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Color: Its Basis, Functions, and Importance in the Teaching of Art for Grades 7 & 8

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CHAPTER I

STATEMENT OF PROBLEM

Art should be an integral part of any school curriculum. It should be considered an important force in developing the creative thinking ability that is so necessary for progress in our society. Art history shows that those artists who are recognized as being great were those creative enough to dare to make changes in the accepted art of their times. Dr. Viktor Lowenfeld, a researcher in education, states, "The development of artistic ability and the development of creative thinking should be thought of as one and the same."[1]

The philosophy of art curricula is that art is a vital part of the curriculum because children need a variety of ways for expressing their ideas and feelings. All children are creative and can express themselves through art media just as they express themselves through words.

Helen Merritt, in her book on children's art, says:

> "Art has a vital part in man's life, and its role begins as soon as the toddler is able to scribble with a crayon. It can be as close to daily life as the arrangement of buttons on one's shirt, but it is also as profound as man's most perceptive statement on the nature of reality. To develop

> the capacity to respond to art is to enrich the human capacity to feel. All of this can make human beings more distinctly human.[2]

The artistic expression of each child has worth, especially if it represents the best of which the child is capable. This is why he needs instruction in the principles of art and how to use the different media. This knowledge utilizes the student's growing awareness of himself, his peers, his family, his community, and his world.

Merritt further states:

> The study of art can begin on a child's level with the very young and continue throughout the school years. It is even possible that an emphasis on art as art can indirectly nourish development of creativity by relieving some of children's self-consciousness and by providing a richer store of visual awareness.[3]

While art is for all, it is an important need of children and those experiencing adolescence. During all maturation periods, there is a special need for those activities and experiences which provide for development of emotional balance, self-expression, and the consequent security which should be an outcome. The characteristics of adolescence, therefore, should be understood by all art teachers concerned with secondary education and so becomes an integral part of art curricula.

In art everything is interrelated and has to be taught as a unit or a whole. The student will not realize

his potential in the successful use of color until he has been taught to think creatively, to understand each element of design (line, value, shape, color, and texture), and how to use the principles of design (balance, unity, contrast, movement, proportion, dominance, economy, and space). All of these things are used in every art medium and should be constantly brought to the attention of the student in the lessons that are presented. Being able to understand these concepts and to internalize them will help the student to solve problems and make his art work structurally sound.

Most of the elements and principles of design are taught through the use and experimentation with color. It is important to teach color. The student must be taught how to think in terms of light and dark. They need to learn to see all the brilliant shades, tones, and hues that are in nature and to imagine color that really isn't there. The use of color can be very exciting if they learn to experiment with it and use it freely. Once they are taught the basic principles and they build their knowledge of the properties of color they will become more involved with their world and find new appreciation in what they see. When they look at the works of the masters they will know and appreciate the work and the imagination that was put into the finished product. They

will be looking at more than just a picture, but feelings and ideas the artist was trying to portray.

In most curriculum guides little or no effort has been made to make lists of suggested assignments for the teaching of 'color'.

In the curriculum guide for the schools of Missouri, methods and materials are suggested for about thirty media from basketry to woodcarving but color is not dealt with as a subject matter. It is suggested that color need not be taught as a separate problem, but should be related to all art problems.[4] That is well and good but this author believes that color should not be catagorized as just one of the elements of design but should be taught as it has extraordinary effect on other elements of design. Since color has such a large part in today's living it should be given much consideration in the art curriculum and there should be lesson plans designed to teach the many properties of color.

The "Virginia Curriculum Guide" suggests activities for meeting social, personal, and emotional problems and needs (7th and 8th grades). One activity on "The study of color which interprets moods" was suggested.[5]

The "Clayton" guide has more on color but presents no definite plans for teaching it. They suggest: "Units on color theory; the color wheel and spectromatic color.

Color harmonies: monochromatic, analogous, complementary, split-complementary, triadic, primary, secondary, and tertiary. Warm and cool colors; hue, value, intensity, tint, shade, tone, and the power of color to suggest mood."[6] An acrylic painting and a tempera painting are suggested as activities. These concepts are all related to this author's goals and rate definite plans for teaching but they are not given.

The New York City Curriculum Guide is more explicit in suggested experiences for the teaching of color. They suggest:

1. Painting the near and far
2. Conveying a feeling of distance and space
3. Expressing mood and tempo of sound
4. Expressing the spirit of an event or holiday

These themes are all accomplished through the use and understanding of color.

To help students to become more aware of the properties, qualities, function, and interaction of colors the New York curriculum guide gives plans for:

1. Experimenting with organization of color
2. Experimenting with light and dark
3. Experimenting with intensities
4. Experimenting with textures
5. Experimenting with warm and cool colors
6. Experimenting with color to produce an expressive mood.[7]

These are helpful ideas for accomplishing my goal to teach color in its own right.

Today's world of automation is made more fascinating

as it moves in color - the food we eat, the clothing we wear, the home in which we live, the automobile we select, the entertainment we choose. All the world is a stage for color. Color plays an increasingly important role in man's life.

The "Jennings School District Art Curriculum Guide" is strong on behavorial objectives and evaluations but does not deal with specific objectives for teaching color which this author contends is needed for students of junior high level.[8]

The "Hazelwood School District Curriculum Guide" gives broad objectives but they are too broad for use in a specific project. This guide leaves the method of teaching the objectives to the initiative and expertise of the teacher.[9]

The curriculum planners should not only offer suggestions for the implementation and evaluation of the art program but definite precise plans should be given so the presentations cover the scope of content in a continuous, meaningful, and functional manner. Of course, the teacher remains flexible and assumes the responsibility of providing a well balanced program of experience to further the physical, mental, spiritual, aesthetic, and emotional growth of pupils. She exercises her prerogative to change, even improve the lesson plans to utilize the

interests and abilities of the students. Because of the busy schedule of a teacher, she needs all the help she can get and curriculum planners should offer some plans for the teaching of objectives they propose.

To make the student sufficiently color-conscious that he will see and enjoy color in the world about him a major concern of the art curriculum should be to guide them through continuous experiences of thoughtful experimentation and exploration with color. The many facets and qualities of color cannot be taught casually and incidentally. There should be a series of well planned lessons to achieve desirable growths in use and recognition of color.

On the suggestion of the author's counselor she interviewed Ms. Maggie Peeno, an art educator and resource person in the St. Louis area. She agreed that there is very little material on how to teach color to junior high students with behavorial objectives and procedures. She said the objectives the author proposed for teaching color to junior high students were needed. She had seen very little of it taught.

When looking for ideas for lessons on color the author found the books available dealt mostly with working with the color wheel and doing projects that were directly related to it. This is good and the author believes

necessary for the understanding of color, but the author wants to go further than that and do projects that teach the students to use imagination and experiment with color in new ways. The author wants to explore the possibilities of teaching chiaroscuro with the use of color. This is the technique of using light and dark values to create volume. She wants to develop the use of color by progressing through different media. This method is directed toward the junior high student but can be adapted to other levels. The author thinks this is an excellent way to teach oil and acrylic painting, even though all exercises are not done in these paints. Oil and acrylic paints are very expensive and in a public school setting it is wise to do preliminary work in other media to gain an understanding of how to use light and dark colors before the expensive paints are used. The teacher may spend as much as a whole semester on projects to teach color since all the elements and principles of design are being taught at the same time.

This project presents a series of lessons designed to teach the students to use light and dark values. The first lessons will be in black and white to teach the technique of chiaroscuro. The lessons will progress to different stages in the use of color until the student is using the full range of color values. He will be able to induce new colors into his forms that the untrained

eye would not detect. He will also be able to lighten and darken these colors to their limits without the use of black pigment. To do this he has to do much preplanning and think about the colors he wants to use. At first it will be trial and error, but he can achieve success with it. With success comes intrinsic rewards that will hopefully lead him to a greater appreciation of colors.

The author of this project wants to go beyond what is already being done in the teaching of color because she believes this study would actively involve the student by making him aware of the artistic aspects of the world around him. He will become concerned with his own immediate environment and be challenged to do something about it artistically. He won't be content with a cluttered town or a tastelessly furnished home. Once it has been pointed out that his own clothes reflect artistic principles (or the lack of them) he will never be quite the same person.

Through the study of color in relation to all the principles and elements of design the student's attitudes, responses, and opinions should be permanently changed. Each attempt to put the principles of art into practice, feeble though it may be, brings about a greater understanding and sharper critical judgment than before. This increasing sharpness of judgment is a lasting effect be-

cause the student will be constantly seeing the same kinds of artistic examples in everyday life, even if he never attends an art galery. The study of color would be designed to open the students eyes to this fascinating world, and to enable him to form his own opinions about it based on more than, "I don't know anything about art, but I know what I like."

This author has used some of these ideas in the classroom and found that most students find a renewed excitement in color, one they had when they first started using crayons. Many of them asked their parents to buy oil pastels so they could experiment with colors at home.

In conclusion, art is for everyone to create and enjoy. It is not a pursuit of a small group of art specialists but a normal and important activity in our everyday living. It is a special part of the totality of living and cannot be separated from any aspect of it. Line, color, and design are qualities which determine our personal dress, our homes, our community buildings, our books and magazines, and, in fact, every object which we use in daily living from furniture and automobiles to sculpture and painting.

The author of this curriculum hopes to make a contribution to art education on the junior high level by presenting in the paper long-term and short-term objectives directly related to the use of color and its

value in promoting understanding of the relation between art and human thought and action.

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[2]Helen Merritt, Guiding Free Expression in Children's Art (New York, N.Y.: Holt, Rinehart and Winston, 1964), p. 83.

[3]Ibid.

[4]Raymond A. Roberts, Director of the State Secondary Curriculum Committee, Art For The Schools of Missouri (Publication No. 119G, 1960), pp. 36-38.

[5]Art Guide for the State of Virginia.

[6]Clayton School District Art Curriculum Guide.

[7]New York City Art Curriculum Guide.

[8]Jennings School District Art Curriculum Guide.

[9]Hazelwood School District Curriculum Guide.

CHAPTER II

REVIEW OF LITERATURE

In the first chapter this author stated, "The development of artistic ability and the development of creative thinking should be thought of as one and the same." Artistic ability and creative thinking both have to be considered when the teacher is planning any project in the art class. Since this paper deals with color and its variations, it is necessary to include information in four areas. The chapter is divided into four sections: History of Color, Scientific Basis of Color, Creativity, and Artistic Ability.

History of Color

Color is as old as art, and art is as old as the human race. Man has always been fascinated by colors and has used color to express his ideas. Color affects people more than any other phase of art. It is the element of art to which we are most sensitive. Through the use of color the artist can create moods and emotional responses from the viewer. Every person with normal eyesight feels the influence of color. This influence

is based on the stimulation of the senses which results when white light, broken by reflection or refraction into its various wavelengths, falls upon our vision, so that instead of sombre grays we see varying hues which appear to add a kind of vitality to forms. Each hue has a different effect on us and many times we are not aware of this influence.

