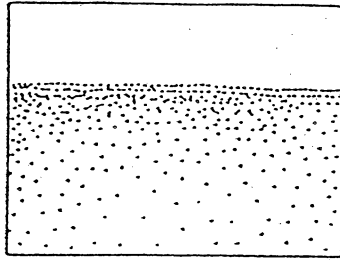


Figure 4.

Texture density in depth perception.

Gibson (1969) concludes from these tests that:

In our society, it would seem, children in first grade judge relative distance in drawings much as adults do.

When viewing conditions reduced the cues for the flat picture plane (thereby reducing conflict of information), texture density plays a significant role in judgment, even though it did not in the three-dimensional situation. Children do not depend more on redundancy or regularity of texture than adults do in judging distance in pictures. (p. 406)

Gibson's studies (1969) showed that children can perceive pictures as well as adults, by about age five or six. With exposure to television, children's abilities to perceive illustrations, including the many varieties of cartooning and caricature, is also discussed. Often artists use simplifications of objects that need to be explained.

Gibson's (1969) research also stressed:

The development of perception for pictures and other representations is not very different from the development of perception of objects, as long as the representations have fidelity. Caricatures can even have super fidelity, by articulating and stressing distinctive features and playing down noisy and irrelevant ones... Perceptual learning, beyond what is accomplished in the natural ecological surroundings, is probably only required for perceiving the meaning of representations that employ special conventions or distortions, ones that are peculiar to the requirements of the graphic act or to the artist. (p. 417)

Pictures of the environment used for directing children's perceptions should have the greatest fidelity possible, to avoid erroneous perceptions. According to Fleming (1971) pictures as accurate representations of reality, can supply the same information to the viewer even though the viewer is not in the physical presence of the environment. However it must be remembered that no matter how accurate the reproduction, the picture is still supplying "perception at second hand" (p. 89).

One's willpower is needed in selecting attention to stimulus. There is always the possibility that some things receive attention consciously or not, such as a bright light

or loud noises. Gibson (1969) cited the studies of Zinchenko, VanChzhi-Tsin and Tarakanov (1963) which dealt with the eye movements of children and development--scanning and information-gathering techniques. Three-year-old children kept their eyes fixed on a single spot, did not seek out distinctive features, and did not seem to follow the contour of the object shown, staying rather within the central areas. The six-year-old, on the other hand, pursued all of these aspects actively. It was assumed from the controls inherent in the tests, that the three-year-olds were not locating the distinctive features and singling them out from the display. When given a picture they had previously examined, the three-year-olds tended to increase their eye movements, but the six-year-olds seemed to display more economical eye movements, such as identifying the key features and ignoring the redundant ones, such as the outline.

Gibson (1969) also cited the study of Vurpillot (1968) with scanning techniques. He found that five- to nine-year-old children developed systematic skills in scanning relevant features, relative to their increase in age. Gibson (1969) suggested that attention develops from a relatively fixed or forced activity, to an exploratory activity, which progresses towards a selective and

systematic search that is adapted to the task.

To increase the selection of appropriate information, the observer must also be able to ignore inappropriate information. Gibson (1969) purported that selectivity is the isolation of a distinctive feature of things. The economical method of selecting distinctive features would be to notice what causes the object to be different from other things. Cartoons and caricatures elaborate on just those differences, exaggerating them for quick identification.

Studies toward discovering the extraction of a single differentiating feature were conducted by Vurpillot (1966) cited by Gibson (1969). Both adults and children participated using transfer tasks.

The interesting thing here is that four features, all common to the positive instances, were uniformly reinforced, but what was learned and generalized was only a single distinctive feature that was sufficient for differentiation. This demonstrates remarkable economy in learning, and it is especially interesting to note that the children behaved in essentially the same way as the adults. (p. 464)

Similar research was discussed with the Miller Visual Analogies Tests by Gibson (1969). In these tests, the subject was required to identify characteristic marking that

appeared in the first series of symbols, did not appear at all in the second series, and appeared in only one of the symbols contained in the final, third series. All three series were available to the subject for perusal at the same time. Visual discrimination is often much more difficult for students, perhaps because of their lack of experience with visual learning. This search for an invariant--the relation that remains constant over change--is the essence of perception.

Directing children's attention towards specific art concepts, such as linearity and overlapping, help to eliminate other stimulus in the environment. Even though pictures are used, children may be expected to transfer this recognition to another picture containing stimuli, after the initial identification has been made. Gibson (1969) felt:

It would seem, therefore, that training in looking for the invariant property and ignoring changing irrelevant ones can be effective in inducing adequate responses in the conservation experiment, even when a new set of stimulus objects is introduced. Paying attention to the invariant and learning to look for it is a prime way of developing cognitive economy. (p. 466)

Picture images for the creative thinker. Maccoby (1968) stressed after seeing examples of linearity in

pictures by artists, students should be able to use lines in similar ways when drawing. Investigations have been made to understand why distinctions perceived by children are unable to be matched through their own behavior. This also occurs with learning to speak. Some children cannot correctly pronounce initial consonants, although they can differentiate and respond to them auditorially, for example, ring (heard), and wing (spoken), as in "the phone is winging" (p. 160). Maccoby (1968) examined this phenomenon:

There is a parallel problem in visual perception and drawing. The child can distinguish simple geometric forms from one another at a very early age--as early as six months. To be able to make a recognizable copy of such a form with a pencil or crayon, however, is a very slowly acquired skill, and the interesting thing is that there is a highly predictable order in which forms become reproducible...

You may think that the existence of a time lag between perceptual discrimination and copying is not very mysterious or surprising. Even in adults, an enormous gap exists in these two classes of behavior. We can all recognize our friends' faces and discriminate them from people who look somewhat like them, yet there are probably few of us here who could

draw or paint a good enough likeness of one of our friends so that others could identify the picture... We may hope that, by studying the development of these simpler forms of copying in childhood, we shall learn something about the processes and skills which underlie artistic abilities in adulthood. Specifically, we need to analyze the roles played by perceptual skills, motor skills, and conceptualizing or coding. (p. 163)

Maccoby (1968) cited the study of Maccoby and Bee (1965) suggesting a hypothesis based on differentiation of attributes necessary for drawing, as opposed to holistic perception necessary only for recognition.

Copying requires that one shall fractionate the stimulus, or differentiate its parts, to a much higher degree than is required for simple form discrimination...

Let me stress that the hypothesis does not assume that the perceptual discrimination of attributes automatically results in their accurate reproduction... The hypothesis simply says that the perceptual discrimination of attributes of the stimulus is a necessary first step. (p. 166)

Work by Sheffield and Maccoby (1961), on teaching motor skills through visual demonstration has shown

that the most effective procedure is to train subjects on separate components of the response sequence, but also to provide training in which components are combined into sub-assemblies and the final response sequence practiced as a whole. They emphasize that the student must attend to the organization of the whole at the same time that he notices component parts. (p. 170)

Losing (1968) tested the lag between recognizing a diagonal, and reproducing a diagonal. He points out that recognition takes place earlier and faster than reproduction, which "is, at minimum, a sequential or segmented process" (p. 173).

Olson (1968) tested the Maccoby hypothesis that if more attributes are recognized, learning would lead to the construction of the diagonal. The test showed that "overlearning of the perceptual attributes did not lead subjects to the point where they could copy or construct the model, contrary to the Maccoby and Bee proposal" (p. 176).

