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Selected Experiences and Teaching Procedures, Using Clay as a Medium, for Developing Creativity in the Nine-to-Eleven Year-Old

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SELECTED EXPERIENCES AND TEACHING PROCEDURES, USING
CLAY AS A MEDIUM, FOR DEVELOPING CREATIVITY IN THE
NINE-TO-ELEVEN YEAR-OLD

A Thesis
Presented to
the Graduate Faculty
Central Washington State College

In Partial Fulfillment
of the Requirements for the Degree
Master of Education

by
Linda Claire Hohn
November, 1970

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L.C.H.

TABLE OF CONTENTS

CHAPTER		PAGE
I.	STATEMENT OF THE PROBLEM	1
	Purpose of the study	2
	Method of investigation	2
	Limitation of the study	3
II.	DEFINITION OF TERMS	4
	Developmental characteristic	4
	Cognitive development	4
	Perception	4
	Creative imagination	4
III.	RELEVANT IDEAS FROM LITERATURE	5
	Creativity in general	5
	Perceptual and cognitive development	10
	Artistic imagination	12
	Medium	12
	Developmental characteristics	13
	Implications for art education	16
IV.	SELECTED EXPERIENCES AND PROCEDURES	20
	Making a pinch bowl	20
	Combining pinch and coil methods	23
	Slab technique	32
	Combining pinch, coil, and slab techniques	39
V.	SUMMARY AND CONCLUSIONS	53

CHAPTER	PAGE
Summary	53
Conclusions	55
BIBLIOGRAPHY	58
APPENDIX	61

LIST OF FIGURES

FIGURE		PAGE
1.	Ricky's Two Handled Covered Jar	27
2.	Some Results of Experimentation by Donald Ricky, Lorrie, and Debbie	28
3.	Bob's Bottle with Stopper	29
4.	Pinch Bowls Executed During the Second Activity	30
5.	Mark, Tim, Diane, and Caroline Display Work Completed During the Second Activity	33
6.	A Crowing Rooster by Danny	34
7.	Work Completed During the Second Activity . . .	35
8.	Flower Forms Completed During the Third Activity	37
9.	A Continuation of Work Completed During the Third Activity	38
10.	A Turtle Parlay	45
11.	Diane's Turtle Showing an Unusual Glaze Application	46
12.	Work Completed During the Fourth Activity . . .	47
13.	A Continuation of Work Completed During the Fourth Activity	48
14.	Monkeys Formed by Using Pinch and Coil Methods	49
15.	Fish Influenced by the Rock Form	50

FIGURE	PAGE
16. Fishing Birds	51
17. Armadilloes Before and After by Danny	52

CHAPTER I

STATEMENT OF THE PROBLEM

Art in the elementary school is often a seasonal or subject-centered program. There is usually little or no consideration given either to the developmental needs of the child or to a gradual sequence in the presentation of the medium or activities.

A study conducted by Kenneth R. Beittel and others at the ninth grade level on the effect of depth vs. breadth instruction concludes that:

Over a year's period of instruction with enriched programs at the ninth grade level, a group instructed by a 'depth' approach will be superior to a 'breadth' group or a control group, . . . as measured by progress in spontaneity, aesthetic quality and related creative personality dimensions. (3:251).

The same study suggests that:

It may be well to begin earlier with boys and girls in engaging in sustained long-term projects of depth and with less yielding to their restless demands for variety. (3:256).

There are legitimate reasons for a progression from simple to the more difficult in the use of every art medium. The child should not be expected to produce creatively until he understands to some extent the characteristics of the given medium. (2:143).

"The evidence indicates that no individual can advance to a later stage without going through the earlier ones . . ." (16:171).

The growth of the child in creative expression needs to be systematically encouraged and guided lest his growth in this area become stagnant or retrogresses.

Purpose of the study. It is the aim of this study to consider the creative development of nine-to-eleven year-olds in art education.

This study also suggests the need for providing a background of experience from which the child might draw inspiration for his creative expression, as a;

child's visual symbols are intimately related to his conceptual growth. If this is the case, there is plenty of justification for saying that we do the child no good by criticizing the visual forms that he produces. If we wish him to change the shape of his work, we must change his concepts first. (10:41).

Throughout this study the investigator hopes to demonstrate a method for increasing the confidence of the child in his creative ability as well as actually stimulating the development of this ability.

Method of investigation. Possibilities of clay were explored in depth for one gradual sequence in development. Clay was used to determine the value of the one medium approach in stimulating the creative development of the nine-to-eleven year-old.

Activities were chosen by first, considering a possible sequence of techniques to be developed in achieving a mastery of the chosen medium, clay. Secondly, there was

a consideration of the suitability of the chosen activity as an avenue of creative expression for the child. Thirdly, there was the consideration of whether or not the chosen activity was congruent with the present developmental level of the child. Furthermore, would it provide him with the means of carrying his developmental level further through the expression of his idea and the development of skill in working with the chosen medium.

Observation was augmented by review of relevant literature, particularly in the consideration of the creative factors and developmental needs of the nine-to-eleven year-old.