Enjoyment of color is so common to us that we often take it for granted and believe we know all there is to know about it. It is like any other subject we study in school, we have to start very simply and build on what we have learned. By expanding our knowledge we advance from the state of simple visual stimulation to an understanding of ordered relationships of hues, the harmonies of balanced tones, and how light and dark is used to create depth on a flat surface. We break through our habits of thought which limit our seeing, and find new enjoyment in our world of color. "The advance from the stage of pleasure in ordinary color sensations and combinations to that of trained appreciation, is comparable to what occurs in the world of music when we progress from enjoyment of sensations of sound, and the more evident and commonplace rhythms, to the realms of harmony which lie beyond and are accessible to most of us only by way of some introductory training."[1]

Painting in ancient times mostly told stories,

stories of mythology and later of religious "heros" and the Bible. Renaissance painters wanted to paint friends and surroundings in the most realistic way. Later the emphasis moved to action, light frivolity, drama, adventure, and even protest, but the artist still painted people, places, and things. The late nineteenth and early twentieth centuries saw the emphasis shift to color, design, and personal statements. The paintings themselves became more important than the subjects they showed.

People of primitive cultures, like the small child of our culture, enjoy the pure bright hues of the primary and secondary colors. Primitive people draw flat two-dimensional figures and designs and fill in with bright colors, much in the same way a child fills in the lines drawn in a coloring book, with no effort to give the objects a three-dimensional effect by using the technique of chiaroscuro or shading.

Although early man could express his ideas, he did not understand how to use perspective and chiaroscuro until the Renaissance in the fifteenth and sixteenth centuries. Perspective is the art of drawing solid objects on a two-dimensional surface so as to produce the appearance of the actual object as viewed from a specific point. To enhance the appearance of depth on a flat surface the artist can use color very success-

fully if he understands value scales and how to use light and dark colors. This technique of modeling a form with values of light and dark is called chiaroscuro and it was first developed by Leonardo da Vinci. His painting of Mona Lisa in 1503 demonstrates how he dramatically modeled the figure with light and shadow and how he used perspective for the background.[2]

Later the expressionist painted his feelings about people and places. He chose to use color subjectively to express his feeling about a subject rather than to depict it with its natural coloring. Paul Cezanne and Vincent VanGogh were two painters who showed deep feelings and emotions about their world and their lives. They were considered rebels in the world of art in the nineteenth century, but they laid the foundation for twentieth century art and for the personal experimentation and expression of today.

Gerald F. Brommer (1976) states in his book on art, "Moving into twentieth century art is like flinging open a dozen doors in a room at the same time." It all began with Cezanne's idea that the artist should be concerned with his work, not imitating nature. The camera can produce likeness, but the artist can produce art - his own personal arrangement and expression.[3]

The Scientific Basis of Color

Color is a sensation which causes stimulation to the eye, and is one of the most obvious attractions around us. Color is contained in light and not in the object itself. Objects do not contain color. Color is caused by an object's ability to absorb different wavelengths of light. There must be light to see color; when there is very little light, such as at nighttime, only values are seen. Different colors are produced because objects do not absorb the same amount of light at each wavelength. When light strikes an object, it penetrates the surface. If a red object is seen, that means that the object is absorbing all colors except red, which is being reflected back, making the object appear red. How much penetration and absorbtion depends on the texture of the object. A smooth surface will reflect back more color than a rough surface.

The Gestalt physchologist, David Katz, once wrote, "Color, rather than shape, is more closely related to emotion. Color comes before drawing." Katz arranged a series of simple forms (triangles, circles, squares) in primary hues (red, yellow, and blue) and asked young children to put similar things together. The children usually chose similar colors rather than similar shape. Katz concluded, "Color is more important than shape in

the creation of forms."[4]

Two English writers, Vernon Lee and C. Anstruther-Thomson, investigated color and form. They state in their book, Beauty and Ugliness:

> Color makes things easy to see. Color gives the eye a grip, so to speak, on shape, preventing its slipping off; we can look much longer at a colored object than an uncolored; and the coloring of architecture enables us to realize its details and its ensemble much quicker and more easily. For the same reason colored objects always feel more familiar than uncolored ones, and the latter seem always to remain in a way strange and external; so that children, in coloring their picture-books, are probably actuated not so much by the sensuous pleasure of color as such, as by a desire to bring the objects represented into a closer and, so to speak, warmer relation with themselves.[5]

Man does not think in terms of black and white but in beautiful arrays of magnificant colors because he lives in a world of color. Everything he sees has a color. It would be very difficult for us to imagine a world of black, grey, and white. Even when we look at black and white T.V. or a black and white photograph, our minds are full of memories of the actual hues of nature, the green foliage and blue skies. We quickly associate what we see in black and white with our past experiences and our mind gives color to the forms.

Even people who are blind have to take color into account because they hear about it as one of the distinguishing qualities of objects. They try to imagine and understand it, and therefore develop some sort of conception of it, so that color affects their ideas of

things. Helen Keller, who was both blind and deaf, and who received all her impressions of the outside world through the senses of touch, smell, and taste, wrote:

> I understand how scarlet can differ from crimson because I know that the smell of an orange is not the smell of a grape-fruit. I can also conceive that colors have shades and guess what shades are. In smell and taste there are varieties not broad enough to be fundamental; so I call them shades. There are half a dozen roses near me. They all have the unmistakable rose scent; yet my nose tells me that they are not the same. The American Beauty is distinct from the Jacqueminot and La France. Odors in certain grasses fade as really to my senses as certain colors do to yours in the sun....I make use of analogies like these to enlarge my conceptions of colors....The force of association drives me to say that white is exalted and pure, green is exuberant, red suggests love or shame or strength. Without the color or its equivalent, life to me would be dark, barren, a vast blackness.
>
> Thus through an inner law of completeness my thoughts are not permitted to remain colorless. It strains my mind to separate color and sound from objects. Since my education began I have always had things described to me with their colors and sounds by one with keen senses and a fine feeling for the significant. Therefore, I habitually think of things as colored and resonant. Habit accounts for part. The soul sense accounts for another part. The brain with its five-sensed construction asserts its right and accounts for the rest. Inclusive of all, the unity of the world demands that color be kept in it whether I have cognizance of it or not. Rather than be shut out, I take part in it by discussing it, happy in the happiness of those near me who gaze at the lovely hues of the sunset or the rainbow.[6]

According to T.G.R. Bower, of Harvard University, the perceptual system of the new born grows more and more competent during the period of infancy. During this period of rapid growth the system is very susceptible to damage. Lack of environmental input can destroy the

structure that is present at birth. The visual system has to receive its appropriate inputs at the right time or the ability will be destroyed. He says:

> Generally by the time a baby has lived six months without benefit of patterned vision, it is too late to introduce patterned vision. The baby makes no use of the capacity at all. It appears that the areas of the brain normally available for vision may be taken over for other functions. Once taken over, these areas cannot, it seems, be recaptured. It may be possible that complete loss of visual function in congential blindness is caused by a take over of "visual" areas of the brain by the other senses, which are receiving inputs.[7]

Helen Keller's other senses compensated for the lack of sight and hearing. If Mr. Bower's theory is true, her other senses took over her "visual" areas of the brain.

If these things are fact, then it is reasonable to say that all of our senses affect how we see color. Sensory relationships have been investigated by science. It has been known for a long time that the stimulation of color will produce reactions throughout the human organism and that the activity of one sense organ will influence another. Sherrington has written:

> All parts of the nervous system are connected together and no part of it is probably ever capable of reaction without affecting and being affected by various other parts, and it is a system certainly never absolutely at rest.[8]

There may be suppression of sensation or activation of it. An effort to hear at night in the woods will seem to sharpen the sense of sight as well as the sense

of hearing. Food eaten while excited may not have much taste. In the studies done by Allen and Schwartz (1940), stimulation of the sense of taste likewise affects the color sensibility of the eye. Using solution of sulfate of quinine, which has a bitter taste, red sensation was depressed and green sensation was increased.[9]

As to the sense of smell Allen and Schwartz said, "With the odor of oil of geranium as the stimulating substance, the red and violet sensations were depressed in sensitivity and the green enhanced."[10]

In 1931 Karl Zietz reported an unusual phenomenon relating to color and sound. While tones of high pitch or low pitch were sounded, small areas of color were exposed to the eye for a fraction of a second. Sounds of low pitch tended to shift the appearance of colors toward adjacent deeper hues. Sounds of high pitch tended to shift them toward adjacent lighter hues. Thus low pitch tones had the effect of making red appear deeper or more bluish; orange became reddish; green became bluer; blue became more like violet. A high pitch gave red an apparent yellowish or orange cast; orange shifted toward yellow; yellow became paler; green became yellowish; blue seemed lighter and greener.[11]

In associations with the sense of touch, colors will appear warm or cool, dry or wet, rough or smooth.

This reaction is inherent in the psychological make-up of most human beings. This may be built upon the association of warm things - the sun and fire - with red and orange colors, and the cool things - water and sky - with blue and green.[12]

Colors may be warm or cool, active or passive on a purely physical and physiological basis. Red will stimulate the autonomic nervous system, while blue will tend to relax it. The equilibrium of the body, pulse rate, heart action, respiration, nervous tension, even digestion will all be affected.[13]

The phrase "unity of the senses" expresses the concept that colors, sounds, odors, tastes, and tactile experiences are all interrelated and one affects the other. If this is the case, an art program needs to include all the senses in order to explore and discover new possibilities of depicting what is seen.

Creativity

Recently interest has shifted from the individual who is a cautious, accurate, and critical thinker to the one who also displays ingenuity, originality, and inventiveness. Thus creativity, long regarded as the basic quality in artistic production, is now being recognized as a basis for scientific production as well.[14]

If this is the case, the arts can play an extremely important role in the education of our children. No other subject taught in the schools can stimulate the mind and at the same time use student's hands and eyes to create something new. Many people have supported the arts as a basic component of education. Plato perceived the natural laws governing the structure of the universe - harmony and proportion, balance and rythm - also govern music, dance, painting, poetry, and so on. He therefore urged making these art forms a foundation of the educational method. In our own century, the British art critic Herbert Read wrote in his book Education Through Art, "In the end I do not distinguish science and art, except as methods. Art is the representation, science the explanation of the same reality."[15] Bernard Shaw, a Read contemporary, said,"I am simply calling attention to the fact that fine art is the only teacher except torture."[16] The American psychologist, Abraham H. Maslow, theorized "learning ones identity" as an essential part of education, believed that the arts are far closer to the core of education than are the more exalted subjects.[17]

Many people in our industrialized society believe the arts are expendable when there have to be cutbacks in school finances. This author believes the arts are basic to creative thinking that will carry over to other

academic subjects.

A sizeable number of public schools have started innovative and promising programs using art as the basis of their curriculum. The federally financed Project IMPACT (Interdisciplinary Model Program in the Arts for Children and Teachers) began in 1970 at five widely scattered schools and survived for a few years through local funding. In Eugene, Oregon, one of the IMPACT cities, the project grew into an ongoing "alternative Magnet Arts school" (K-6) where, in the words of the principal, the arts "are used as a discipline in themselves but mostly as a vehicle to teach other disciplines." Students spend less than half as much time on the three R's as do their counterparts in Eugene's traditional schools. In 1976, compared with the 29 traditional schools in its district, Magnet Arts' sixth grade tied for first place in reading and for fifth place in math.[18]

In 1976 a study was done by the Arts, Education and Americans Panel chaired by David Rockefeller, Jr., to determine the importance of art in education. This panel supports the concept of "basic education", but maintains that the arts, properly taught, are basic to individual development since they, more than any other subject, awaken all the senses. We send and receive a torrent of information through our eyes, ears, skin, and palate. Through the arts we can learn to see our

environment more clearly; to sense its color, song, and dance; and to preserve its life and quality. "We endorse a curriculum which puts "basics" first, because the arts are basic, right at the heart of the matter. We suggest not that reading be replaced by art but that the concept of literacy be expanded beyond word skills."[19]

Researchers need to explore the area of creative thinking and how to encourage it, in light of the information already available to us through research and observable behavior. This ability is what separates us from other animals and without it, we would still be sitting in caves and hunting our food for survival. The Naropa Institute, in Boulder, Colorado offers a teacher retraining course whose theme is that "artistic" is a quality of mind available to the ordinary person and applicable to every aspect of daily life. We could substitute the word "creativity" for the word "artistic" and have the very same meaning.