Although discrimination of attributes is indeed a part of the gap between perceiving and performing a diagonal, the rest of the gap remained unidentified. Olson (1968) utilized a checkerboard and checkers to be placed on the diagonal line. This eliminated any motor skill problems with drawing a diagonal line. Recognizing the pattern of a

diagonal, and the ability to place the checkers in such a pattern was required. The test groups were non-verbally trained, and verbally trained. Verbal explanations were given to the subjects in response to questions about the diagonal. Cards of diagonals were shown to the non-verbally trained group. The verbally trained groups improved their performance in "a highly significant number of cases" (p. 177).

These results suggest that the gap is not filled by more and better perceptions but by the development of a way of "representing" the perceptual event in terms of a system relating the parts to the whole--or the attributes to the concept. This development comes about either by an independent invention on the part of the child or by a suggestion from an adult. (p. 178)

Olson (1968) declared that concepts may not be fully perceived, unless discrimination is both visually and verbally made explicit. Even then, there must be a system for representation, the language by which perceptual understanding is made visible.

For "copying" nature in art as for copying our humble diagonal, one requires not only a perceptual image and a steady hand, but also, and more importantly, some system for representing that event, "in the medium you

are working," as Arnheim would add. Gombrich (1960) and Bruner (1966) think that these "representations" come from the culture, Piaget and Arnheim think they come from internalized actions, but nobody, except the naive realist, thinks that they come from more viewing of the stimulus. (p. 178)

How do students create concepts they have learned? Copying eliminates a need for perceptual understanding, but there is no originality in copying. For knowledge that supports creativity, a system is necessary for translating concepts of visual discrimination and perceptual learning into visual images.

GOALS AND OBJECTIVES

Goal

Based on a review of current literature, this writer suggested a need for an interdisciplinary art program on the elementary level.

Objective

This project developed art lessons pertaining to other subjects. Units related to the areas of science, mathematics, social studies and language arts are designed. According to the Visual and Performing Arts Framework (1989) interdisciplinary teaching strategies reinforce other models of teaching, to improve test scores and regular attendance of students. Ideas for selection of the art lessons came from the author's experience with art materials.

DESIGN OF THE PROJECT

This project contained a variety of art lessons related to the areas of science, mathematics, social studies and language arts. Each lesson has six objectives. The first objective is the chosen subject area. The second objective is the curriculum concept, which is a specific topic. The third objective is the recommended grade levels for the lesson. The fourth objective is the specified objectives for the art lesson. The fifth objective is the preparation and art materials needed for the lesson. The sixth objective explains directions for the lesson.

Means of assessment included a checklist for skills to be developed, possible media to be explored and other goals for an interdisciplinary art program. References on literature for art lessons, films, videos and art materials are included.

IMPLICATIONS FOR EDUCATION

According to the Visual and Performing Arts Framework for California Schools (1989) "experiences encountered through the diversity of the numerous disciplines create interests that begin to build relationships between abstract concepts and that which is real and relevant to students" (p. 123). The role of art in the school system today includes many factors effecting the educational process. Factors such as economical considerations, instructional time, teacher training and motivation. Panel members of the American Council for the Arts (Quinn & Hanks, 1977) suggested, that the arts increase retention in other subjects while absenteeism decreases.

The general failure of the public, policymakers, and educators to see art as important to a balanced curriculum results in large measure from the way art is often taught. Few programs go beyond art activities to incorporate heritage, criticism or aesthetics. Ambivalence towards art spreads because the art curriculum is seen as a "fun" or therapeutic activity. Valuable educational resources should not be wasted.

School changes are long-term processes that need to be developed at the local level and through a school network. Individual schools cannot make changes alone and need the

support of other schools, the school district, community, and other local, state and national resources. The means for securing this support is through collaborative action. Thus, a network of schools is formed committed to the same educational philosophy. This network is supported by a "hub" (a person or team of people) that coordinates its activities, seeks out and secures needed resources and provides technical and consulting assistance. Once a group of schools successfully demonstrates the effectiveness of a new approach, other schools in the system are encouraged to visit to determine whether they wish to follow a similar course. The interdisciplinary schools are now theoretically in a position to help influence the rest of the school system in beneficial ways. Model programs, practices and processes are available for inspection and adaptation in whole or in part (Fowler, 1980).

In-service workshops should be offered either within the schools or in other appropriate locations. Training also should be available to administrators and other art specialists. At the workshops, principals and teachers who are familiar with interdisciplinary learning might convince their peers to the value of the arts. Concrete, specific extended training must be offered, such as lesson planning, use of art materials, "hands-on" experiences and other

practical problems. Observing other classrooms, schools and districts helps to dissolve teachers' fears. Financial support alone will not determine the success or failure of an interdisciplinary program. Implementing a change will be determined by teachers and other staff members.

CONCLUSION

The training of visual perception through an interdisciplinary art program may result in a higher degree of visual literacy for students. Studies have shown that the arts not only are beneficial in themselves, but also cause marked improvement in science, mathematics, social studies, language arts and other academic subjects when included in the curriculum (Williams, 1977). Art, therefore, is viewed as an important part of the child's cultural heritage, and a means by which he can express his expanding view of the world. An interdisciplinary art curriculum is a tool for the child to develop his cognitive, manipulative, critical, aesthetic and creative skills.

The Visual and Performing Arts Framework for California Public Schools (1989) supports interdisciplinary methods for learning. Planning strategies need attention and require new approaches to examine former educational practices. "Teachers need to consider the potential contribution of the arts to each subject as they make their daily instructional plans" (p. 138). In the future, schools can hopefully be a place where social interaction, spontaneous learning and interpretive lessons can be achieved, instead of learning facts and "yes" or "no" answers.

APPENDICES

APPENDIX A
Science Art Lessons

Subject:

Science

Curriculum Concept:

Air pressure

Grades Recommended:

Kindergarten to two

Objectives:

To demonstrate the moving force of air.

To demonstrate that air moves heavier things than itself.

To create a picture using air that makes lines.

Preparation:

Materials: Light color construction paper, approximately 12 inches by 18 inches, thinned tempera paint, drinking straws, tongue depressors, and egg cartons to hold paint.

Procedure:

1. Talk about wind effects.
2. Demonstrate powerful effect the wind produces by blowing paper across the desk.
3. Thin tempera paint with water until it is the consistency of ink.
4. Put a small amount of black paint and a second color into egg cartons or other containers to hold paint.
5. Lay paper vertically.
6. Dip the tongue depressor into black paint and let

drip onto construction paper near the bottom.

7. Place a drinking straw in mouth, so it can be blown through.

8. Place end of straw below puddle of paint, but do not let straw touch the paint. Take a deep breath and blow through straw slowly and continuously. A line of paint will begin to travel up the paper.

9. Aim straw in different directions. When the line gets close to edge, change directions.

10. Drop a small amount of colored paint in several areas of picture.

11. Hold straw right above the spot of paint. Blow straight down with one quick blow. Paint will splatter out in all directions (Peck, 1973).

Subject:

Science

Curriculum Concept:

Nature

Grades Recommended:

Two to four

Objectives:

Explore birds and their habitats.

To learn about relationship between nests and terrains.

To create a bird's nest, birds, their babies and eggs.

Preparation:

Have prepared slides of different kinds of birds. Also have available clay, raveled burlap threads, leaves, grasses, vines and similar materials, wheat paste in a large can, plastic bags with wire twists, tempera paint and brushes.

Procedure:

1. Show students slides of birds in their nests.
2. Explain that nests are homes of birds. Most birds use nests to hatch their eggs and feed their babies.
3. Stimulate class by asking questions. Examples are: What do scientists know about the origins of birds? Discuss dinosaurs, reptiles, fossils and scales. All birds have wings, but do all birds fly? Penguins swim; ostriches run fast.
4. Form a mound of clay the size and shape of planned

nest. Place clay mound inside plastic bag and seal with a wire twist. Clay will later be used to model birds and eggs.