Limitation of the study. This study was limited to a consideration of the investigator's students, a group of twenty-seven fourth graders. The study was carried out at Clover Creek School, Bethel School District, Tacoma, during the school year 1967-68.

As already stated, the art activities for a gradual sequence of development were limited to working in clay.

CHAPTER II

DEFINITION OF TERMS

Developmental characteristic. A developmental characteristic is a behavior trait which indicates that an individual possesses affective and cognitive factors common to and peculiar to a period of intellectual or physical growth.

Cognitive development. As referred to in this study is understood in terms of Piaget's investigations which led him to conclude that there are three major stages in the child's cognitive development: the sensory-motor period; the concrete operations period; and the period of formal operations. (See Review of Literature) (11:33).

Perception. As used in this study refers to the coordination of the perceptual image plus perceptual movement and the coordination of these movements to develop a mental image. (11:35).

Creative imagination. "The ability to utilize vivid sense impressions effectively in the creation (organization) of a work having some degree of aesthetic character." (20:113).

CHAPTER III

RELEVANT IDEAS FROM LITERATURE

The art program in the elementary school should give primary consideration to fostering the creative growth of the child from a developmental viewpoint.

Every medium can be structured in its presentation so that the child by progressing from the comparatively simple to more complex techniques may experience greater creative growth through the medium.

Before developing an art program which purports to take into consideration the creative needs of a child one must first be aware of the general developmental needs of most children in relation to creative growth.

Creativity in general. First consideration should be given to creative imagination as:

The ability to utilize vivid sense impressions effectively in the creation (organization) of a work having some degree of aesthetic character. One does not construct 'out of' unless some basis for such construction is there, and that can come only from one's experience, or as is usually the case from composites of experience. (20:113).

In research conducted at Penn State, these criteria for creativity were developed: "flexibility; fluency; sensitivity to problems; originality; and the ability to analyze, synthesize, and redefine materials and problems and organize them coherently." (12:12).

Paul Torrance defines creative thinking as: "the

process of forming ideas or hypotheses, testing hypotheses, and communicating the results." (20:32).

Wilson asserts that:

The abilities involved in being creative are universal, i.e., everybody possesses these abilities to some degree; that these abilities are capable of being increased by training; and that it is one of the school's legitimate functions to provide such training. (20:33).

He further states that:

Creativity is manifested early in the life cycle and that its development depends upon 'experience in the social and physical world and the values of the cultural environment.' Fletcher 1958 (20:33).

Wilson also cites the necessity of including discovery as well as investigation as long as it involves something new to the child. Also, included would be the production of ideas which contribute to the pleasure and welfare of the group to which the child belongs. (20:33).

Paul Torrance lists several practices for promoting creativity in the classroom:

1. VALUE CREATIVE THINKING.

Every educator from the kindergarten through the graduate school should always be on the alert to notice new ideas proposed by children and young people, and to encourage such individuals to continue the development of their creative talents. There are two major obstacles to achieving this goal which must be understood and mastered. The first is in recognizing and appreciating the child's creative productions. A second obstacle to valuing creativity is our tendency to overrate the finished product.

2. MAKE CHILDREN MORE SENSITIVE TO ENVIRONMENTAL STIMULI.

There is a need to make young children more sensitive to a wide range of environmental

stimuli. We do know that young children can be helped to sense such stimuli more clearly and vividly and that this affects the quality of their creative productions.

3. ENCOURAGE MANIPULATION OF OBJECTS AND IDEAS.

Studies of creative thinking in the early school years show a significant relationship between degree of manipulation and the quality and quantity of inventive responses.

4. TEACH HOW TO TEST SYSTEMATICALLY EACH IDEA.

Teachers should show pupils beginning in the early grades, how to define a problem and keep testing each suggestion systematically. After trying the various possibilities, the child could then be permitted to decide for himself which is best.

5. DEVELOP TOLERANCE OF NEW IDEAS.

The important role of the teacher or the leader is to protect and obtain a hearing for minority ideas and solutions to problems.

6. BEWARE OF FORCING A SET PATTERN.

Freedom and permissiveness with guidance reduced to a minimum, is an important ingredient of much creative work.

7. DEVELOP A CREATIVE CLASSROOM ATMOSPHERE.

Reflected in the artifacts found in the room, there is an atmosphere of "released control," permissiveness, a sense of security, an absence of fear, flexible ways of working together and the like.

8. TEACH THE CHILD TO VALUE HIS CREATIVE THINKING.

It is important that the child learn early to place value on his own ideas and to trust his perception of reality. One approach to this is to have the child form the habit of recording what he thinks. This helps him to appreciate the value of his imagination and at the same time discourages excessive daydreaming. As the child sees his own ideas expressed in some concrete form, he should be encouraged to continue his efforts.

9. TEACH SKILLS FOR AVOIDING PEER SANCTIONS.

It seems obvious that the problem resolves itself into one of helping an individual maintain those characteristics which seem essential to the development of his creative talent while at the same time helping him to acquire skills for avoiding or reducing to a tolerable level the peer sanctions, so that he will have an opportunity to find expression for his creative talent.