Probably no psychological concept has proven to be as difficult to measure as creativity. A wealth of research in the last twenty-five years has included the development of numerous instruments in the identification of creative talent. Some of these tests are explained in the book, Psychological Testing by Anne Anastasi.[20] The biggest problem in evaluating these instruments is their diversity. This diversity is indicative of both

the complexity of creativity and the multitude of goals, research designs, subjects, settings, etc. that are characteristic of research on the psychology of creativity. Many experts in the area agree more attention should be given to the measurement of creativity.

There are some problems with validity when we try to measure creativity. When creativity is based on subjective judgement, it is possible that a 'halo' effect is present. Creativity is thought to be a unitary trait, if a person is creative in one area he will be creative in others. It is possible that a person who is creative in one area has neither the time, ability, nor the motivation to be creative in other areas.

The most serious measurement problem is a lack of convergent validity among all the methods of testing - correlations between methods are low.

Dennis Nocevar concluded in his paper on Measurement of Creativity: Review and Critique, the best way to measure creativity is to simply ask the subject. "The predominant preference in the field today is to identify creativity by indirect methods that essentially have little to do with the real criteria of creativity."[21] The subject knows more about himself than anyone else. Individuals can not always discriminate creativity from their own general opinion of the subject.

Creative thinking is the process of divergent

thinking; the person has a different idea or way of thinking than the normal line of thought. His thoughts lead him in a different direction than the direction that most people think. This can cause a great deal of trouble for the person or it can be a great benefit to him and his society. This depends on the kind of encouragement he had during his early years and the self-concept he developed of himself.

Creativity is an attitude which every human being should and can achieve. Education for creativity is education for living. It is very desirable for a person to be creative in his thinking but we as a society have discouraged divergency because it can be uncomfortable for us. Teachers like complete control of their classrooms and discourage any deviation from the rules they have set up. Many teachers expect their lessons to follow in an orderly manner with one idea leading to another; the end development already in mind. The teacher many times discourages deviation from that particular line of thought because it takes too much time, she may not be prepared for that idea, the subject may be uncomfortable for her, or she may not have the patience for dealing with things that aren't planned. The student who always comes up with unusual ideas or another way of thinking can be irritating to a teacher. If this is the case, the student will know it and sense that

his deviation is bad and this can hurt his self-concept. Fellow students will also sense the feeling of the teacher and possibly pick up the same feeling for the deviant thinker. These impressions, once formed, can follow the student all the way through school.

Peer groups exercise severe pressures against their most creative members. Three characteristics stand out as differentiating the highly creative child from the less creative ones:

1. There is a tendency for them to gain a reputation for having wild or silly ideas. They are not taken seriously.
2. Their work is characterized by its productivity of ideas "off the beaten track".
3. They are characterized by humor and playfulness.

Many times a creative student is not accepted by his classmates because he is different.[22]

Many creative people who rejected social conformity and were not guided properly, end up with troubled and tragic lives, because their self-concept was not good. If the creative thinker is not guided in the right direction and encouraged, several problems could develop for him.

The teacher might view his creativity as a behavioral problem, which could discourage the student. The highly creative individual desires personal qualities having little relationship to those he believes make for adult

success and are in some ways opposite those he believes his teachers favor, therefore the desire to emulate the teacher is absent or weak among creative students. The desire to emulate peers is also weak.[23]

It is possible for a teacher and fellow students to think a child is slow or not very intelligent because his ideas and work are so different from the norm. The feedback the creative student gets from his peers and his teacher can effect his self-concept.[24] The normal way a person builds his self-image and ideas is by constantly testing them on the individuals with whom he comes in contact. The weaker ones are likely to conform and do what is expected of them. They live normal, average lives and do not usually accept a person socially who shows great creativity.

The exceptionally strong desire to be well thought of may interfere with creative growth. Some students may repress their creative needs and this may cause learning disabilities and behavior problems later on. When prevented from learning creatively some children will lose interest in learning altogether.[25] A person has to be able to create to feel good inside. It is a feeling of accomplishment and self-worth. The desire to create is an innate quality with which we were born. Without creativity man would not have been able to survive in this world and he certainly would not have

achieved the heights which he has achieved today. We do have to have certain limits in order to live in a society. We are social beings and have the need to be loved and accepted. Creative thinkers have to learn to merge the two needs of social acceptance and creativity in order to have a good self-concept and to be self-confident, which is the essence of success in both needs.

Creative thinking has two defining characteristics:

1. It is self-directed and is neither random nor controlled by fixed rules.
2. The thinker forms a new idea that he was not aware of before he began the particular line of thought.[26]

The creative individual is unable to stop working because he is unable to stop thinking. To him, there is nothing more enjoyable than work in which he can use his creative powers. Although the above is true, creative development should not be left to chance. Educators have developed new strategies to promote and stimulate creative or divergent thinking.[27]

Since the early years are spent in the classroom with fellow students, this time is very critical in building the personality of an individual. An inspiring teacher can be the prime factor in encouraging each student toward creativity and respect for the thoughts of others. Plato once said: "What is honored in a

country will be cultivated there."[28] If children are to be challenged to learn and think creatively, the teacher must honor this kind of achievement. A healthy society and a humane kind of education, however, requires that we honor all of those talents which contribute to our welfare. The teacher should be able to guide this creativity into a channel that will be both satisfying to the individual and still be within the bounds of social acceptability.

Teachers should help the creative child learn to tolerate his separateness or they should help him find someone with whom he can communicate, suggests E. Paul Torrance, a leader in creativity research. He says a highly creative individual has an unusually intense need to communicate. It is very encouraging for a divergent individual to discover someone else with a similar divergency, someone who understands him and they can communicate freely on the same level without feeling the pressures of criticism. He states this person may be any age.[29]

Research has repeatedly shown that people develop in ways they find rewarding, according to Torrance. In his book, Creativity: Its Educational Implications, he suggests five principles for rewarding creative thinking:

1. BE RESPECTFUL OF THE UNUSUAL. The best reward a child can have to a question is an answer. Questions mean the child's mind is hungry and it must be

satisfied or it will starve. The question should not be answered for the child but the child should be helped to find the answer for himself. This type of reward is known as intrinsic reward and is much more satisfing than just being told the answer. They need to be taught the skills of inquiry. They need to learn how to sustain a question, to play with it, toss it back and forth, refine it, and accept the questioning mood without the need for ready-made answers from the teacher. Teachers should be prepared for some shocks and not be threatened by questions they can't answer. They should find enjoyment in searching for solutions to the questions with the children. Let the children guess and learn to test their guesses.[30]

2. BE RESPECTFUL OF THE UNUSUAL IDEAS OF CHILDREN. They may see many relationships and significances that the teacher misses. The teacher may not be able to evaluate some of the ideas, which makes it very difficult for her to reward such thinking. We should not stimulate thinking of which we can't be respectful.[31]

3. SHOW CHILDREN THAT THEIR IDEAS HAVE VALUE. Children can be shown that their ideas have value, if the teacher communicates them to proper groups or individuals, if they display them, and if they give credit for them. The children will also receive intrinsic rewards for the ability to discover through their own curiosity and interest.[32]

4. PROVIDE OPPORTUNITIES FOR SELF-INITIATED LEARNING AND GIVE CREDIT FOR IT. One principle of learning is: "Excite and direct the self-activities of the learner and tell him nothing that he can learn for himself." Highly creative individuals have a self-starting ability which is found in all children. The problem is to keep it alive. It is hindered by overly detailed supervision. Teachers need to praise and give credit to growth resulting from the student's own initiative.[33]

5. PROVIDE FOR PERIODS OF NON-EVALUATED PRACTICE OR LEARNING. Time to experiment needs to be given to the student without the threat of being evaluated. Evaluation causes a need to defend what has been done. This denies the openness necessary to produce new ideas.[34]

It takes a great deal of knowledge and flexibility for a teacher to guide each student in a path of creativity

since creativity is original with each person it could go in many directions at the same time. This calls for much individualized instruction and the shifting of the teacher's train of thought at any given moment. She has to be sensitive to the needs of each student and take the time to get to know each student personally. It is much harder to teach in a way that stimulates creativity than to encourage students to conform to the normal way of thinking but it is much more interesting to the teacher and the students. Work that is interesting does not seem like work at all. If the class is interesting the students will retain the information for the rest of their lives, which is the goal of teaching anyway.

Students need to possess the minimum skills necessary to enter into situations where creativity can be expressed. They have to have these skills in order to achieve success. The teacher should teach these basic skills to the student and then let him experiment. The teacher should not interfere during the creative process unless the student seems to need help. He should be given time to work out the problem on his own before the teacher tries to help. Any guidance from the teacher may change his thought direction or inhibit his progress. The creative thinker needs to be able to make decisions. These decisions may lead them to a dead end or they may fail in the results they hoped to get. If this happens

they should be encouraged to accept that fact and go back and try another approach.

To be successful in thinking creatively students must learn to cope with problems and failures. If they are encouraged and permitted to explore, experiment, test ideas, initiate projects on their own, and assume responsibility, they will encounter problems and failures. If freedom to try out ideas without penalty is permitted against a background of high standards the student will learn to cope with these problems and failures. The creative individual, suggests Torrance (1962), needs the ability to stick to something until it is completed.[35] A great work needs not only the flash, the inspiration, the peak-experience, it also needs hard work, long training, unrelenting criticism, and perfectionistic standards. Masterpieces are achieved only by trying, improving, modifying, and perfecting. The old saying, "Rome wasn't built in a day." applies here.