5. Work twigs, grasses and other materials into a couple of handfuls of raveled burlap threads. Immerse this in a creamy mixture of wheat paste until materials are saturated. Squeeze excess paste back into container.

6. Loosen stringy mass. Mold strings over clay mound to achieve the characteristics of a real nest. Allow nest to dry for a day or two, then gently lift it off clay mound.

7. Model birds, eggs, and babies using clay. Allow clay to dry thoroughly before firing in a kiln.

8. Study colors of birds and eggs. Duplicate those colors by mixing paints. Paint the whole bird one color, let it dry completely, then add details.

9. When paint is dry, arrange eggs and birds in nest (Champlin, 1986).

Subject:

Science

Curriculum Concept:

Underwater life

Grades Recommended:

Four to six

Objectives:

To understand plant life in the water.

To use lines to create rhythm and motion.

To create a stitchery underwater applique.

Preparation:

Students need light-colored burlap cloth, approximately 10 inches by 12 inches, different color and weight yarns, scissors, and large plastic tapestry needle.

Procedure:

1. Discuss plant and fish life underneath the water. Mention plankton, a sea plant that grows near the surface.

2. Talk about appliques, which are a procedure that sews thick yarn to a fabric.

3. Using a heavy piece of material or burlap, lay thick yarn on fabric to begin shaping a plant.

4. Thread a large tapestry needle using a thinner yarn. Pull needle from back of the cloth, so the knot is underneath. Put needle over thick yarn and back down underneath making a stitch and holding the thick yarn in place.

5. Move needle a short distance, not more than an inch, and come up, over and down again. Continue procedure to make many stitches.

6. Have students make largest thing first. Organize first thing off to side. Other objects such as shells, coral, sand, rocks, seaweed and water lilies will surround largest plant or object.

7. Students can use the same color yarn for both stitch and picture, or contrasting colors to show stitch.

8. Staple finished pictures on construction paper to display (Peck, 1973).

Subject:

Science

Curriculum Concept:

Transportation

Grades Recommended:

Five and six

Objectives:

To understand that transportation is changing.

To recognize different types of fuels used for transportation in next century.

To create a glue line-relief print, inventing new kinds of transportation with modern fuel and equipment.

Preparation:

Prepare information on solar energy, electric power, gas and hydrogen fuels. Have present cardboards or tagboards, nine by nine inches, pencils, glue, water-soluble black printing ink, rubber brayers, plastic trays or old cafeteria tray, colored construction paper and newspapers.

Procedure:

1. Discuss alternative energy sources for future.

Explain differences between the fuels.

2. Explain that first source of energy came from the sun. Man later learned to produce other energy sources to be manufactured and stored, for transportation and heating buildings.

3. Show film on energy supplies of the future.

4. Have students draw imaginative alternative transportation of future on cardboard or tagboard.
5. Cover desks with newspapers.
6. Using glue squeeze bottle, trail it over drawn lines. Store pictures in a corner of floor or top of desks.
7. When glue is dry, put water-soluble black ink on tray.
8. Roll the rubber brayer on ink and apply to picture.
9. Place a sheet of construction paper over picture and apply pressure with palm of hand. Pull sheet off and repeat process.
10. Store to dry and trim borders of print if necessary (Wachowiak, 1985).

Subject:

Science and Mathematics

Curriculum Concept:

Dinosaurs

Grades Recommended:

Five and six

Objectives:

To study dinosaurs.

To learn about Triceratops.

To understand who to use mathematical tables.

To draw Triceratops.

Preparation:

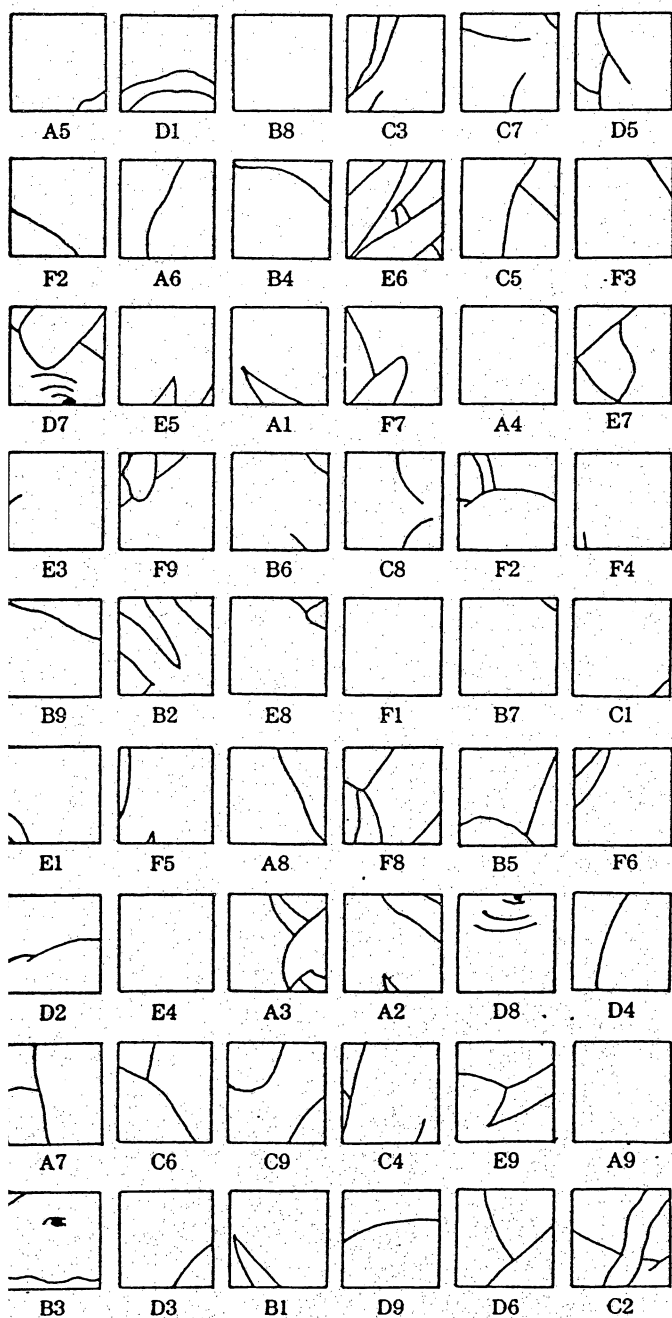
Prepare ahead of time stencils of Triceratops. Have ready pencils, paper with premeasured one-inch squares, scissors, paste and magic markers.

Procedure:

1. Explain to students that a Triceratops is a dinosaur discovered around the year 1889, in Wyoming, by a man named John Bell Hatcher. Triceratops means "three-horned face." Above the dinosaur's eyes were two bony horns, up to four feet long. The horn on its snout was shorter.
2. Explain how dinosaurs ate and survived.
3. Have students copy pictures with pencil, exactly how the lines are illustrated in empty squares.
4. After drawing squares, cut them up for the puzzle.

5. Paste each square, according to the number and letter in the columns, and discover what Triceratops looked like.

6. Fill in picture with magic markers (Pearce, 1989).



	A	B	C	D	E	F
1						
2						
3						
4						
5						
6						
7						
8						
9						

APPENDIX B
Mathematics Art Lessons

Subject:

Mathematics

Curriculum Concept:

Spatial Relationships

Grades Recommended:

Kindergarten to three

Objectives:

To understand spatial relationships related to numbers.

To differentiate between visual images.

To create drawings showing spatial relationships.