10. GIVE INFORMATION ABOUT THE CREATIVE PROCESS.

The steps in the creative process seem to be quite well established and the process appears to be essentially the same regardless of the activity. First there is apparently the sensing of a need or deficiency, random exploration, and a clarification or "pinning down" of the problem. Then ensues a period of preparation accompanied by reading, discussing, exploring, formulating many possible solutions, and critically analyzing these solutions for advantages and disadvantages. Out of all this activity comes the birth of a new idea -- flash of insight, illumination. Finally there is experimentation to evaluate the most promising solution and the selection and perfection of the idea . . . encourage quantity of production and . . . "free-wheeling" of ideas without concern for quality, at least temporarily.

11. DISPEL THE SENSE OF AWE OF MASTERPIECES.

In this connection, Wilson (1958) suggests the following reminders that teachers can keep before children:

- A. All have creative abilities, but not all in the same areas.
- B. Even though someone may have done it before, it still might be creative to you.
- C. When we are blocked in the solution of a problem maybe we need to learn new techniques.
- D. The solution of our problem doesn't always come after prolonged study of the subject. It may come like a flash after a rest or it may come while one is engaged in a completely different occupation.
- E. Above all, don't be afraid to express all the

thoughts that come to you, no matter how unusual they may seem.

12. ENCOURAGE AND EVALUATE SELF-INITIATED LEARNING.

Apparently the first signs of creative thinking in children occur in the spontaneous accompaniment of other activities.

13. CREATE THORNS IN THE FLESH.

The essence of creativity lies in a sensitivity to defects.

14. CREATE NECESSITIES FOR CREATIVE THINKING.

The necessity for creative thinking can be created by making the problems given students sufficiently difficult in relation to the ability of the subject. . . .occasionally every individual should confront problems which stretch his imagination and ingenuity to the limits.

15. PROVIDE FOR ACTIVE AND QUIET PERIODS.

16. MAKE AVAILABLE RESOURCES FOR WORKING OUT IDEAS.

It is obviously important that children have available the resources for working out some of their ideas.

17. ENCOURAGE THE HABIT OF WORKING OUT THE FULL IMPLICATION OF IDEAS.

18. DEVELOP CONSTRUCTIVE CRITICISM-NOT JUST CRITICISM.

19. ENCOURAGE ACQUISITION OF KNOWLEDGE IN A VARIETY OF FIELDS.

Knowledge outside and beyond one's special field is useful in promoting original ideas.

20. DEVELOP ADVENTUROUS SPIRITED TEACHERS.

If the teacher is forever trying to find out the cause of things, pupils will be stimulated to do likewise. (20:33-37)

Perceptual and cognitive development. Arnheim

explains perception as it affects the creative process:

Perception consists in the formation of perceptual concepts, in the grasping of integral features of structure. In other words, if I want to represent the roundness of an object such as the head, I cannot use the shapes actually given in it but must find or invent a shape that will satisfactorily embody the visual generality 'roundness' in the world of tangible things. If the child makes a circle stand for a head, that circle is not given to him in the object. It is a genuine invention, an impressive achievement, at which the child arrives only after laborious experimentation. (2:130).

Perception and cognitive development are closely related. Piaget's investigations led him to conclude that there are three major stages in the child's cognitive development: the sensory-motor period; the concrete operations period; and the period of formal operations. (10:33).

He indicates the close relation between cognitive development and perception when: "he contends that we build our conceptual images out of the perceptual image plus perceptual movement and the coordination of perceptual movements." (10:35).

Piaget calls the second stage of development the concrete operations period and defines it as lasting from about the age of two to the age of eleven. Though the child perceives topological and Euclidean spatial relations and coordinated perspective up to this point, a lack of mental image that he can retain prevents him from drawing and from thinking intelligently. (10:35).

As he acquires representational or conceptual images during the concrete operations period of development, he is able to draw and to think about concrete objects and events. But changes in thinking and drawing that are very evident occur within this period of development. Consequently the period is divided into three sub-stages. The first of the sub-stages within the concrete operations period is called the 'preparatory' or 'pre-operational sub-stage,' and it extends from about the age of two to the age of four. This is the time during which the child makes his first unorganized attempts at symbolic representation. (10:35)

The second sub-stage within the concrete operations period is the stage of 'intuitive thought,' and it lasts from the age of four to the age of seven. (10:36).

The third sub-stage of the concrete operations period is called the 'concrete operations sub-stage,' and it lasts from the age of seven to the age of eleven. (10:37).

The concrete operations sub-stage is the period during which the child achieves reversibility in his actions. Thus, it is the first time that he is able to imagine the relationships 'between' concrete objects and organize those objects meaningfully in his drawings. The child's progress in perceptual exploration during this period yields the kind of pictorial synthesis that we see in pictures from the stage of symbolic development that Lowenfeld has called the schematic stage. He begins to draw objects in a more natural relationship to each other because he is drawing what he conceives rather than what he perceives, that is conceptual realism. Things are drawn without any attention being given to the angle from which they are viewed. (10:37-38).