Artistic Ability

Dr. Viktor Lowenfeld, a leading researcher in art education, has broken down the creative growth of the child into developmental stages. The stage dealing with the eleven to thirteen-year-old he calls the 'stage of reasoning'. He says this stage is one of the most

exciting and yet one of the most trying in the field of art. This is the time when the child advances from the elementary school into the junior high school level and for many this will be the last formal public school art they will receive, so the importance of this level cannot be minimized. This is a time when girls start to develop mature sexual characteristics but boys do not. It is a time for seeking greater independence from adults and a time for following the demands of the 'crowd'. He strives to be as much like his peers as possible, even to the extent of following fads and refusing to wear appropriate clothes and insisting on having his hair just so. It is a period of great individual differences as well.[36] This is an age when emotion and strong feelings begin to be expressed, when the adult world is no longer accepted as gospel, when he begins to find that he is not a child, but he knows he is not an adult either. Lowenfeld states, "The role of art in this stage of development should be both strong and clear: to give support to his individuality, to provide a socially accepted release for his emotions and tensions and to ease the transition from the expression of a child to the type of expression expected of an adult."[37]

The difference between children and adults can best be seen in the diversity of their imaginative activity. A child may imagine a pencil is an airplane

while moving it up and down and imitating the noises of an airplane, unaware of what is going on around him. This unawareness is characteristic of children and they use their imagination in uninhibited ways; if an adult were to do the same he would be considered insane. For an adult the pencil is for writing only. The child's imaginative activity is unconscious while the adult's is controlled. Lowenfeld says, "This change in the imaginative activity from the unconscious to critical awareness, signaled by physical changes in the body, is one of the most important characteristics of the crisis of adolescence."[38]

E. Paul Torrance has been involved with research and experimental programs to determine the creative growth ability of the child from kindergarten through graduate school. Growth curves have been fairly well developed for grades one through twelve. He states:

> The general pattern of the developmental curve of most of the creative thinking abilities we have assessed is as follows: There is a steady increase from first through third grade. There is a sharp decrease between the third and fourth grades followed by some recovery during the fifth and sixth grades. Another drop occurs between the sixth and seventh grades, after which there is growth until near the end of the high school years.[39]

The Minnesota studies in child development suggest several reasons why these drops in creative thinking have occurred at these particular age levels. Most relevant are the theories of Harry Stack Sullivan.

According to him, the third and fourth grade student is faced with the pressures of socialization which includes: social subordination and accommodation, ostracism, segregation into groups, disparagement, stereotyping competition, and compromise. Strong dependence upon what the majority thinks is developed, and unusual ideas are laughed at, ridiculed, and condemned. The child sees those around him as sources of humiliation, anxiety, and punishment with respect to that which they communicate; and this tends to reduce the freedom and enthusiasm of communication, especially of original ideas. As the transition is made into early adolescence at about the seventh grade, still other social pressures to conformity appear. These new demands typically produce feelings of inadequacy and insecurity, as new roles are imposed. The resultant anxiety restricts awareness and produces uncertainty, making productive thinking difficult.[40]

Torrance suggests these declines may be reactions to new stresses encountered at each new stage of development or each transitional stage in education. These occur at the time of entry into kindergarten, between the primary and intermediate grades, and between elementary and high school. When new stresses occur in life there is usually a temporary decrease in performance resulting from a period of shock or temporary loss of old props or anchors. Such periods are usually followed

by periods of overcompensation or recovery. These decreases in creative activity may be typical reactions to new stresses.[41]

Through the "Union College Character Research Project" an effort has been made to develop age-characteristics through the eighteen-year-old level. This author will address the level that concerns this paper, which is the twelve to fourteen-year-old. This age is concerned with the activities of the moment and rarely plans for the future. He tends to respond to adventure more readily than to reason. Socially and emotionally it is a period of adventure. The sexes still do not mix very well. During this stage, the gifted child produces remarkable performances in imaginative, artistic, musical, and mechanical fields. He is beginning to question adult regulations and wants to have a part in decisions concerning them. He feels insecure because of changes in his physical and emotional make-up and a growing strangeness in interpersonal relations. He is afraid of rejection by his peers, but he is also able to stand on his own convictions even against group pressures.[42]

Helen Merritt, in her book, Guiding Free Expression in Children's Art, says many things interfere with the creativity of the child at this age. This stems from their feelings about themselves or from their uneasy feelings that they don't know how to do what they want

to do. A drawing is a very honest document. Each part of a drawing tells exactly how the artist felt toward it. If an artist were vitally interested in what he said and how he said it, his drawing would be alive, but this vitality of interest cannot be faked. If it is not there, the drawing is dead.[43]

Projecting oneself emotionally into the drawing or whatever the creative process might be, is fundamental to exciting art, but this kind of involvement does not come spontaneously to most upper-grade children. These children are faced with the problems of discovering their own identity as individuals. To say to a child, "Do it in your own way," simply adds to his confusion about what his own way is. To him his own way may seem hopelessly childish. He would like for his drawing to look "grown up". To him this means reproducing things the way they really look. He doesn't realize that this is an impossible goal, that art is not a reproduction of nature, so he feels inadequate in not being able to do what he wants to do. Merritt says, "This feeling of inadequacy increases his selfconsciousness and blocks his ability to become really involved in doing something in his own way."[44]

According to Merritt, to say to a child, "Make it in your own way," takes for granted that the child has a concept of what he wants to express and that he

can visualize the symbols through which he wants to express the concept. It also takes for granted that he has the skills needed to work with the materials to carry out his idea to his own satisfaction. This is possible with young children because their concepts are simple, their symbols are simple and they are satisfied with their skill. As a child outgrows the freedom of early childhood, all sorts of complications develop from his attitudes toward his work which often interfere with his freedom to become successfully involved in expressing something in his own way.[45]

The Union College group emphasizes the need for helping the twelve-to-fourteen-year-old develop specific short-range goals which require him to use what he has learned. Exciting but difficult projects are needed. It is time to give him experiences in making decisions and carrying them out. Young people at this stage should not be asked to be too different from their peers but should be given skills for influencing the group and raising the level of the group. They can be given practice in sensing the needs of others and in maintaining the respect of friends by using creative solutions.[46]

According to Lowenfeld, the important question is, "How can we prepare the child to create in such a way that he looks with pride on his work instead of being ashamed of it?" For the first time the attention has

to be shifted from the importance of the working process to an increased emphasis on the final product. The final art project becomes more and more significant with increasing age. This recognition of the importance of the final product is a clear demand on the part of the youth, and must be recognized by educators.[47] This is why they need projects geared toward their success.

Many successful, effective individuals have developed strategies for coping with the conflicts which arise from the fight between expression and repression. Pauline Pepinsky conducted intensive investigations of production independence in three different natural situations: a university campus, a research institute, and an architecturally planned neighborhood. As a result of her studies, Mrs. Pepinsky has identified the following seven strategies of productive independence:

1. The individual translates his own ideas into the language of others so that they can see his contribution as relevant to their own ends.
2. He states his criticism in a positive and constructive way.
3. He makes it evident that basically he stands for something that commands the respect of others in the group.
4. He minimizes personal threat to others by granting them dignity; he will listen.
5. He builds up a "credit rating" and "buys" more freedom over a period of time by initial service in terms of existing demands and requirements.
6. He focuses upon the job to be done, not on "person-abilities," and not on acquiring status as an end in itself.
7. He takes into account matters of timing; he is able to delay responses as well as act upon them.[48]

These can be used by the art teacher and subtly taught to

the students.

The more we study adolesence, the more we see a distinction in the sensory reactions of the children toward their artistic experiences. Lowenfeld offers the theory that some children prefer visual stimuli, while others may be more concerned with the interpretation of subjective experiences. Visual experiences refer to our optical senses and are concerned with the differences of color, light and shadows, introduced through atmospheric conditions as well as with the perspective interpretation of space. Subjective interpretations are those that emphasize the emotional relationship between the student and the external world. Visually-minded individuals refer to environment in their art work, whereas nonvisually minded individuals express their feelings about the subject. Children who have a preference for visual expression feel as spectators, looking at their work from the outside. Subjectively-minded people feel involved in their work. As these preferences toward these different experiences crystallize, the teacher needs to pay increasing attention to motivation toward both of these important experiences. We could discourage a visually-minded person by motivating him in referring to subjective experiences or emotional qualities; in the corresponding way we could inhibit a subjectively-minded person if we were to motivate him by mere visual experiences. Since

traditional art education is mainly built upon visual stimuli, many of our young people must feel neglected and frustrated. According to Lowenfeld, many art educators use visual stimulations throughout the secondary level, not realizing that modern expressionist art is a clear indication of the importance of nonvisual stimuli in our present-day life. Most of the children react in both ways, with a preference for one or the other kind of experience. The knowledge of this fact together with the increasing shift of emphasis from the working process to the final product is of vital importance for art educators who deal with this age level.[49]

Lowenfeld says there are two different approaches to the representation of space, depending upon whether a child has a preference for visual experiences or non-visual experiences. Most children will tend toward both characteristics in their creative expressions, depending upon several factors, one of which is the degree to which a child is stimulated by the subject matter, but we commonly find a preference for one type of experience or the other. The author will discuss the two space concepts separately for the purpose of clarifying these differences.[50]

The Space Concept of the Visually-Minded

One of the important discoveries for the visually-minded is the gradually decreasing size of distant objects.

Along with this comes the meaning of the horizon line. With the recognition of distance, the three-dimensional qualities of space intuitively become the main interest of the visually minded child. The child follows his growing innate demand and power of observation. Light and shadows in their changing effects begin to come into the mental picture of the child without him being aware of it. Lowenfeld states, "The teacher should know that stimulation of optical changes in space is not to be given on the conscious level of perspective and "constructing" three-dimensional effects, unless the child asks for it."[51]

The seeing of depth must be discovered by the child. To take this discovery from him by "explaining" perspective would deprive him of an important experience. The teacher must capitalize on the child's own findings and start on the child's own level. "What makes the tree more distant in your drawing?" Let the child become aware of his own discoveries: that he has drawn the tree smaller, because distant objects appear to be smaller to us; that he has included less detail, because we do not see as many details in distant objects; that he has given it a less intense color, because the air in between makes the color appear less bright. Lowenfeld believes the child should find out all this for himself. It should be used as a frame of reference for later

experiences in nature. The teacher has no right to deprive the child of his own discoveries, instead he should pave the way in providing the child with the right stimulus whenever the need for it arises. He states that much of the creative unawareness of the child had been spoiled by teachers who are too eager to see a child's taste adjusted to an adult's taste.[52]

The Space Concept of the Nonvisually-Minded

Some children who have advanced beyond the base-line concept return to the very same kind of space concept. This may appear to be a regression to a former concept but through the study of higher art forms of nonvisual art the base-line becomes the vehicle of space representations. It is the same step into the nonvisual sphere as the three-dimensional concept of space representation is in the visually minded.[53]

The nonvisually-minded children concentrate in their representations more on the expression of self and the emotions resulting from it. Space has significance only if it is necessary for their expression. We can distinguish visually-minded children from nonvisually-minded by the choice of representation. The visually-minded child includes environment in his work which gives the feeling of a spectator. He may be off in the distance looking at what is happening. The nonvisually-

minded child concentrates more on the self and includes environment only when it has emotional significance to him. The child feels that he is actually taking part in the action. He is in close to what is going on in the picture and concentrates on expression and gesture. We should remember that many children will be affected by both visual and nonvisual experiences. Lowenfeld believes the child who is more visually-minded will relate figure spacing to the proportion of the landscape, while the nonvisually-minded child will establish space relations mainly through his body feelings and emotions on which the picture is centered. He goes on to say that many children will include both types of stimulation within their work.[54]

The child develops as a whole. Space, color, and the self are fused in the creative development of the child and form a unity. The visually-minded child sees changing effects in color in relation to space. To have a percept of color means that we notice the changes color undergoes under different external conditions. The same color appears different in light and shadow. The surrounding colors reflect upon the focal color and make it seem different. The same color under different color lights appear different. A color in the distance looks different from the same color in the foreground. A color on a dull day appears very different on a bright

day. To notice these changing effects, says Lowenfeld, is one of the attributes of visually-minded individuals. During the stage of reasoning the visually-minded child will begin to adjust colors to his visual impressions, while the nonvisually-minded child depends on his emotional reactions toward color. Emotional reactions to color are highly individualized. The nonvisually-minded child often uses color in contradiction to nature according to his individual emotional reaction. Color is highly subjective in its meaning. We must keep in mind that most children are between the two extremes, and may show both characteristics.[55]