Preparation:

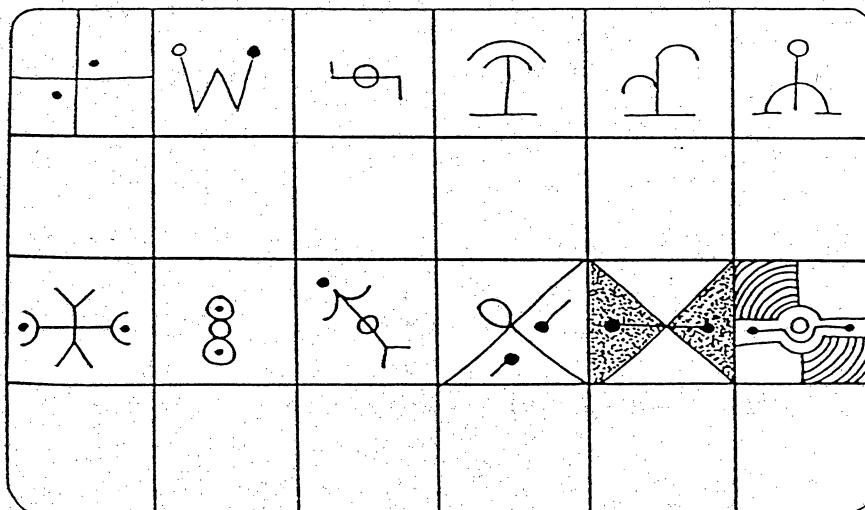
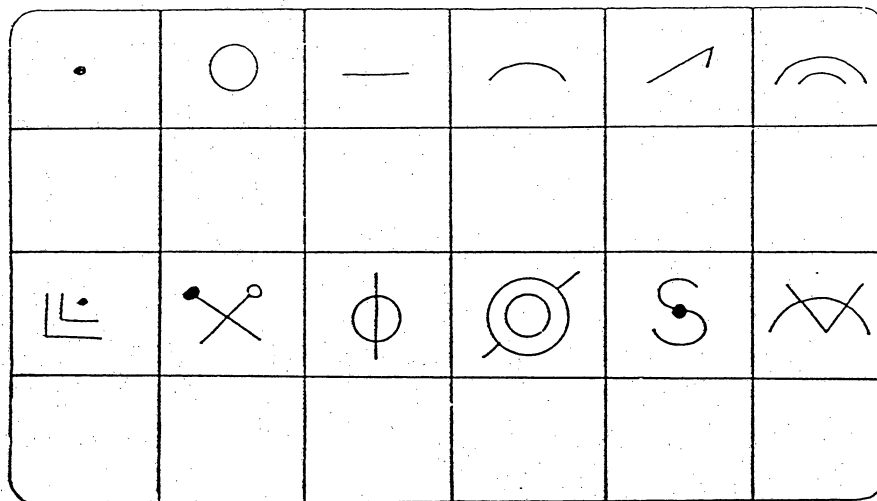
Draw ahead a chart combining five elements -- dot, circle, straight, curve and angle lines. Have at least six different examples, also paper and pencils.

Procedure:

1. Discuss idea that numbers are combinations of things.
2. Discuss combination of dot, circle, straight, curve and angle lines. New combinations and spatial relationships are formed.
3. Show class chart of five shapes.
4. Show shape combinations, and ask class to copy the arrangements.
5. Draw first group of shapes on paper.

6. Draw second combination of shapes and continue until finished.

7. Analyze drawings not in terms of exact duplication, but for spatial patterns. (Brookes, 1986).



Subject:

Mathematics

Curriculum Concept:

Positive and Negative Shapes

Grades Recommended:

Two to six

Objectives:

To introduce positive and negative forms of a stencil.

To understand shapes that chalk can create with stencils.

Preparation:

Have available newspaper, chalk, facial tissue, scissors, smocks, fixative or hair spray, white 12 inches by 18 inches construction paper, and 9 inches by 12 inches white drawing paper.

Procedure:

1. Fold a piece of white drawing paper, 9 inches by 12 inches, into quarters. On the long folded edge, cut a long narrow point (be sure the student cuts from the folded edges toward the center fold). On the shorter folded edge, cut another narrow point, so the two cuts meet near the folded corner. Begin each cut at the edge, about 2 inches away from the open end. Open out paper of the four-pointed star. Take paper out from the middle, and the student has created

two stars.

2. Discuss that a stencil is a shape that can be reproduced many times by rubbing color through it or around it.

3. The solid star is called a positive stencil, and the one with a hole in it is called a negative stencil.

4. Have students wear smocks to protect their clothing.

5. Lay the negative stencil on a piece of newspaper, and draw a heavy chalk line around the edges of the star shape. Lay the stencil on a piece of 12 inches by 18 inches white construction paper. Wrap a piece of facial tissue around index finger, and rub chalk from the stencil onto white paper (inside center of stencil). Hold the stencil firmly in place. Lift off the stencil carefully to see a chalk reproduction of the stencil.

6. Draw a chalk line near the edge of the positive stencil. Again, lay it on the white paper, wrap the index finger with a facial tissue, and rub outward so the chalk is pushed from the stencil onto the white paper. Remove the stencil carefully. A white paper star is surrounded by color.

7. Repeat the exercise several times to complete the picture.

8. Spray picture lightly with fixative or hair spray to prevent smearing (Peck, 1973).

Subject:

Mathematics

Curriculum Concept:

Geometric solid forms

Grades Recommended:

Three to six

Objectives:

To study geometrical forms in correspondence to their three-dimensional shape.

To form geometrical patterns.

Preparation:

Materials needed are newsprint paper, railroad board or tagboard, pencils, rulers, scissors or mat knives, white glue, rubberbands or string, tape, nylon thread, and paper clips.

Procedure:

1. To make a pattern for a cube, draw a square and add identical squares to all four sides of the original square. Add a sixth square to the end of one of the additions. (Be sure that all drawings and measurements are accurate.)
2. Determine which sides of the squares meet when the cube is folded together.
3. Draw a long tab along the edge of one of these

sides parallel to the edge and $\frac{3}{8}$ to $\frac{1}{2}$ inches wide.

4. Draw diagonal lines across the corners of the tabs to eliminate square ends and to prevent bulging when the tabs are glued to the inside of the finished cube.

5. Cut out the pattern and fold it together to check for accuracy.

6. Transfer the pattern to the tagboard or railroad board.

7. Cut on the cutting lines carefully.

8. Score all fold lines on the outside surface of the form.

9. Bend on all scored lines and fold the sides together, leaving one end open.

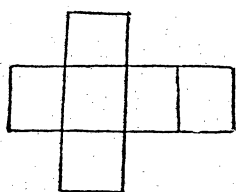
10. Tape the tabs to keep from slipping while the glue dries.

11. Glue together, except for open end, and tape to keep tabs from slipping.

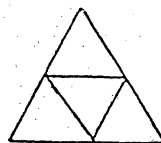
12. Glue the tab on the open end to complete the cube, and hold it in place with a rubberband or string, until the glue dries.

13. Thread nylon through one corner of the cube, and tie it to the cube.

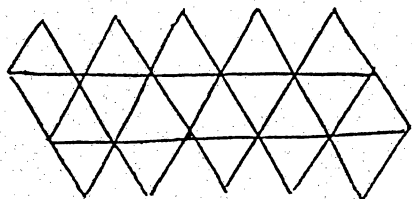
14. Tie a paper clip onto the opposite end of the thread, and hang it up in the classroom (Penn, 1975).



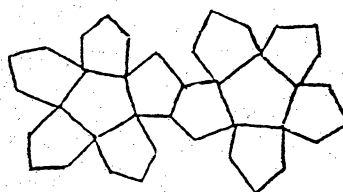
Cube



Three-sided Pyramid



Icosahedron



Dodecahedron

Subject:

Mathematics

Curriculum Concept:

Shapes

Grades Recommended:

Four to six

Objectives:

To draw different shapes and divide them up into designs.