Not until the child reaches the age of nine, or thereabouts, does he develop the conscious awareness of his own point of view that allows him to draw what he sees and to give his work a single perspective. To develop such a personal perspective an individual must not only be aware of other points of view, but he must be able to coordinate the different views in such a way that he understands his own unique relationship to the object; this is a highly egocentric attitude.

Thus between the ages of nine and eleven, the child's visual symbolization becomes more highly naturalistic

than it ever has been before. This is because the child's concept of spatial relationships is more accurate than it has ever been in the past.

Between the ages of two and eleven the child becomes increasingly capable of conceiving concrete objects and events. There is little or no evidence of abstract ideas either in his thinking or in his creative productions. (10:37-42).

To further the process of creating form from things perceived artistic imagination is indispensable.

Artistic imagination. Artistic imagination could be described as: "the finding of new form for old content." (2:114).

From his experiences the child must invent the forms which he will use to represent those experiences. Thus when:

Children start to experiment with shape and color they are faced with the job of inventing a way in which the objects of their experiences can be represented in the given medium. Occasionally they are helped by watching other children's work, but essentially they are on their own. (2:114).

Arnheim cites the effect of the environment and of unsuitable teaching on the imagination of the child. (2:165).

He notes the effect of the:

Medium. The medium can have a definite effect on the final expression. The medium itself is a powerful source of inspiration. It often supplies form elements that turn out to be usable for the expression of experience. (2:134).

For this reason as well as others, the medium in this experiment was chosen from those with which the majority of children in the group had had little previous experience. Thus it was hoped that the investigator and the children could be more enabled to proceed on relatively new ground and be less inhibited by previous experiences of the children. It was hoped that the effect of over adult domination on the images which the child produced would be minimized in this way.

As Arnheim states:

The mind proceeds at the rate at which it can comprehend, and at any point of the rising path it is handling a medium that seems fitting and natural. Willful interference with this process creates disturbance. The old-fashioned teacher who imposes on his student advanced tricks of the trade is just as guilty as the new-styled primitivist who admonishes the child, 'This is a nice picture, but we do not make noses in the second grade!' (2:165).

Developmental characteristics. These characteristics have already been referred to in the discussion of perception and cognitive development. However, further consideration might be given to a discussion of developmental characteristics as they are revealed in the nine to eleven year age group, which is referred to as "the age of dawning realism; or the gang age" by Lowenfeld.

In his artistic products the nine to eleven year old begins to show growth in his awareness of the real world, or a development of the concept of realism.

Realism refers to what is real. The question, then, is not whether the child should draw in a photographic way or be forced to rely upon imaginative patterns, but whether the art experience provides the opportunity for a child to identify with his own experience and encourages him in his own personal, sensitive artistic creation. (11:183).

As children become increasingly aware of the world as it is, and concerned with reproducing what they objectively see rather than what they feel, the self-expressive qualities of painting decrease.

Lowenfeld's studies suggest that the peak in this transition occurs by the age of nine. At that time, children tend to be so conscious of the external world and so bent upon exact reproduction of that world that they become blocked in attempts at self-expression. Art teachers support this finding in their observations that age nine is a particularly difficult year in which to obtain self-expressive really creative products. (1:117).

In his representation of the human figure:

The child moves to a form of expression that relates more closely to nature, but is still far from a visual representation. (11:185).

The representation of space changes from a symbolic expression to a more naturalistic representation.

Since the child is developing a greater visual awareness, he no longer uses exaggerations, omissions, or other deviations in expressing his emotions. The child now begins to substitute other means of expression to show emphasis. We commonly see an accumulation of details on those parts that are emotionally significant. This concern for proper detail can occasionally make the total look distorted. (11:188).

Lowenfeld also points out the unity with which children change in their means of expression. In the use of color the child moves from a rigid color-object relationship

to a characterization of color.

The basic underlying philosophy should be that the child himself becomes aware of the significance of color through his own experiences and achievements. (11:189)

Also apparent in the work of the child at this stage is a concern for design.

It is the function of the teacher to stimulate children's thinking and provide opportunities for discoveries that relate to the natural beauty of materials as they are found unspoiled within our environment. The sincerity of beauty as found in nature should be stressed since this is a natural extension of the child's own direction at this age. (11:191)

To identify with the needs of the materials, that is, to learn their behavior, is important not only educationally but also ethically, as it will promote a feeling for sincerity and truth in design. With the emphasis being upon the process of manipulation and exploring the material and not upon achieving a 'nice-looking' finished product. (11:193)

Lowenfeld states that "clay continues to be an excellent material for three-dimensional expression." (11:194).

In order to give a child a feeling of self-esteem, Lowenfeld feels that motivation during this period must stress the newly discovered social independence. In an art experience, the child would be given an opportunity to express a growing awareness of sex, to satisfy his curiosity for the environment, and to develop a greater awareness of self. Newly found methods of group cooperation as a means for achieving desired results might also be utilized.

Although there is a need for group activities, these

should never be accompanied by pressure for conformity to the norm.