As the author has already stated, one of the characteristics of adolescence is the change of the imaginative activity from uncontrolled to controlled. The drawing expression seems childish and ridiculous because of the sudden awakening of an adult attitude. Lowenfeld holds to the theory that if we can gradually develop the child's unaware production to such an extent that it reaches a "creative maturity", which will be able to stand the critical awareness that will come, we have kept the child from making a sudden change and from disappointments in his changing imaginative activity. This can be done by making the child aware of his own achievements at a time when he is not yet aware of them. The motivation is simple: "Mary, how

did you get this color?" or "Mike, what did you do to make your house look that far away?" or "Jerry, how did you get that tense feeling in your figure?" These questions help make the child aware of his own achievements and gives him the pleasure and intrinsic value of discovery. The motivations should never occur during the creative process because this would interfere with the intuitive character of art. They should occur afterward.[56]

A good teacher must always start on the level of the individual and extend his frame of reference. If the expression of distant space has become important to a student, the teacher must support that student's desire using the student's present understanding and building on it. By the same reasoning, if the student uses the base-line concept to break up space in order to express his feelings about a subject, the teacher should encourage him and help him become aware of the emotions shown in the picture. It is important to stress that every product in which a student becomes truly involved should be accepted. The student who produces pleasing looking products and the student who is not doing the type of work that suits the teacher's aesthetic taste should be treated with equal respect. To stimulate a child's thinking, to have him come to grips with a problem that is meaningful, to encourage a depth of

expression are all much more important than "pretty" end products. We have discussed earlier the need, for an environment that fosters divergent thinking. "The teacher should consider the development of creativity as one of the vital areas of the art program." states Lowenfeld.[57]

Helen Merritt of Northern Illinois University, in her book on children's art, states that the teacher usually has to guide children into awareness of the possible questions that they can ask themselves about their work. When children start appraising their own work, they are involved in the kind of independent thinking that is fundamental to genuine creativity. Reliance on one's own judgement rather than on that of someone else is a mature approach to art. It will not be achieved quickly by most children, but it is well worth the work. Merritt has set down some specific ideas to help children become aware of their own achievements and to appraise their own work. A teacher can stimulate children to think about their work by asking such questions as:

> Is the whole picture tied together into a consistent whole? Have you treated all of the parts of the picture as if they belong together?
>
> Does it put across the mood that you want it to express? If it does, why does it? If it doesn't, what would make the mood more convincing?
>
> Is the person a good size and shape for his position in the painting? Have you remembered to think about shapes?

> Have you put in the drawing all that you know or want to show about the subject? Do you know enough about the subject, or do you need to look at it again?
>
> Have you used contrast between light and dark or between colors to the best advantage to emphasize what you want to emphasize?[58]

Merritt states children will still need other people's approval even when they are good at appraising their own work. She suggests that the teacher can have a place to tack up pictures temporarily for study during the working process and involve the class in solving one child's problems, either by listening or by commenting.[59] This should be done only if the child can handle the situation. The teacher should be very positive with what is happening so that the student is not embarrassed in front of his peers. In this kind of situation the class approval of a job well done is really felt because they have all been coping with similar problems.

Merritt makes the statement, "Quality in children's art does not hinge on whether or not children are expressing their feelings; it depends instead on the quality of the feelings and the children's sensitivity."[60] A child's art work naturally expresses his feelings. She says that large free drawings have been associated with self-expression, but tight, cramped, stiff little figures express a child's feelings just as surely as large, rhythmic figures. These show that the child is inhibited from within.[61]

In this section the author has presented the theories of several different authorities in the field of education on the capabilities of the twelve to thirteen-year-old child in creative art expression. Dr. Viktor Lowenfeld named this stage of development the "Age of Reasoning" and divided the children into two types of creative abilities; the visually-minded and the nonvisually-minded. The visually-minded are concerned with reproducing what they see and view themselves as spectators. The nonvisually-minded are concerned with the emotional relationship between themselves and the subject, and they feel that they are taking part in the action. The teacher needs to realize that both types exist and structure her class to motivate both types. Lowenfeld stresses that most children react in both ways with a preference for one or the other. This makes motivation of the child easier for the teacher. All of the cited authorities agree that the good teacher starts where the child is and builds new concepts upon the ones already learned. Several examples on how to do this have been presented.

The sections of this paper on creativity and on the developmental characteristics of junior high students are importantly related to the purpose of this project. The teachers of adolescent young adults possesses the special role of working with students of considerable

skill and maturity. The author has tried to give an insight into what the adolescent student is like. It is an accepted fact that all children are creative. When planning instructional units that meet the needs, interests, and abilities of students in a particular school situation it is important to know the individual student, his capacities and maturity level. This is necessary to provide satisfying art experiences. Each child's peculiar talents and abilities should be nurtured.

If "color" is the element of design being studied the focus will be on the role played by this element in the life of the student. Creativity is in all of us - we should know how it works. Since we live in a world of color the study of its many properties, intensities, qualities, values, and extraordinary effect it has on other elements of design gives the widest spectrum possible for experiencing art and encouraging and developing creativity. The author is only proposing that more emphasis be given to the study of "color" so the students are guided toward desirable growths in use and recognition of it's role in their environment.

In the author's research on what is being done in the teaching of art, especially how color figures dramatically in that teaching, she found in Art Education, March 1978, an article by Elliot W. Eisner on "What Do Children Learn When They Paint?" He says art educators operate on

the belief that art activities are good for children. They should be able to justify what is taught in the arts. Eisner describes in his article several potential consequences for children who are given the opportunity to work with teachers of art.

When children are first given an opportunity to use materials one of the first things they learn is that their actions can have consequences. They learn that they can create images with material and that the activity of making such images can provide intrinsic forms of satisfaction. Knowledge that a person can alter the world through his or her own actions is an important learning.

The second thing, Eisner says, that children learn is that the images they create can function as symbols. They can stand for something else. He quotes Edward Sapir, one of the century's most able psycho/linguists, as saying that symbol-making, a process requiring abstraction and transformation of one thing into another, is a natural human capacity upon which thought and consciousness itself depend.

The third thing that children learn is that symbolic images can be used to create an imaginary world and through them they can become a part of other situations in which they can play other roles. This affords them opportunities to empathetically participate in the life of another. This way they learn to empathize, to feel like,

as well as to feel for, others. This is an important ingredient in becoming a social being.

The fourth thing that children learn from making images is that the process of image-making requires the making of judgments. To create the student must invent and judge. In the process of creating a project in art he may shift purposes in order to exploit an unexpected opportunity; a new image presents itself, an array of colors looks particularly arresting, one color has run into another color to create a new shape. To exploit such opportunities purposes must be flexible and judgment must be exercised. In learning to paint, children learn to judge and learn to be flexibly purposive. As children work with materials and have the benefit of intelligent and sensitive teaching in art, their power to conceptualize visual ideas and to use effective means for expressing them increases. Their range for expressive visual articulation increases. Their "vocabulary" of visual possibilities expands and they become more confident because they become more competent in art.

Work in the visual arts has the potential to develop in children the ability to savor the quality of experience that flows from the qualities they encounter. Such experience, in turn, becomes the source for artistic expression. Work in the arts, in sum, provides children with the opportunity to develop the sensibilities that

make aesthetic awareness of the world possible.[62]

The teaching of "color" in all its facets would provide appropriate stimulation for developing in children their powers of conceptualization and expression. This article by Illiot W. Eisner reinforces and sustains the author's proposal that the teaching of "color" as an entity, a vehicle for developing the variety and sophistication of skills or techniques needed for transforming ideas, images, and feelings into a public form, would be an important plus to the art curriculum.

In the author's research she also found an article by Michael Day in School Arts, April, 1975, that reinforces her proposal that many lessons should be taught on the use of color beginning with black and white to develop students' ability to conceptualize visual images and to use effective means for expressing them through color.[63]

In 1895, Claude Monet changed the world of art by painting a lily pond. Monet provided us with an image that altered our perception of nature. Day states in his article on teaching Impressionism to beginning high school art students, "After seeing Monet's work we can see more in nature; we can see what was always there, but was previously unnoticed. Not only did his artistic contributions change our perception of the world but they contributed to an alternation in our view on art."[64] Monet's

paintings are quite acceptable to us today but they were shocking to art connoisseurs of Monet's time. Day further states, "The power of art to change the perceptions of individuals is one means through which art changes the world."[65]

Day's article describes an integrated learning unit organized around the study of Impressionist painting. The objective of this learning unit was to sharpen students' perceptions as well as to broaden their knowledge of art and enhance their productive abilities.

The students at the beginning knew little about "Impressionism" or about color theory. They were shown a number of Impressionist paintings and were able to respond appreciatively to them. There was much in the paintings and even more in nature that the students did not see at the outset.

The teacher wanted to ease the students into the complex activity of landscape painting. The first activity involved students in sketching the scenes at two large ponds near their school. They used pen and ink and/or brush and ink attending only to form, eliminating the multitude of problems related to the use of color. The students were encouraged to notice how light defined forms, how shadows were formed and how light broke up dark areas.

The next step was to introduce the students to

some of the principles of basic color theory. Two needs with respect to the study of color emerged during this part of the unit. The students would need to improve their abilities to mix colors with paints. Some in the class needed to develop their abilities to see colors and to make fine visual distinctions with color. Seeing color became almost a game in the class. For example, the students and teacher went outdoors and looked at clouds in the morning when the soft, subtle colors of the sunrise were still evident. Questions were asked: What color is that cloud? How is the color different from this cloud? Which is darker? How would you mix that color?

Some of the practices of Impressionists, such as using complimentary colors in shadows, were especially useful to assist students to look more attentively and see more in the world around them. Some began to search the world anew, to see tones of red and blue in the shadows of a tree that previously had been considered to be all green. One student came back to school on a Monday and related his experience while hunting during the weekend. The day had been unsuccessful from a hunter's standpoint, but his enjoyment in seeing color in nature was more than compensatory. When students began to see more color and to make fine discriminations, they also began to use color more carefully in their own work. The

study of color became instrumental to the achievement of results in works of art, not merely an academic exercise. Much of the conversation between teachers and students had to do with color as it related to "being selective", "foreground, middle-ground and background", and "center of interest".

The children were engaged in a first-hand experience, one of the most direct means to gain insight. Because of their inexperience they had to develop composition and painting technique simultaneously. The students discovered for themselves that painting could be a satisfying activity, but that it required more sensitivity, attention, perseverance, and skill than most had initially imagined. The approach to teaching this unit integrates the critical, historical, and productive aspects of art learning. By relating the seeing of art, the knowing about art, and the doing of art, this approach utilizes each aspect for the support of the other two.[66]

The ideas and concepts set forth in this article are supportive of the author's contention that the teaching of color should be an integral part of the art curriculum.