To understand materials used in a design will effect the product.

To create a picture that splits-up a basic shape into pieces, while original shape is retained.

Preparation:

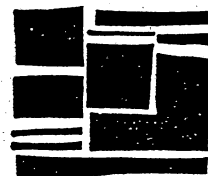
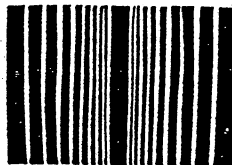
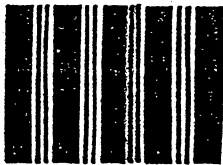
Have available white and black construction paper, scissors, rulers, pencils and glue.

Procedure:

1. Draw a large shape, such as a rectangle, circle, triangle or square on black construction paper.
2. Divide shape into pieces by cutting a design from the edge, through the middle, to the other side.
3. Other ideas are to create a balanced rhythm of equal parts, intensify movement towards middle, form movement in one direction, draw movement through broken

lines, form a division through one horizontal and several diagonal cuts, or change space using horizontal and vertical cuts.

4. When a satisfactory solution is found, pieces are pasted down on white construction paper. Black construction paper on white give illusion of dept, similar to shadows (Rottger, 1961).



Subject:

Mathematics

Curriculum Concept:

Symmetry

Grades Recommended:

Five and six

Objectives:

To develop and understanding of patterns in balance to the whole.

To understand how patterns contribute to symmetrical balance.

To create a picture of balanced designs.

Preparation:

Have available plain drawing paper, lined or graph paper. Also pencils, felt-tip markers or colored pencils, ceramic or tile shapes obtained from floor samples, such as rectangles, triangles, squares and hexagons.

Procedure:

1. Develop a pattern in relation to numbers.
2. An example is a design labeling the first square #1, the second square #2, the third square #3 and so on.
3. Color in the shapes with different colors, and create a pattern with the colors, repeating many times.

4. For variation, use rectangles, triangles and hexagons with different colors (Barnes, 1987).

APPENDIX C

Social Studies Art Lessons

Subject:

History

Curriculum Concept:

Ancient civilization of Egypt, Greece and Rome.

Grades Recommended:

Kindergarten to six

Objectives:

To understand the ancient craft of mosaics used for decorating floors, ceilings and walls in Egypt, Greece and Rome.

To create mosaics made out of paper.

Preparation:

Construction paper -- various colors, 12 inches by 18 inches black paper, scissors, chalk, paste and facial tissues are needed for the project.

Procedure:

1. Discuss that mosaics were a craft from ancient Egypt, Greece and Rome. Show pictures of mosaics if possible.

2. Discuss that a mosaic is a picture of design made up of small, separate bits of materials, such as wood, ivory, glass, tile, marble or other stones. These materials are set into a grout of fine cement or mortar.

3. Pre-cut strips of assorted colors of construction

paper about 1/2 inches in width.

4. With chalk, students make a simple contour (or outline) drawing on black paper. Nature is an excellent source of ideas because leaves, fish, birds, butterflies and so on, are suited to mosaic pictures. Make the drawing large and simple. If mistakes occur, rub out the chalk with a piece of tissue.

5. Select several colors of paper strips and cut them into rectangles approximately 1/2 by 3/4 inches.

6. Carefully spread paste within an area of the contour drawing. Press the cut paper rectangles onto the paste, making sure to leave little space between each piece.

7. Continue this procedure until the entire mosaic is complete. It is often easier to work from the middle towards the outline of the drawing. As the edge is reached, it may be necessary to cut the rectangles smaller, so they fit (Klonsky, 1975).

Subject:

Social Studies

Curriculum Concept:

Towns

Grades Recommended:

One to three

Objectives:

To understand towns are made by people, for people.

To understand man can change his world.

To create a miniature town.

Preparation:

Students need cardboard or plastic tubes, small boxes, bottle tops, paper or Styrofoam cups, small plastic bottles, small milk cartons, an assortment of twigs, straws, pipe cleaners and thin sticks. Also, colored construction paper, paints, brushes, liquid soap and clay.

Procedure:

1. Explain that people who plan buildings are called architects. Architects make models before planning a real building.

2. Discuss various buildings in a town, such as factories, post offices, supermarkets, gas stations, churches, temples, houses, apartments and office buildings.

3. Have students experiment with different

combinations and arrangements of materials to create buildings to form a town.

4. Join flat surfaces with glue and curved forms with tape.

5. Paint plastic or waxy models by adding a few drops of undiluted liquid soap to paint.

6. Cut strips of construction paper into shapes to suggest windows and doors. Write name of building on model.

7. Arrange models in rows to suggest streets. Small ball of clay can serve as base for people (paper cut outs), trees (twigs), signs or telephone poles (straws). Model cars can be made from clay (Chapman, 1985).

Subject:

Social Studies

Curriculum Concept:

Food from the ocean

Grades Recommended:

Two and three

Objectives:

To understand that fish are a source of food from the ocean.

To understand that fish are caught by fishermen at seaports.

To create fish banners that symbolize Japanese traditions.

Preparation:

Each student needs a large piece of craft paper, about 36 inches wide. Craft paper comes in large rolls of many colors. Students also need pencils, scissors, stapler, paints, string and newspapers.

Procedure:

1. Explain to students that fish are a main source of food from the ocean. Many fishermen deliver their catch of fish each day to local markets to sell.

2. Explain to students that fish symbolize masculinity and power in the Japanese culture. When a male is born, a

fish banner is bought to announce his birth and flown every year on May 5th. The national holiday is called Children's Day.

3. Fold a large piece of craft paper in half. Draw the outline of a fish shape on one side. Keeping the paper doubled, cut out the fish.

4. Staple the sides together. Leave one section open so the fish can later be stuffed with newspaper.

5. Paint the fish scales using a variety of colors and patterns, such as stripes, dots or shapes. When one side is painted and dry, turn the fish over and paint the other side.

6. Crumble sheets of newspaper and stuff the fish. Staple the opening together when done.

7. Attach string to fish and hang (Schuman, 1981).

Subject:

Social Studies

Curriculum Concept:

Lighting before the bulb

Grades Recommended:

Three to six

Objectives:

To distinguish the characteristics of a golden era past.

To understand how people survived before electricity.

To create a candleholder.

Preparation:

Prepare ahead of time by saving small jars of various sizes, including baby food jars, jelly jars or olive jars.

Also have available tape, scissors, paint, shellac and decorative materials such as felt, sequins and braids.

Laminating materials include newspapers, papertowels, wheat past, stirring sticks and coffee cans or covered jars.

Procedure:

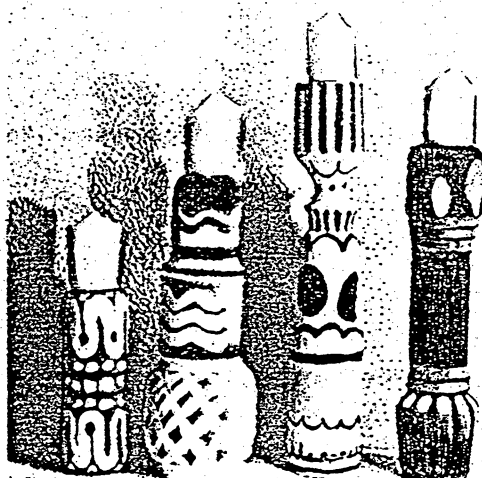
1. Stack and tape a series of small bottles together to create a candleholder.