Care should be taken in any art motivation to insure that the individual has ample opportunity to develop his own means of expression. (11:196).

Implications for art education. It has previously been observed that the age period with which we are here concerned is one in which the child's creative production may reach a plateau. There is a definite need for systematic guidance to help him to realize that every person creates in his own individual manner. To this end it will be helpful to guide the child through the steps of the creative process from the sensing of a need or deficiency, which might be something so simple as the need to express his idea in a medium; to a random exploration of the medium; methods of working with the medium; related works and ideas reviewed through reading, discussion, films, and other means to the working out of his individual solution and the expression of his idea in the medium. Thus the creative process is not left merely to the child's own individual experiences which at best are too varied and unknown for the instructor to use as the only basis for guidance, and at worst too meager or unnoticed by the individual child to be sorted out for focus as the only inspiration for a creative work. Thus the child becomes aware that a particular problem can have several solutions. During this activity, each individual

is aided in the development of his own individual solution to a particular problem. An individual should be encouraged to try more than one solution to a given problem or to explore various techniques in order to express his concept in the manner which is most satisfactory to him.

Further justification for seeking to enhance the child's concepts of the environment, rather than merely letting him create from his already formed concepts is found in the work of Piaget as referred to by Kenneth Lansing, which gives further substance to the hypothesis that a child's visual symbols are intimately related to his conceptual growth. He states that: "we do the child no good by criticizing his visual forms, but must rather change his concepts if we wish him to change the shape of his work." (10:40).

Art educators are becoming increasingly aware of the: importance of sustained and continuous contact with great works of art. It stems from the discovery and the realization that the capacity for sensitive and knowledgeable judgment rests in large part on insights gained through acquaintance with and careful study of great works of art. (1:425).

Although the art education instruction should make available a variety of media, it can be a hindrance if children are expected to sample all of them.

Media are tools for teachers to use in teaching art, and for students to use in learning to behave like artists. The student, like the artist, needs some degree of exploration in order to find the medium he enjoys using, because through that medium he is

able to formulate ideas of aesthetic significance at his level of development. Through his education in art, he needs to learn to come back again and again to work with the same medium. (1:429).

Lansing suggests other implications for art education which can be drawn from the investigations of Piaget. One of these is the observation that children in the 'concrete operations' period can entertain concepts that deal with concrete objects and events, but not abstract ideas. Therefore, a teacher's stimulation is more apt to be successful if it deals with concrete objects and events. (10:40).

Further Lansing states that:

Piaget's work also suggests another possibility. If children develop spatial concepts as a result of visual and motor action, then drawing itself should help to improve an individual's concept of space, if he draws from nature. Drawing a model or a natural scene would encourage the child to increase his looking and to look more carefully and it would reinforce his looking. (10:41).

He also indicates that:

A coordinated concept of the world depends upon perceptual action in relation to a point of reference. This would suggest that Lowenfeld's haptic or non-visual person could have his spatial concepts developed. (10:42).

Both Arnheim and Piaget indicate the value of the artistic activity as related to perception.

Arnheim when he states that:

The eye and the hand are father and mother of artistic activity. Drawing, painting, and modeling are a part of human motor behavior. . .

Descriptive movements are deliberate gestures meant to represent perceptual qualities. It seems permissible to assume that the activity of deliberate artistic representation has its motor source in descriptive movement. Gestures often describe the shape of objects by their outlines, and it is for this reason that representation by outline seems to be the simplest psychologically and the most natural technique for making an image by hand. (2:135).

Piaget strengthens this concept when "he contends that we build our conceptual images out of the perceptual image plus perceptual movement and the coordination of perceptual movements." (10:35).

Several authorities indicate the value of clay as a medium for the creative expression of the nine-to-eleven year age group. Among these are Lowenfeld and D'Amico.

D'Amico states that "clay is the most suitable material for this age level because it is pliable and easily mastered." (4:90).

He also expresses the opinion that:

During the later elementary grades, such as fourth, fifth, and sixth, particularly as the individual shows a need for it, the teacher may begin instructing the child more directly and consciously, both in the use of design and in the mastery of the craft. He can now talk of design and analyze the elements of design in a form, suggesting simplicity, rhythm, and proportion. (4:91).

CHAPTER IV

SELECTED EXPERIENCES AND PROCEDURES

Four of the experiences introduced during the school year have been chosen to be included here. These four experiences were chosen because it was felt that each project was in keeping with the interest of all. Also each procedure represented a technique in the making of pottery within the grasp of all to master. Some of the handbuilt pottery techniques are not recommended for use with children of this age in any of the investigator's reading. However, it is hoped that by relating these experiences and procedures it will become evident that a continued exposure to a material and projects of ascending difficulty are not only interesting to the child, but help him to attain a competence in the utilization of the medium to express his ideas.