Summary

Art is both a creative process by which we evolve into well-adjusted, stabilized human beings and

an end-product which is a well-designed object which we can see, touch, and enjoy because of its aesthetic or beautiful form. Both the process and the end product of art are important. Art is the creative function of man; and through a release of this capacity, he is enabled to communicate his most intense and deepest feelings and ideas. In this sense, art becomes a universal language of expression. Art grows out of the inherent and daily needs of man and involves the expression of imagination, feeling, organization or design, knowledge, skill selectivity, and sensitivity to art form. To make choices and to work out answers to problems in a logical way are by-products of the kinds of learning which are involved in participation in the arts. Appreciation and enjoyment of art or beauty are both intellectual and emotional. Art forms or products enhance every aspect of our lives and lift, to a qualitative basis, our everyday living. Art is not only a product but a way of life; not simply a material form but a basic approach to living.

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CHAPTER III

SCOPE AND SEQUENCE OF ART INSTRUCTION AS RELATED TO COLOR AND PERSPECTIVE

The elementary art student has been introduced to the basic color wheel. They have learned the three primary colors, red, yellow, and blue are basic and that all other colors are created from them. When they are mixed they create the three secondary colors, orange, green, and violet. They have learned that these colors can be classified as warm and cool colors. The warm colors are yellow, red, and orange and the cool colors are blue, green, and violet. They probably have created different moods with these colors. They have learned that white added to a color creates a tint and black added to a color creates a shade.

The elementary student has been introduced to perspective. The first through fourth grades have learned that depth can be created by making objects smaller and closer together in the distance. The higher the object is on the paper the farther away it is. They have learned also, that depth can be created by overlapping and letting colors fade out in the distance. The fifth and sixth grades use these principles but also learn to use one-

point perspective.

The maturation, basic needs, and individual differences of early adolescents should and does influence the differentiation of activities, assignments, curricular content, and organization in accordance with the abilities and interest of each learner. The art program for junior high students makes learning continuous raising its structure on the foundations laid in the elementary program.

Guidelines for Acceptable Performance With Color For 7th and 8th Grade Students

I. Long Range Objectives:

A. The student will be given the opportunity to experiment with the techniques of painting in different media such as tempra, oil pastels, and acrylics, diverting himself from a flat two-dimensional approach and developing three-dimensional painterly qualities in his work.

B. The student will learn to lay in areas of color and to build up values, proceeding from the background to the middle-ground, and finally to the foreground of the picture surface.

C. He will plan his painting in pencil renderings using the principles of perspective.

D. By a careful selection of colors, the student will express the mood of the painting and develop it in terms of a theme that will be readable to the viewer.

E. The student will learn his painting vocabulary and thus better prepare himself to express ideas.

II. Intermediate Objectives:

A. The student will develop a workable understanding of the theory of color.

B. The student will be able to plan and render a painting that interprets a theme in color and composition, and is readable to the viewer.

C. The student will be able to select the appropriate materials and incorporate the proper techniques for application in the painting problem.

D. The student will begin to eliminate illustrative tendencies and become concerned with detail, striving to relate his work more closely to reality.

E. The student will be concerned with the correct mixing of colors to achieve subtle variations in value and intensity.

F. By the use of oil pastels and acrylics, the student's work will display an added freshness that is not easily attained in the medium of tempera.

III. Short-term Objectives:

A. Objective: The student will be able to fill out a diagram of the design elements and principles showing how they interrelate and give a definition of each. (Diagram is in appendix.)

Fulfillment of objectives: LRO-C LRO-E IO-B IO-D

Evaluation: Test

B. Objective: The student will be able to balance light and dark colors realizing that they have visual weight. (Slides 1 and 2)

Fulfillment of Objectives: LRO-D LRO-E IO-B IO-C

Materials: 9x12 white drawing paper, magic markers, compass, ruler, pencil, and fine-tip black markers.

Project: The student will draw two compositions using geometric shapes. One will be symmetrical balance and the other asymmetrical balance. The symmetrical balance design will be exactly the same on both sides of a vertical axis. If it is folded down the center the shapes and the colors should match up. This is done by folding the paper in half and drawing one side of the design. Then fold the drawing to the inside and trace over the back of that drawing. The pencil mark will come off on the other side making the two

sides identical. The asymmetrical balance design is not identical on both sides but the placement of the shapes and colors create a felt equilibrium or balance. This type of balance is more interesting than complete symmetry. When the drawings have been colored in with marker the student should outline the design with the fine-tip marker.

Evaluation: A grade will be given on execution, imagination, and placement of shapes and color.

C. Objective: The student will be able to separate space by the use of imagined perspective, overlapping, and by the use of color versus black and white. (Slide 3)

Fulfillment of Objectives: LRO-A LRO-B LRO-C LRO-E IØ-D IO-E

Materials: 12x18 white drawing paper, pencil paint, and fine-tip black markers.

Project: The student is to create a design using several free-form shapes of varied sizes, keeping in mind all the principles of design already studied. He is to open up these forms by making holes in them and imagining they have three-dimension by drawing sides to them. They are to determine which sides they think they

would see from its position on the paper. Next they will actually bind all of these forms together by drawing a string through and around all of the forms employing the principle of movement and creating unity. They will then paint the background in the color of their choise creating the illusion of depth. The forms in front seem to float and come forward. When the paint has dried they will outline the forms with black fine-tip marker.
Evaluation: A grade will be given on execution, imagination, placement of shapes, and perspective.

D. Objective: The student will be able to use the mechanics of perspective by drawing nine boxes that recede to one central point. (Slide 4)
Fulfillment of Objectives: LRO-A LRP-C LRO-E IO-C IO-D
Materials: 12x18 drawing paper, pencil and rulers.
Project: They are to draw a line through the center of the paper horizontally. This is the horizon line. The vanishing point is placed on the center of the horizon line. They should draw three rectangular shapes across the top, three through the center, and three across the bottom. The sides are to match up with the point and the back of the box is to be parallel

to the front. This shows the students what the boxes look like from every position; above, on, and below the horizon line. This is done in pencil only but is necessary to know when they want to show depth when using color. Evaluation: This will receive a grade on neatness and correctness.

E. Objective: The student will be able to use the mechanics of two-point perspective and demonstrate the value scale of one color. (Slide 5)
Fulfillment of Objectives: LRO-A LRO-B LRO-C LRO-E IO-A IO-C IO-D IO-E
Materials: 12x18 white drawing paper, pencil, ruler, colored pencils, and fine-tip black markers.
Project: The students will draw seven box forms, four openings, and three intersections of these forms. The student will work vertically on the paper drawing a one-inch frame around the outside edge. A horizon line is drawn through the center and a vanishing point is placed at each end of it. The lines of the basic forms are vertical with sides going to the vanishing points. When forms are drawn the student will demonstrate a knowledge of the change of values in one color by measuring off

one-inch horizontal strips in the background and shading them in steps from dark at the top, to light in center, and back to dark at the bottom. The light area in the center gives the illusion of vast distance because colors seem to fade with distance. As in the previous project, the use of color in the background creates depth while the black and white forms seem to float in space.

Evaluation: A grade will be given on execution, correctness of perspective, and value changes.

F. Objective: The student will demonstrate the effect different types of texture have on the amount of light reflected from that surface which can also determine the value of the color seen. (Slide 6)

Fulfillment of Objectives: LRO-A LRO-C LRO-E IO-A IO-C IO-D

Materials: 4" squares of colored tissue paper, envelopes, pencil, 1" paint brushes, polymer, 12x18 yellow construction paper.

Project: Students are to take home 20 four-inch squares of tissue paper in an envelope. They are to find 20 different textural surfaces and lay the tissue on it, then rub with the side of

the pencil to pick up that texture on the paper. The next day they bring them back to class. They cut and arrange them on the construction paper into an interesting balance of values. Then they paint over it with polymer to glue them down. This is using actual textures, the next project will be creating artifical texture.

Evaluation: They will be graded on the execution, variety of textures, and the arrangement of them.

G. Objective: The student will be able to recreate actual texture into artifical texture by drawing what is seen to produce variety and interest to his compositions. (Slide 7)

Fulfillment of Objectives: LRO-A LRO-C LRO-E IO-A IO-C IO-D

Materials: 12x18 white drawing paper, pens, India ink, and their actual texture project.

Project: The students are to draw a free-form design using all the principles of organization. Then they are to choose eight textures from the previous project and reproduce them in their forms with pen and ink, being careful to balance the light and dark values.

Evaluation: They will be graded on the execution, variety of textures, and the balance of values.

H. Objective: The student will be able to produce nine grades of value from black to white. (Slide 8)

Fulfillment of Objectives: LRO-A LRO-E IO-A IO-C IO-D IO-E

Materials: 9x12 white drawing paper, rulers, #4 drawing pencils, and glue.

Project: Draw three scales vertically on paper with ruler. There are to be nine one-inch squares. Then start at top leaving first square white, the next one barely shaded, until at the bottom it is very dark. There should be a definite change from one square to the next but it should be gradual. Cut out the best scale and glue it to the center of a 9x12 sheet of white drawing paper. This should be saved for a future project.

Evaluation: A grade will be given on execution, and change of values.

I. Objective: The student will be able to relate the nine different values to a still-life giving a three-dimensional effect on a flat surface. (Slide 9)

Fulfillment of Objectives: LRO-A LRO-B LRO-C LRO-E IO-A IO-C IO-D IO-E

Materials: 12x18 white drawing paper, and #6 drawing pencils.

Project: The student will draw a large bowl filled with fruit and placed on a table from memory. The student will shade the objects using the nine values to give the effect of volume or depth. The student will do the same project later in color to relate the value changes here to the light and dark colors of the color wheel.

Evaluation: The student will be graded on the execution, composition, and value changes.

J. Objective: The student will develop a workable understanding of the theory of color.

Fulfillment of Objectives: LRO-D LRO-E IO-A IO-B

Project: The teacher will hand out a study guide on color theory which will be used daily to work from. (This is in appendix.) The student will read it and study it for a test.

Evaluation: Test

K. Objective: The student will show his understanding of how the three primary colors will make all the other colors in their pure state. (Slide 10)

Fulfillment of Objectives: LRO-A LRO-E IO-A IO-B IO-C IO-E

Materials: 9x12 white drawing paper, pencil, protractors, tempera paint, mixing trays, and brushes.

Project: The student will draw a twelve-part radial design and fill each space with its proper order of color. When it is completed they will have mixed the primary colors to make all the other colors of a basic color wheel. At the same time they are to realize that this wheel can be divided into two parts: half of it is classified as warm colors - half of it is classified as cool colors. This project and the following project should be worked on at the same time while the students have their paints mixed.

Evaluation: The student will be graded on the execution, proper color mixing and originality of design.

L. Objective: The student will show that each of the twelve colors on the color wheel have a value that corresponds with a gray value on the value scale by matching up the color values. (Slides 11 and 12)

Fulfillment of objectives: LRO-A LRO-B LRO-D LRO-E IO-A IO-B IO-C IO-D IO-E

Materials: 9x12 white drawing paper, pencils, rulers, tempera paint, mixing trays, brushes, and previous project done on black and white color values. (I)

Project: On two different sheets of paper the student will draw two vertical scales. Each scale should consist of eight one-inch squares. One page will be for warm colors and the other page for cool colors. While they have their paint mixed for the color wheel they are to paint in the warm colors on the scale in the correct order on the sheet of paper. On the other sheet they are to paint in the cool colors in the same fashion. When these are dry they are to cut out the best group of colors and glue them on the page they made of the black and white value scale, matching up the proper values. An example of this is shown on the hand-out sheet on color theory. Show an example of the completed scale on a color slide and the same scale on a black and white slide to compare the values. On a sheet of note-book paper the student is to write something about each color. The information is in the study guide on color theory.