2. Cover with two layers of newspaper strips dipped in wheat paste and one of paper toweling.

3. When the candleholder is dry, paint designs or

patterns on surface and cover with shellac.

4. For more elaborate decorations, glue braids, sequins or felt on surface (Penn, 1975).



Subject:

History

Curriculum Concept:

Egyptian history

Grades Recommended:

Five and six

Objectives:

To understand ancient Egyptian history.

To understand historical aspects of Egyptian culture.

To create hieroglyphic relief sculptures and understand their meaning.

Preparation:

Have ready plaster of Paris, Styrofoam meat trays or small shallow boxes, petroleum jelly, pencils and linoleum cutting tools.

Procedure:

1. Explain that in the twenty-fifth century B.C., Egyptian hieroglyphs were carved in relief on ancient tombs. Egyptians desired to preserve everything for afterlife.

2. Portrait sculptures of kings and persons of high rank were made so spirits would have a place to go, if they could not inhabit their own body.

3. In ancient Egypt, the average person did not read or write. Scribes, trained for many years, did the writing

and recording of hieroglyphs.

4. Have containers set out on newspaper, before mixing plaster of Paris.

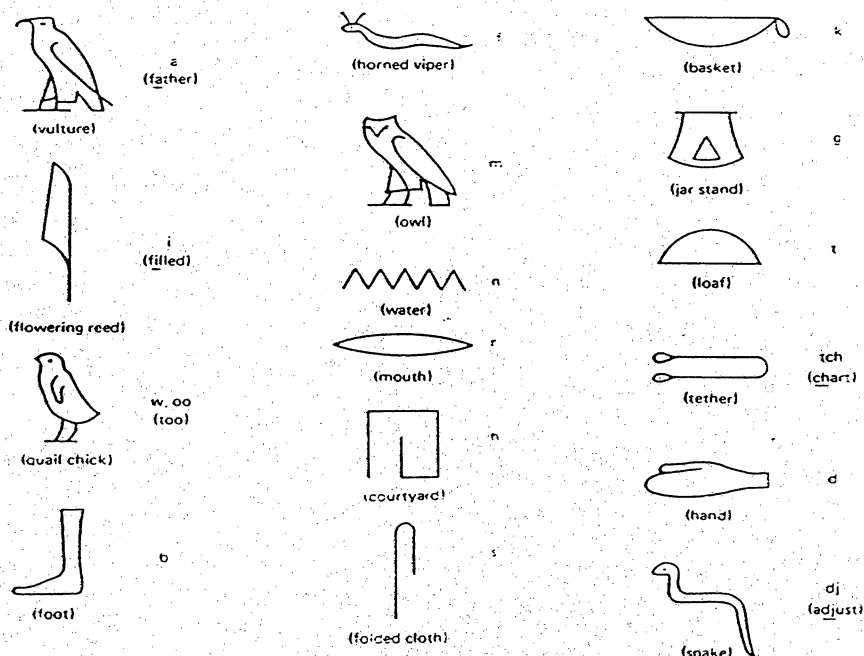
5. Mix plaster and pour it into Styrofoam meat trays. Other containers will need a coat of petroleum jelly, so plaster can be removed when dry. Pour in about 1/2 inch to create a slab.

6. Set it to dry overnight, then remove container.

7. Draw hieroglyphs on the plaster with pencil.

8. Cut plaster with linoleum cutting tool. The hand holding plaster should be behind the one using cutting tool.

9. Students can combine hieroglyphs to make their own name (Schuman, 1981).



APPENDIX D
Language Arts Lessons

Subject:

Language Arts

Curriculum Concept:

Bookmarks

Grades Recommended:

One and two

Objectives:

To understand that felt bookmarks can be made to represent a story.

To understand a story is clarified by pictures and words.

To create a bookmark representing a story told on film.

Preparation:

Prepare ahead a film selection for children. Also other material needed are scraps of felt, glue, pencils, scissors, sequins and pre-cut felt, 1 inch wide and 6 to 9 inches long.

Procedure:

1. Show film that was selected earlier.
2. Discuss main characters and ideas. Illustrate on blackboard a character's feature or main idea. Keep drawings simple.
3. Draw picture on felt and cut out. Glue felt on top of pre-cut felt strip.

4. Continue to decorate bookmark with ideas related to film, using felt and sequins (Goldman, 1971).

Subject:

Language Arts

Curriculum Concept:

Capital letters

Grades Recommended:

Two and three

Objectives:

To understand that stamps are created by artists, are designed to be functional and are sometimes beautiful.

To understand that creating a stamp correlates design and lettering.

To create a stamp using appropriate capital letters.

Preparation:

Prepare a slide presentation of stamps from around the world. Show students real stamps too. Have available paper, 6 inches by 9 inches, pencils, paint, brushes and rulers.

Procedure:

1. Present slides of stamps to class.
2. Show students real stamps. Discuss that stamps are created for a purpose.
3. Explain that stamps are printed in factories on big machines called printing presses, after artist designs first one.

4. Compare and contrast stamp designs and letters.

Explain that letters and words are an important part of the stamp's design. They may be placed at top, middle or bottom of stamp. Letters can be changed to look like flowers, clown faces, shapes and so on. They must be easy to see and read.

5. Design a stamp, planning shapes of letters, pictures and borders with pencils and ruler.

6. Plan letters by deciding where capital letters belong.

7. Paint the stamp and words (Chapman, 1985).

Subject:

Language Arts

Curriculum Concept:

Usage of riddles

Grades Recommended:

Three to five

Objectives:

To understand how to structure a riddle.

To create a puzzle that separates into two pieces. A drawing of the riddle on one side and the riddle on the other side.

Preparation:

Have ready pencils, crayons and paper or 5 by 8 inch index cards--one for each student.

Procedure:

1. On one half of an index card or paper, write three or four lines to a riddle.
2. On the other half, finish the project by drawing the answer to the riddle.
3. Cut the index card or paper down the center to form an indentation that fits into each other, like a real puzzle piece.
4. Share your riddles with other classmates.
5. An example is: I smell like oil. I smell like

gasoline. I have a motor. I am longer than a snake. What
am I: The answer is a train.

Subject:

Language Arts

Curriculum Concept:

Quotation marks

Grades Recommended:

Four and five

Objectives:

To observe the characteristics of a comic strip.

To understand the use of quotation marks in sentences.

To draw cartoon strips and use proper sentence structure.

Preparation:

Students need long strips of paper, pencils and rulers.

Procedure:

1. Divide strips of paper with ruler into several squares.
2. Draw a comic strip story on the paper.
3. Write appropriate words in the boxes where the drawings are. Use quotation marks around direct sentences the characters spoke.
4. Draw balloon forms around the sentences to show which character has spoken.

Subject:

Language Arts

Curriculum Concept:

Adventure stories

Grades Recommended:

Three to six

Objectives:

To write a story about a fantastic vehicle and it's adventure.

To describe vehicle and how it is made.

To create a wooden vehicle that imaginatively travels in outer space.

To understand that traveling in space for more people might happen in the next few decades.

Preparation:

Gather wooden scraps from local lumber yard. Also have available paper, pencils, glue, paint, brushers, cellophane, yarn, felt and pieces of wire to hang vehicles.

Procedure:

1. Discuss traveling and how space travel has changed in last century.
2. Explain that space travel will change in future.
3. Draw a picture of a space vehicle.
4. Create a flying machine that travels to stars out

of wooden scraps and miscellaneous materials.

5. Using finished drawings and space vehicle, write a story about adventures in space travel.

6. In first paragraph describe vehicle; it's looks, colors, what the parts do, how it moves.

7. In next paragraph involve vehicle in an adventure. Describe where it goes, what it does, who is inside (Olson, Prager & Henry, 1986).