Making a pinch bowl. The first activity consisted of making a pinch bowl. As the children were studying Indians of the Northwest in Social Studies, it was decided to correlate this activity with the study then in progress. In order to provide a background of experience reference books were made available to the students through which they might become acquainted with various pieces of Indian pottery and designs used to decorate these pieces. Since

no three dimensional examples of Indian pottery were immediately available for display, some examples of Mexican pottery were displayed in the classroom for the children to examine. Thus they became familiar with the similar but varied shapes that could be produced with the pinch bowl technique. In order to further strengthen the child's concept of the pinch bowl technique, a film on making Navaho Pottery was presented to the group. The children requested that they be allowed to view this film twice.

After two weeks of storing a backlog of experiences, all reference materials and examples were removed. The investigator felt that this would leave the individual more free to draw on all his background experience, but to develop his own pinch bowl form. A brief ten minute demonstration recalled the forming technique to be used. The teacher took a lump of clay in her hands and demonstrated a method by which it might be wedged by passing the clay from one hand to the other as in tossing a baseball back and forth. After this the ball of clay was held in two hands and the thumbs were inserted into it to form the beginning of the interior. The teacher suggested that the children hold the ball of clay in one hand and turn it while working so that the walls of the piece would be even.

Initially, two points were stressed: first, that the bowl in formation should be supported on the outside by

one hand as it was being formed by the other from the inside; and second, that the walls of the bowl should be about the thickness of the thumbnail. The teacher also suggested that the walls be curved slightly inward during the process of formation, as this made the pot stronger.

About half an hour was spent in the actual formation of the bowls. They were then placed on separate small pieces of wood and covered with plastic garbage sacks to prevent each from drying too quickly. The following day each child took his or her pot to the working place and drew the desired designs on the wall of the leather hard bowl. These were painted with engobes in the colors chosen by each student. Available colors of engobe were yellow, brown, blue, and green. The bowls were covered again after the application of the engobe design to allow both the clay and the engobe to dry slowly. This reduced the likelihood of the engobe design peeling. After the pieces had been allowed to dry slowly for one more day the plastic was removed and the pots were allowed to dry fully. Then they were bisque fired at Cone .06.

Several methods of attaining a shiny surface, however, not as shiny as a glaze surface, were experimented with by the children. They wanted the finished piece to look as much like a piece of Indian pottery as possible. Because of this desire, they decided to try other finishing methods besides a clear gloss glaze. Although some finishing pro-

cesses worked better than others, it is felt all profited by this experimental method. Some of the methods used to finish the pots were: applying several coats of paste car wax; rubbing milk into the surface; dipping the whole pot in a coat of melted wax; or applying a coat of acrylic finish.

Combining pinch and coil methods. In the second activity the forming techniques of pinch and coil were used. It was begun spontaneously as the students wished to use clay as a medium. Through reference books both examples of contemporary and ancient pottery were made available to the students. Methods of forming certain shapes were discussed. As before, examples were removed from the scene when the time to work came. Some students had a definite idea before beginning. Some did not, but developed the form entirely as they worked. Of those who began with a preconceived idea, most modified the form and decoration while working. Suggestions on how to proceed were given only upon the request of the student. This was done by referring the student to the method of another student or to several similar pieces from the reference material. Or, it might be suggested that the student go to the chalk board and sketch a few solutions to his problem from which he might choose the one he wished to use in this particular case. The main point to be stressed here, the investigator

believed, was that there was no one right way to finish a certain piece, but only the way preferred by the student. Innovation was encouraged.

Several of the pieces thought most creative might be traced in their execution here. First, those most creative in form. Among these the investigator would include the covered two-handled jar illustrated in Figure 1, which was executed by Ricky. After forming the body of this jar, Ricky was confronted with the problem of fashioning handles for his creation. The investigator asked him if he would like to learn how to make handles in another way besides the coil method. She then showed him how to "milk" handles out a coil of clay. After several tries he succeeded in making two, nicely shaped large handles and attaching these to his pot. The acquiring of this new skill accompanied the need to use it. During the execution of this piece Ricky also solved the problem of creating a lid for the jar. This he did by flattening a piece of clay and cutting a form which appeared the right size, then altering it to fit the already formed jar. When all this had been completed, he made an unusual handle for the lid by fashioning a small bird's form and attaching it to act as a handle. This piece was finished by applying a rich brown glaze to the body and lid of the jar. The bird on the lid was glazed with a lavender glaze.

Another quite imaginative work done by Debbie, exemplifies the need for encouragement. Debbie had made an imaginative shallow bowl in the form of a bird, Figure 2. This was later designated as a chicken. When, in the process of drying, this somewhat fragile piece was bumped and lost part of its tail she was ready to discard it. However, the investigator encouraged her to try to mend it by making a new tail and covering it so that it could dry more slowly. This piece, the form of which grew out of a random manipulation of the material, a case in which the medium itself might be said to have been a "powerful source of inspiration" (2:134) was later finished by several applications of lavender, rose, and blue glaze in a manner imitating feathers in the execution of the brush strokes. After the piece had been fired, Debbie's pleasure at noting the unusual effect her experimentation had produced was quite evident.