Evaluation: The student will be graded on the execution of the project and on the worksheet.

M. Objective: The student will demonstrate his understanding of the relationship of color value to black and white value. (Slide 13)
Fulfillment of Objectives: LRO-A LRO-B LRO-C LRO-E IO-A IO-B IO-C IO-D IO-E IO-F
Materials: 12x18 white drawing paper, pencil, oil pastels.
Project: The student will reproduce the fruit bowl he did in black and white but this time he will use the color scale only; no black or white. He is to show the light and dark of an object with color only.
Evaluation: The student will be graded on the execution, composition, and color value change.

N. Objective: The student will demonstrate the technique of blending paint and combining color schemes. (Slides 14,15 and 16)
Fulfillment of Objectives: LRO-A LRO-B LRO-C LRO-D LRO-E IO-A IO-B IO-C IO-D IO-E IO-F
Materials: 12x18 white drawing paper, pencils, rulers, tempra paint, mixing trays, and brushes.
Project: The student will draw four two-inch rectangles across his paper horizontally. He needs two of these. In each rectangle he will combine color schemes with the technique of blending.

1. Complimentary color scheme
2. Tint
3. Shade
4. Both tint and shade
5. Split-complimentary color scheme
6. Monochromatic color scheme
7. Analogous color scheme
8. Triadic color scheme

The student should label the color under each change of color. The choice of color is theirs according to the proper scheme. They can use their study guide for this.

Evaluation: The student will be graded on the execution, correct color scheme, and blending technique.

O. Objective: The student will produce a monochromatic color scheme in a composition. (Slide 17)

Fulfillment of Objectives: LRO-A LRO-B LRO-C LRO-D LRO-E IO-A IO-B IO-C IO-D IO-E IO-F

Materials: 12x18 white drawing paper, pencils, tempera paint, mixing trays, and brushes.

Project: The student will plan his painting with a pencil rendering. The subject can be abstract or of nature, allowing for the taste of the visually and non-visually minded student. The project should use all the principles of design.

Evaluation: The work will be graded on the execution, originality, and value changes.

P. Objective: The student will demonstrate his understanding of complimentary color schemes and what happens to the two colors when mixed together. (Slide 18)

Fulfillment of Objectives: LRO-A LRO-B LRO-C LRO-D LRO-E IO-A IO-B IO-C IO-D IO-E IO-F

Materials: 12x18 white drawing paper, pencils, tempera paint, mixing trays, and brushes.

Project: The student will draw a composition of nature or abstract and paint with only two complimentary colors, mixing them together for different variations and tones. The gray areas produced by mixing will recede and the brighter areas will advance. The student should keep in mind the principles of balance, harmony, contrast, economy, dominance, and porportion. All of these used together produce unity. The teacher can discuss how nature is always correct in it's color schemes. An experiment can be done to demonstrate how the eyes will produce a color's compliment. Six objects are needed, each painted with a different primary or secondary color. The student should look at each object separately for a few seconds, then look immediately at a white area. The student should see the object reproduced in its complimentary color.

Q. Objective: The student will demonstrate his understanding of a split-complimentary scheme by drawing a composition and painting it. (Slide 19)

Fulfillment of Objectives: LRO-A LRO-B LRO-C LRO-D LRO-E IO-A IO-B IO-C IO-D IO-E IO-F

Materials: 12x18 white drawing paper, pencils, tempera paint, mixing trays, and brushes.

Project: The composition can be of nature or be abstract and is painted with the three split-complimentary colors of their choice. They can mix the split-compliments to the original color for variations. For example; if red-violet is mixed with yellow, grayed tones are produced. The brighter or more intense the color the more emphasis it will have.

Evaluation: The work will be graded on the execution, originality, and color variations.

R. Objective: The student will demonstrate his understanding of an analogus color scheme by producing a composition using an analogus scheme of his choice. (Slide 20)

Fulfillment of Objectives: LRO-A LRO-B LRO-C LRO-D LRO-E IO-A IO-B IO-C IO-D IO-E IO-F

Materials: 12x18 white drawing paper, pencils, tempera paint, mixing trays, and brushes.

Project: The composition can be of nature or abstract and is painted with four or more related colors next to each other on the color wheel with one common hue. The related colors produce the principle of harmony.

Evaluation: The work will be graded on the execution, originality, and color variations.

S. Objective: The student will paint a composition to demonstrate his understanding of a triadic color scheme. (Slide 21)

Fulfillment of Objectives: LRO-A LRO-B LRO-C LRO-D LRO-E IO-A IO-B IO-C IO-D IO-E IO-F

Materials: 12x18 white drawing paper, pencils, tempera paint, mixing trays, and brushes.

Project: The student will draw a humorous or symbolic composition and paint it with three colors spaced equal distance apart on the color wheel. The student can use tints and shades for variation. Ideas for subject may come from magazines.

Evaluation: The work will be graded on the execution, originality, and color variations.

T. Objective: The student will demonstrate his understanding of the different color schemes by choosing a picture from a magazine with a particular color scheme and reproducing it in tempera paint. (Slide 22)

Fulfillment of Objectives: LRO-A LRO-B LRO-C LRO-D LRO-E IO-A IO-B IO-C IO-D IO-E IO-F

Materials: Magazines, 12x18 white drawing paper, pencils, tempera paint, paint trays, and brushes.

Project: The student will draw his composition in pencil by looking at the magazine picture. He is to use at least six colors that are complimentary and harmonious in his composition.

1. Complimentary colors: This is done by using two colors adjacent to the complimentary colors, being sure to always use its opposite.
2. Split-complimentary colors: The student will use two sets of split-compliments adjacent to each other for harmony.
3. Analogus colors: The student will choose six colors adjacent to each other with one hue in all of them.

Evaluation: The work will be graded on the choice and execution of the color schemes, originality, and color variations.

U. Objective: The student will demonstrate that he doesn't always have to use a color scheme to achieve a satisfactory use of colors.

He can use color freely in a composition if he uses a good sense of judgment and works with his previously learned knowledge.

(Slide 23)

Fulfillment of Objectives: LRO-A LRO-B LRO-C LRO-D LRO-E IO-A IO-B IO-C IO-D IO-E IO-F

Materials: 12x18 white drawing paper, pencils, pictures of flowers, magazines, and oil pastels.

Project: The student will draw a composition of three large flowers of the same variety, using all the design principles and the technique of chiaroscuro, showing depth by the use of light and dark colors without using black. This is done with oil pastels. The student should have at least six different colors in his stems and six in his flowers to create the illusion of depth.

Evaluation: The work will be graded on the execution, originality, and color variations.

V. Objective: The student will be able to use knowledge previously learned with oil pastels and tempera to develop a composition in acrylics.

Fulfillment of Objectives: LRO-A LRO-B LRO-C LRO-D LRO-E IO-A IO-B IO-C IO-D IO-E IO-F

Materials: Acrylic paint, canvas, brushes, and gesso.

Project: The final project will be using acrylic paints in the same way the studends previously used the oil pastels, being careful not to overwork the colors, but letting them show through on the surface.

Evaluation: The work will be graded on the execution, originality, and color variations.

APPENDIX

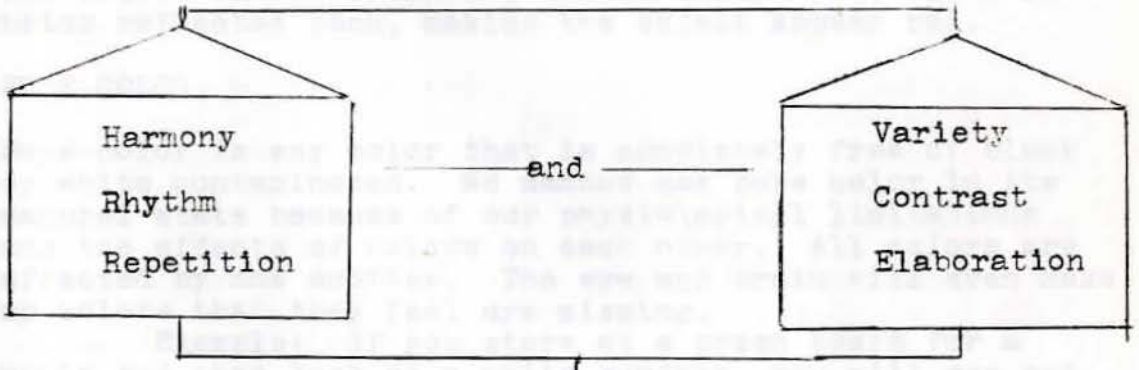
FORM

is the use of

THE ELEMENTS OF ART

Line
Shape
Value
Texture
Color

according to the PRINCIPLES OF ORGANIZATION



Balance

Movement

Proportion

Dominance

Economy

Space

all of these together produces

UNITY

COLOR

Color is a sensation which causes stimulation to the eye, and is one of the most obvious attractions around us.

Color is contained in light and not in the objects itself. Objects do not contain color. Color is caused by an objects ability to absorb different wavelengths of light. There must be light to see color - when there is very little light, such as at nighttime, only values are seen. Because objects do not absorb the same amount of light at each wavelength, different colors are produced. When light strikes an object, it penetrates the surface somewhat. How much penetration and absorbtion depends on the texture of the object.

Example: If a red object is seen, that means that the object is absorbing all colors except red, which is being reflected back, making the object appear red.

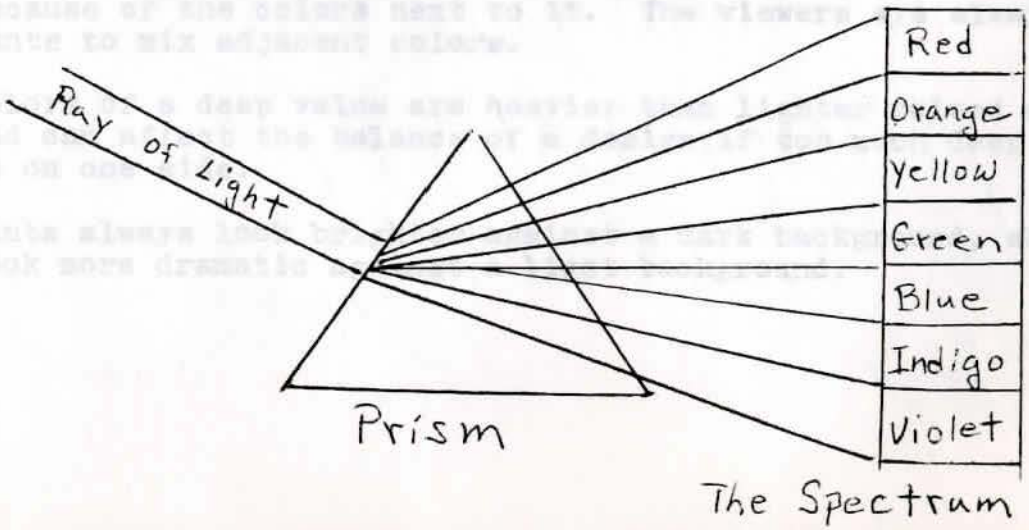
PURE COLOR

Pure color is any color that is completely free of black or white contaminates. We cannot see pure color in its natural state because of our physiological limitations and the effects of colors on each other. All colors are affected by one another. The eye and brain will even make up colors that they feel are missing.