APPENDIX E

Means of Assessment

According to the Visual and Performing Arts Framework (1989), evaluating student artworks criteria is based on several objectives. Perception in form, color and texture is necessary to understand visual and tactile structures. Creative expression is essential for developing forms that communicate feelings, ideas, images and symbols to represent artistic skills. Aesthetic judgement is needed to identify personal tastes and perception of judgements according to form, content, technique and purpose in art.

Teaching strategies will include means of assessment combining observation, verbal assessments, checklists and skill development reviews. Criteria for instructional materials in art include films, videotapes and filmstrips. Students will participate using different means of learning styles, interests, aptitudes and achievements.

Checklist for Kindergarten to First Grade

1. Skills to be developed

A. Sensory and perceptual skills

- | | |
|--------------|----------------|
| (a) Seeing | (f) Thinking |
| (b) Hearing | (g) Perceiving |
| (c) Touching | (h) Combining |
| (d) Smelling | (i) Mixing |
| (e) Moving | (j) Relating |

B. Manipulative Skills

- | | |
|-------------|--------------------------|
| (a) Cutting | (e) Painting |
| (b) Pasting | (f) Printing or stamping |
| (c) Folding | (g) Molding or pinching |
| (d) Drawing | |

C. Working and learning skills

- | | |
|---------------------------|-------------------------------|
| (a) Listening | (e) Handling basic tools |
| (b) Following directions | (f) Cleaning up own work area |
| (c) Working independently | |
| (d) Working with others | |

2. Possible media to be introduced

A. Two-dimensional

- | | |
|---|---|
| (a) Crayon | (g) Monoprints |
| (b) Tempera | (h) Gadget or natural object printing |
| (c) Torn and cut paper collage | (i) Watercolor (sparingly for mixing) or payons (water color in stick form) |
| (d) Scrap collage (cloth, cotton and so on) | |
| (e) Multi-media | |
| (f) Chalk | |

B. Three-dimensional

- | | |
|-------------------------|------------------------------------|
| (a) Clay (pinch) | (e) Pipe cleaners |
| (b) Plasticene clay | (f) Box or egg carton construction |
| (c) Paper sculpture | |
| (d) Salt (Baker's) clay | (g) Plaster casting |

3. Possible goals for Kindergarten to First Grade interdisciplinary art program

- A. Recognition and creative use of shape -- geometric and organic.
- B. Recognition and creative use of line -- thick, thin, straight, curvy and so on.
- C. Recognition and use of basic colors -- experimentation with mixing primaries.
- D. Recognition and creative use of texture -- smooth, rough, soft, hard and so on.
- E. Recognition and creative use of three-dimensional forms -- cone, sphere, cube, cylinder and so on.
- F. Awareness and use of size relationships -- small, medium, large.
- G. Awareness and use of the whole paper in planning a picture.
- H. Awareness and use of light and dark.
- I. Awareness and use of repetition to create a pattern.
- J. Awareness and use of imaginative, creative thought -- fluency, flexibility and originality of ideas

Checklist for Second to Third Grade

1. Skills to be developed

A. Sensory and perceptual

- | | | |
|-------------|----------------|---------------|
| (a) Seeing | (f) Thinking | (k) Relating |
| (b) Hearing | (g) Perceiving | (l) Analyzing |

- (c) Touching (h) Conceptualizing (m) Organizing
- (d) Smelling (i) Discriminating (n) Combining
- (e) Moving (j) Mixing (o) Evaluating
- (p) Designing

B. Manipulative

- (a) Cutting (f) Printing (k) Stitching
- (b) Pasting (g) Molding or (l) Weaving
- (c) Folding pinching (m) Sculpting
- (d) Drawing (h) Pulling (i) Pushing
- (e) Painting (j) Constructing

C. Working and learning skills

- (a) Listening
- (b) Following directions -- oral, visual, written
- (c) Working independently
- (d) Working with others
- (e) Handling basic tools safely
- (f) Maintaining and organizing art room materials
- (g) Cleaning up work area and supply areas
- (h) Solving problems

2. Possible media to be explored

A. Two-dimensional

- (a) Crayon (h) Collage (paper, scrap)
- (b) Fiber-tipped pens
- (c) Chalk (i) Stenciling
- (d) Tempera (j) Paper weaving
- (e) Watercolor (k) Mosaics (paper)

- | | |
|-----------------------|-------------------------|
| (f) Multi-media | (1) Transparencies (wax |
| (g) Printing (potato, | paper, tissue, |
| gadget, cardboard, | cellophane, so on) |
| Styrofoam, so on) | |

B. Three-dimensional

- | | |
|------------------------------------|--|
| (a) Clay--pinch, slab, coil | (f) Jewelry |
| (b) Paper sculpture | (g) Wire, pipe cleaner, straw or stick |
| (c) Paper mache | sculpture |
| (d) Plaster of Paris | (h) Relief sculpture |
| (e) Box or egg carton construction | (i) Mobiles/stables |

3. Possible goals for the Second and Third Grade interdisciplinary art program

A. Recognition and use of the elements of design

- (a) Shape -- geometric, organic, positive and negative
- (b) Line -- various kinds, contour, expression use for texture
- (c) Color -- mixing of primaries, expressive use
- (d) Texture real and illusionary
- (e) Light and dark
- (f) Three-dimensional form as contrasted to two-dimensional

- B. Development in the following design areas
 - (a) Unity or simplicity
 - (b) Variety
 - (c) Balance
 - (d) Repetition for rhythmical pattern
 - (e) Flexibility in space relationships -- for example consideration of background and foreground, varying base line for different effect
 - (f) Emphasis or importance
 - (g) Story-telling through pictures -- sequencing of events
- C. Use of creative thinking or problem-solving -- fluency, flexibility and originality of ideas, elaboration of details

Checklist for Fourth to Sixth Grade

1. Skills to be developed

A. Sensory and perceptual skills

- | | | |
|---------------------------|---------------------|-----------------|
| (a) Seeing | (g) Perceiving | (m) Comparing |
| (b) Hearing | (h) Conceptualizing | (n) Contrasting |
| (c) Touching | (i) Combining | (o) Organizing |
| (d) Smelling | (j) Discriminating | (p) Mixing |
| (e) Moving | (k) Relating | (q) Evaluating |
| (f) Thinking | (l) Analyzing | (r) Designing |
| (s) Planning Compositions | | |

B. Manipulative skills

- | | | |
|----------------|-----------------|-----------------|
| (a) Cutting | (e) Printing | (j) Casting |
| (b) Pasting | (f) Molding or | (k) Tooling |
| and gluing | pinching | (l) Stitching |
| (c) Folding | (g) Pulling | (m) Weaving |
| (d) Drawing in | (h) Pushing | (n) Building or |
| various | (i) Modeling or | Constructing |
| ways with | sculpting | (o) Carving |
| various tools | | |

C. Working or learning skills

- (a) Listening
- (b) Following directions -- oral, visual, written
- (c) Working independently
- (d) Group cooperation -- brainstorming, decision making, division of responsibility and so on
- (e) Handling a variety of tools safely
- (f) Maintaining and organizing art room materials
- (g) Adapting materials to suit own needs (for example, thinking and mixing own paints)
- (h) Cleaning up own work area and supply areas
- (i) Setting up and solving problems
- (j) Selecting media and methods suitable for a particular problem
- (k) Establishing criteria for evaluation