A small bowl, made with the pinch bowl process is the work of Lorrie. This piece may be seen in Figure 2, second from the right. Although Lorrie preferred to remain with the previously used technique, she experimented with the glaze application, by trailing several contrasting glazes across the interior of the form. Lorrie, and the rest of the students were pleasingly surprised by the unforeseen puddling of the glazes, which occurred during firing.

Also illustrated in Figure 2, is a pitcher, the work of Donald. For this piece Donald extended the pinch technique by forming a protruding lip on the pitcher. A coil handle was attached to the form. He also asked and was shown a method of forming a spout for the pitcher. This was done by pressing the forefinger of one hand against the interior of the lip of the pitcher, while the thumb and forefinger of the other hand formed the pitcher spout by pressing the clay around the forefinger on the interior of the piece. Donald finished this piece with a brown glaze and a brush decoration in a contrasting glaze.

Another boy, Bob, whose work appears in Figure 3, combined the pinch and coil techniques in the execution of his piece by forming a bulging pinch bowl for the lower portion of his pot and attaching coils to this in their rough state to finish the form. When finished he also made a clay stopper.

This pot was glazed with curved stripes of several contrasting glazes on the main body of the piece. Part of the coil neck was left in its natural state, as Bob felt this was more in keeping with the nature of the clay. The stopper was glazed with a dark, contrasting glaze.

Although several of the children remained with the previous technique of forming a pot by the pinch method, as shown in Figure 4, all experimented with the glaze application. Here, to facilitate firing, the foot of each piece



Figure 1. Ricky's two-handled, covered jar.



Figure 2. Some results of experimentation
by Donald, Ricky, Lorrie, and Debbie.



Figure 3. Bob's bottle with stopper



Figure 4. Pinch bowls executed during the second activity.

was left unglazed about one-half inch from the bottom. The students took great pride in finishing their pieces thus with the care of a potter in action.

Two boys, Danny and Tim desired to make imaginative animal forms rather than pottery forms. Tim formed the body of his animal, a wolf dog, Figure 5, second from the left, by sculpting the body, then adding the appendages. These were attached by scoring the surface of the two pieces and applying a little slip before the pieces were joined. As the body was quite thick, Tim decided to hollow it out. However, he did not hollow it from underneath, but from the top of the animal's back, thus forming a hollow animal dish, reminiscent of Indian ceremonial bowls. This doggish wolf was finished with a brown glaze, and an accent of bird's egg blue for the hollow.

Danny, a child whose achievement level was low in other areas, seemed to be quite imaginative with his hands. In fact, he could justly receive the admiration of his classmates in this area. For this activity, he created a chicken form, shown in Figure 6, which seemed about to flap its wings and crow. This was finished with the brown glaze, which seemed very appropriate for this form.

Other students, who elaborated on the pinch bowl technique, increased their skill by using the former technique to attain such forms as the pitchers shown in Figure

5. These are the work of Mark and Diane. Techniques not previously known by these individuals were introduced when each asked to be shown the proper method of forming a pouring spout and handle.

Caroline's piece, shown in Figure 5, was begun with the pinch technique and brought to completion by adding coils and shaping these into the desired form. This piece was glazed in a light lavender hue, with the decoration in a contrasting darker glaze.

An observation made by the students after the pieces had been fired, proved useful in later glaze application. When it was desired that more than one glaze be used, a more pleasing effect was achieved by applying the lighter glaze first and the glaze darker in tone over the lighter glaze.

Most of the glaze application was done with a brush. However, where the piece was too large to warrant the use of the brush, or the shape gave itself more readily to dipping, this method of applying glaze was used. The investigator fired a couple of small pieces with the students for the purpose of demonstrating both glaze application techniques. All work illustrated in Figure 7 was glaze fired at Cone .04.

The slab technique. The third activity employed a



Figure 5. Mark, Tim, Diane, and Caroline display work completed during the second activity.



Figure 6. A crowing rooster by Danny.



Figure 7. Work completed during the second activity.

simple use of the slab technique. A short demonstration was given in which the investigator showed how to form slabs of clay by wedging them about a fourth to a half inch in depth. These were tested by inserting a pin at several points into the slab of clay. Any air bubbles found were poked with a pin to prevent the captured air from cracking the piece during firing. The students decided to use the slab technique to form small flower like pieces of jewelry. Here actual flowers were studied as to their formation and parts. The students were encouraged to incorporate into the finished piece both the character of a "flower" and the characteristics of the clay itself. Thus such facts were recalled as, that the clay, if allowed to become too thin would crack and break. Also, that each piece to be joined needed to be scored and slip applied. Some quite imaginative flower forms, displayed in Figures 8 and 9, emerged from this experiment in using the slab technique.

Teresa constructed the flower of her ornament from a small pinch bowl, and used the slab technique for the stem.

Other children cut out the shapes of individual petals and then shaped these into the form desired. Some used coils for stamens. All seemed to realize that the flower should have the quality of an ornament fashioned in clay, that is, delicate, but not too delicate; decorative as opposed to realistic. Each took care not to make shapes



Figure 8. Flower forms completed during the third activity.