Example: If you stare at a green board for a while and then look at a white surface, you will see red.

WHITE LIGHT

Different sources of light affect colors in different ways. Sunlight, incandescent light, fluorescent light all change how we perceive color. Only sunlight, or whitelight, is a mixture of all colors. A glass prism breaks white light into its seperate colors. White surfaces reflect all colors. Black surfaces do not reflect any colors.



HUE

Hue is another word for color.

VALUE

Value is the lightness or darkness of a color. There must be light to see a color. Without light, only value is seen.

INTENSITY OR CHROMA

Intensity is a colors brightness or dullness, the purity of a hue, how free it is from all other colors except those that are supposed to be there.

Example: Green contains only blue and yellow, no red.

WAYS TO CHANGE A HUES VALUE OR INTENSITY

TINTS

Tints are achieved by adding white to color, making a lighter value of the hue. Example: Red mixed with white makes the tint, pink.

SHADES

Adding black to a hue makes a darker value or shade. Example: red + black = maroon, orange + black = brown, yellow + black = olive green.

Bright colors always appear larger than grayed ones because a bright color is more stimulating to the nerves of the retina of the eye than a grayed color. Likewise, a light color surrounded by a dark color appears larger and vice versa. Example: Yellow appears larger than orange, which appears larger than red, which appears larger than blue, etc.

If the same color is used in several places in a picture plane, its hue may appear to be different in different places because of the colors next to it. The viewers eye always wants to mix adjacent colors.

Colors of a deep value are heavier than lighter valued colors and can affect the balance of a design if too much deep color is on one side.

Tints always look brighter against a dark background, shades look more dramatic against a light background.

PSYCOLOGICAL EFFECTS OF COLOR

Reactions to color are often psycological. Red is used most often in advertising because it is the most stimulating color to the eye. In total saturation, red can cause some individuals to hallucinate in a short period of time.

Blue reduces mental excitability and helps one to concentrate. It is soothing and cooling, but if it is used to indiscriminantly it can cause depression and melancholia.

Green is also cooling, but in excess can produce listlessness.

Yellow is cheerful, but is also tiring to the eye.

Brown is restful and warming, but needs to be combined with yellow, orange, or gold or it can also be depressing.

COLOR THEORY

PRIMARY COLORS

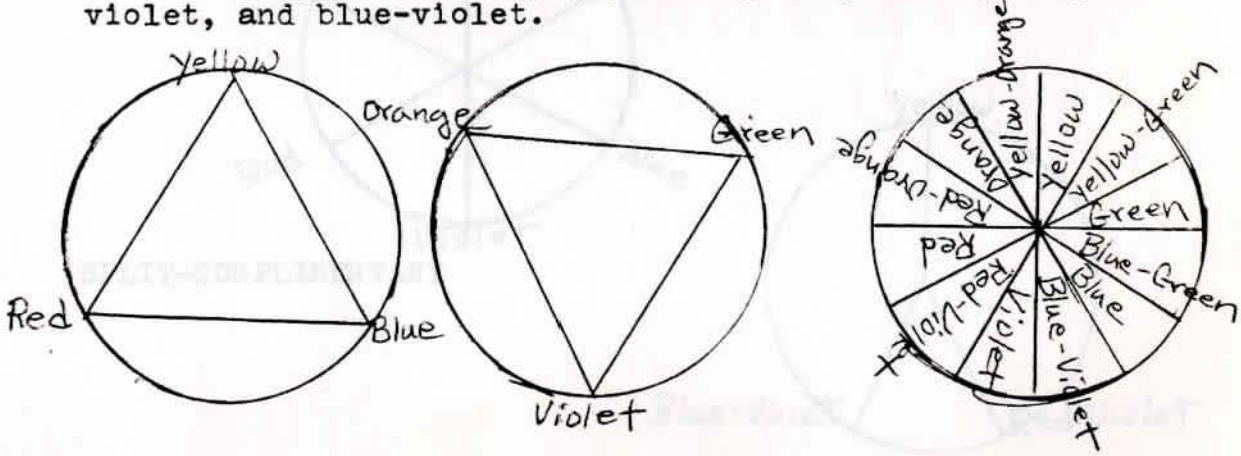
Color begins with three hues which are pure and cannot be made by mixing. They are called primary colors and are red, yellow, and blue. By using these three colors plus white and black, all other colors can be made.

SECONDARY COLORS

By mixing two primary colors together in equal proportions, the three secondary colors are made, and they are: orange, green, and violet.

INTERMEDIATE COLORS

By mixing one primary and one secondary color together in equal amounts, intermediate colors are made, and they are: yellow-orange, red-orange, yellow-green, blue-green, red-violet, and blue-violet.



VALUE SCALE

Each of the twelve colors on the color wheel has a value that corresponds with a gray value on the value scale.

	WHITE	
YELLOW	HIGH LIGHT	
YELLOW-ORANGE	LIGHT	YELLOW-GREEN
ORANGE	LOW LIGHT	GREEN
RED-ORANGE	MEDIUM	BLUE-GREEN
RED	HIGH DARK	BLUE
RED-VIOLET	DARK	BLUE-VIOLET
	LOW DARK	VIOLET
	BLACK	

WARM AND COOL COLORS

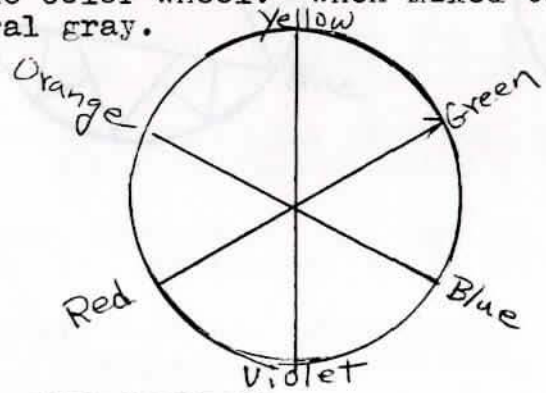
Warm colors make one think of warmth, the sun and fire. They contain mostly yellow and red and are located on the left side of the color wheel. Yellow, yellow-orange, orange, red-orange, red, and red-violet.

Cool colors make one think of ice, water and vegitation. They contain mostly blue and are located on the right side of the color wheel. Yellow-green, green, blue-green, blue, blue-violet, and violet.

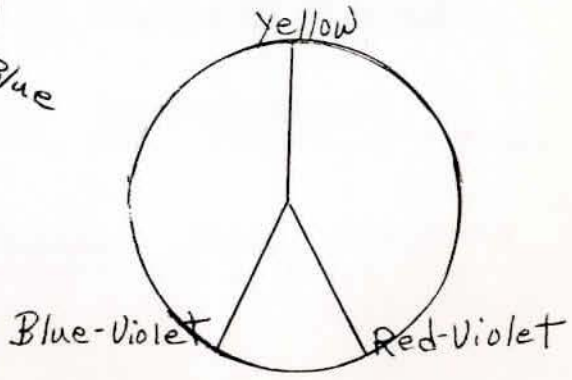
COLOR SCHEMES

COMPLIMENTARY COLOR SCHEME

A complimentary color scheme is two colors which are directly opposite each other and equidistant to each other on the color wheel. When mixed together they produce a neutral gray.



SPLIT-COMPLIMENTARY

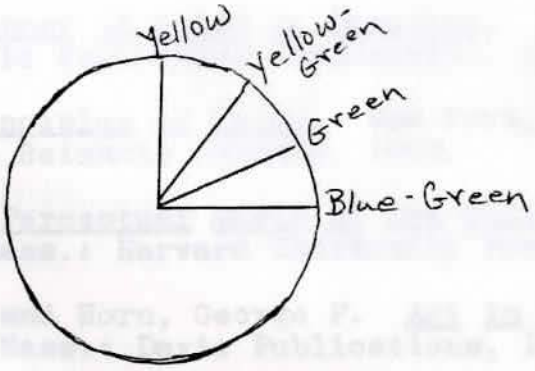


MONOCHROMATIC

One color plus all of its tints and shades.

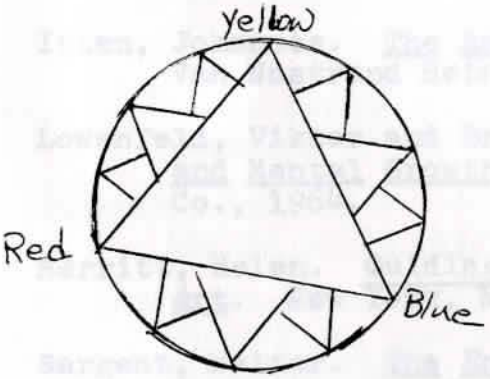
ANALOGOUS

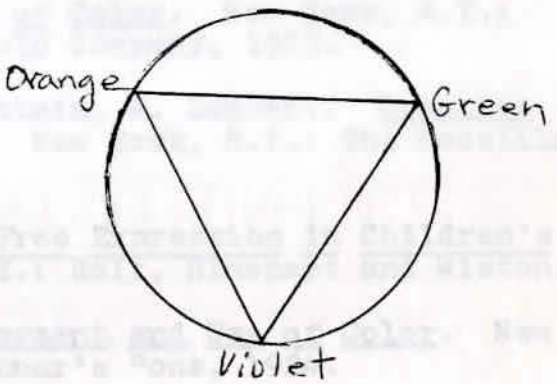
Closely related colors in which we can see one common hue. They are neighboring colors on the color wheel.



TRIADIC COLOR SCHEME (TRIAD)

Three colors that are spaced equally distant apart on the color wheel.





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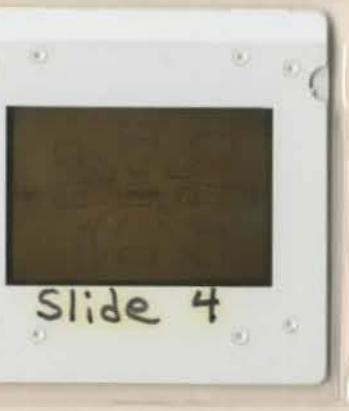
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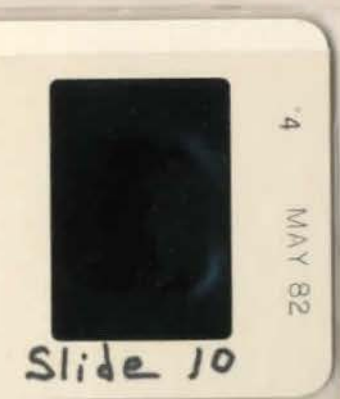

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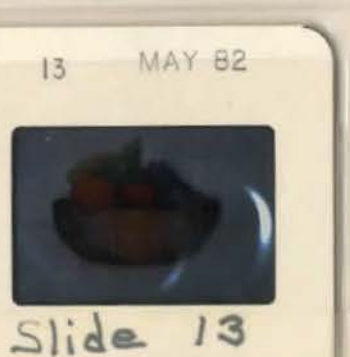

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