2. Possible media to be introduced and/or explored

A. Two-dimensional

- | | | |
|--------------------|-----------------|----------------|
| (a) Crayon | (h) Tempera | (o) Stenciling |
| (b) Pencil | (i) Watercolor | (p) Tie-dying |
| (c) Fiber- | (j) Fingerpaint | (q) Batik (or |
| tipped pens | (k) Acrylics | adaptation |
| (d) Chalk or | (l) Multi-media | (r) Photo |
| pastels | (m) Block | montage |
| (e) Charcoal | printing | (s) Stitchery |
| (f) Payons | (n) Collage | (t) Yarn |
| (g) Oil crayons or | | weaving |
| (h) cray-pas | | (u) Macrame |

B. Three-dimensional

- | | |
|--------------------------|-------------------------|
| (a) Clay--pinch, slab, | (g) Jewelry--ceramic, |
| coil glazed, slip- | wire, enamels, so on |
| decorated | (h) Wire, pipe cleaner, |
| (b) Paper sculpture | straw, or stick |
| (c) Paper mache | sculpture |
| (d) Puppetry | (i) Copper or aluminum |
| (e) Plaster sand casting | tooling |
| or Paris craft | (j) Mobiles or stabiles |
| (f) Construction with | (k) Mosaics--seed, rice |
| scrap wood, cardboard | and so on |
| or what-have-you | |

3. Possible goals for the Fourth, Fifth and Sixth Grade Interdisciplinary art program
 - A. Recognition and creative use of the elements of design
 - (a) Shape -- geometric, organic or free form, negative, positive, relationship in a given composition
 - (b) Line -- for contour, gesture, movement texture, expression
 - (c) Color -- relationship of primaries, secondaries, complementaries, mixing of shades and tints, expressive and selective use
 - (d) Texture -- real and illusionary, expressive use of
 - (e) Light and dark -- for contrast, illusion of depth
 - (f) Three-dimensional form
 - B. Recognition and use of the principles of design in planning compositions
 - (a) Unity or simplicity
 - (b) Variety
 - (c) Balance
 - (d) Repetition for rhythmical pattern
 - (e) Space relationships -- Overlapping, varying size to express distance, horizon line

- (f) Size relationships -- proportion of parts to a whole
 - (g) Emphasis or importance
 - (h) Movement
- C. Use of creative thinking or problem solving alone and with a group
- (a) Openness to experience and new ideas
 - (b) Identifying problems
 - (c) Fluency, flexibility and originality of ideas
 - (d) Experimenting, testing various methods and media
 - (e) Evaluating and, if necessary, redefining problems

APPENDIX F**Related Literature**

Baker, D. (Ed.). School Arts, The Art Education Magazine for Teachers. Worcester, Massachusetts: Davis Publications, Incorporated.

Featured are structured art units correlating thematic lessons. Art materials, interviews and upcoming events are also presented.

Brooks, M. (1986). Drawing with Children. New York: St. Martin's Press.

This book stimulates the creative capacity of children by using a field-tested practical method of learning. Students learn to recognize the five basic shapes that combine to form all objects and apply them to drawing.

Caket, C. (1986). Model a Monster. New York: Blandford Press.

This book is full of many ways to make dinosaurs from cardboard to sand. Techniques that are applicable to any three-dimensional activity.

Chapman, L. (1985). Discover Art, Grade Series One to Six, Teachers Edition. Worcester, Massachusetts: Davis Publications, Incorporated.

The series is designed for use by classroom teachers and art specialists who wish to offer an art program that develops perceptual awareness, provides

for creative art activity, includes art appreciation, and builds awareness in art in everyday life.

Cornia, I. (1986). Art is Elementary. Layton, Utah: Gibbs M. Smith, Incorporated.

Designed as an art program for teaching pre-school through grade six, for students to acquire skills in visual awareness and visual thinking. Various art techniques and concepts accompany the lessons.

Edwards, B. (1986). Drawing on the Artist Within. New York: Simon and Schuster, Incorporated.

The book unleashes brain power for creative problem solving. Students become aware of new perspectives through drawing.

Hirschman, P. (1990). Art Parts. San Bernardino, California: San Bernardino County Superintendent of Schools.

A monthly newsletter sent to the home or classroom. Short, concise art lessons for all seasons and holidays.

Romberg, J. (1975). Let's Discover Art. New York: The Center for Applied Research in Education, Incorporated.

Discover the simplicity of paper craft, weaving, paints, paper mache, printing and sculpture. Through the series explore art lessons and find out they are

comparatively easy to teach.

Wachowiak, F. (1986). Emphasis Art, A Qualitative Art Program for Elementary and Middle School. New York: Harper and Row.

An excellent reference book for cognitive and affective growth. Hundreds of ideas and pictures to correlate children's art with other subjects. Also section on handicapped students.

Wankelman, W. (1985). A Handbook of Arts and Crafts. Dubuque, Iowa: Brown Company Publishers.

The book offers practical help in the development of classroom problems of a creative nature. It also satisfies all art questions, such as "how to" and "why."

Watertower, B. (1974). Paper, Crayons, Paint and Crafts. Ontario, Canada: Regensteiner Publishing Enterprises, Incorporated.

An activities book for all children. Easy to follow instructions, using easy to find materials.

Other Art Education Book and Magazine Publishers:

Art Education, Inc.

28 East Erie Street

Blauvelt, New York 10913

Davis Publications, Inc.

50 Portland Street

Worcester, Massachusetts 01608

National Art Education Association

(N.A.E.A.)

1916 Association Drive

Reston, Virginia 22091

Prentice Hall, Inc.

Englewood Cliffs, New Jersey 07632

The Unicorn Craft Books and Videotapes

1304 Scott Street

Petaluma, California 94954

APPENDIX G

Related Films and Videos

Art and Perception: Learning to See

Arts and Crafts of West Africa

Children Are Creative (Children pursuing art activities)

Creating with Clay

Creating with Paper

Crayon Resist

Discovering Art Series: Color, Composition, Creative

Pattern, Dark and Light, Form in Art, Harmony in Art,

Ideas for Art, Line Perspective, Texture

Farm Babies and Their Mothers

Insects and Painting (Children using natural motifs as
inspiration for art)

Introduction to Sculpture Methods

Introduction to Contour Drawing

Introduction to Drawing Materials

Introduction to Gesture Drawing

Look at That! (Basic art elements seen through the eyes of
two young children)

Make a Mobile

Masks

Weeds and Mosaics (Collage technique using natural
substances)

Zoo Families

Distribution for above films:

BFA Educational Media
11559 Santa Monica Boulevard
Los Angeles, California 90025

Other Color Slide and Filmstrip Sources:

Art Council Aids
Box 641
Beverly Hills, California 90213

Dr. Block Color Reproductions
1309 North Genesee Avenue
Los Angeles, California 90046

Warner Educational Productions
Box 8791
Fountain Valley, California 92728

Art Videos: Resource Center, Riverside County

Superintendent of Schools

Alive with the Arts no. 20573
Arts and Self Expression no 20582
Art and Social Messages no 20583
Creating Visual Arts no. 20575
Elements of Visual Arts no. 20574

APPENDIX H

Art Material Suppliers

Art Supply Distributors

Creative Crafts International

Essex Industrial Park

Centerbrook, Connecticut 06409

Nasco

901 Janesville Avenue

Ft. Atkinson, Wisconsin 53538

Pyramid Artists Materials

Box 877

Urbana, Illinois 61801

S & S Arts and Crafts

Dept. SA

Norwich Avenue

Colchester, Connecticut 06415

Sax Arts & Crafts

Box 2002

Milwaukee, Wisconsin

- Anderson, K. (1990. February). Interdisciplinary strategies. School Arts, p. 4.
- Armstrong, J. & Kristina L. (1990, February). An integrated learning experience. School Arts, 38-39.
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