Figure 9. A continuation of work completed during the third activity.

that would not hold together well in such a material. After these ornamental flowers had been bisque fired at Cone .06, each student glazed his or her work. Glaze application was characterized by individual choice rather than imitating nature. Some unusual results were obtained through the children's use of a mixture of glazes. The smaller ornaments were utilized as ceramic pins by affixing a pin to the back, while the larger ones became wall decorations by affixing a wall hanging attachment. All work completed during the third activity may be seen in Figures 8 and 9.

Combining pinch, coil, and slab techniques. The fourth activity was designed to include all of the previously introduced techniques. That is, a combination of pinch, coil, and slab forming techniques. Use of these techniques enabled the children to execute hollow forms which was particularly profitable as the pieces could dry more quickly and uniformly.

The subject matter of this activity evolved as a natural outgrowth of the students interests. Animals are always fascinating to this age group. The area of study in Social Studies was the Continent of South America. What better area to find many varied animals. The student might study unusual birds, or mysterious fish, as the pirania; or small animals, as the marmoset, the smallest monkey in

the world. His imagination might also be captured by the donkey, or the lumbering turtle, the long-nosed anteater, or the aloof llama. Each of these creatures were strange to the student. How might they be imagined in clay? How had animals been depicted in clay before -- by the American Indian, the Mexican, the Inca? A few pictured examples were available. Besides these, one example of an armadillo from Ecuador was displayed. The children were eager to begin to create hollow animals, rather than solid ones.

In order to provide a background of information, many books containing pictures of animals native to South America were perused. Each child was required to sketch the animal he had chosen before beginning to work, so that he might have its particular characteristics more clearly in mind. However, it was understood that each was free to change the final outcome of his work.

The greatest source of inspiration was a two part film on South America. One part, in particular was viewed several times to record the colors and characteristics of various animals.

When the children began to construct the animals, it seemed that there was going to be a predominance of turtles. However, though there were indeed more turtles than any other animal, they were not, as had been feared, carbon copies of one another. Each turtle, like each child had

its own personality, as can be noted from Figure 10, depicting a turtle parlay.

Diane's turtle, Figure 11, shows an unusual glaze application which was attained by two glaze applications. A light initial glaze was followed by a darker glaze.

Practically every animal indigenous to the vast Continent of South America did eventually appear in the finished display of work. These were arranged on maps of the locality in which the animal might be found, as shown in Figures 12 and 13.

The time required to execute each individual piece varied extensively from student to student. Since work space was limited, students worked in groups of two or three, while the remainder of the class worked on related activities at their desks. Most of the students spent an average of three hours, ultimately, on their creations. Some explored further variations of the slab technique, using the rounded rocks each had gathered to help form the main body of the animal. These may be seen in the background of Figures 12 and 13.

However, some found that forming a slab over a rock and then assembling the individual parts, when each would hold its own shape, was too difficult. These returned to the pinch form which was now utilized as the body or head of the animal. Thus convincing and mischievous monkeys

emerged, as shown in Figure 14. These possessed the character of both monkey and of a clay pottery form.

Other students employed more sculptural techniques, as did Lorraine, by forming the separate pieces, then attaching these to form a South American parrot, Figure 13.

One piece showed the influence of the rock form used as an interior mold. This was the small fish made by Teresa, which may be viewed in Figure 15.

Several children tackled the problem of forms more difficult to carry to completion. Two made donkeys, two others made llamas, and three made fishing birds. These may be seen in Figures 12 and 13. Each of these forms had the added difficulties of long necks and long appendages in the form of legs. This difficulty was partly remedied by being patient enough to allow one part to set up before attaching another part. This required a discipline on the part of the student which had not been previously attained. Long legs and necks were attached by using a bundle of soft plastic bags to form a cushion for the part which had already been assembled. In the case of the long-legged birds, seen in Figure 16, pieces of clothes hanger wire were used as support.

A remark made by Ricky, as he and two other boys were engaged in this exacting work, is revealing. "How come they don't get to make things like this in fifth and sixth grade?"

A before and after study is furnished by the three armadillos pictured in Figure 16. All are the work of the same boy, Danny. The first armadillo on the right, bore little resemblance to the animal itself. It was finished with a dark glaze and rainbow stripes to indicate the armored bands of its shell.

After finishing this animal Danny discovered a book on armadillos, among the books used as reference for this unit. Besides centering his written report around this book, he became inspired to make a more authentic form of the animal itself. He selected a rock which approximated the curled up form of the animal. He then carefully formed the body using this as a drape form. While forming this piece, he showed a precision which he had not displayed previously. After the piece was formed, Danny used the scraffito needle to carefully and meticulously decorate the armor of the armadillo. This required the good part of an hour. When he had completed this form, he made a companion armadillo from a small inverted pinch bowl. This also received care in the provision of its armored shell. Danny finished these two pieces with a combination of an application of dark brown glaze and blue glaze which produced a pleasing grey blue.

The two donkeys, which may be viewed in Figure 13, might also be noted in detail here.

The first, made by Doreen was especially interesting as she added a pack to each of its sides which was formed by utilizing the pinch bowl technique. She also formed removable lids for these packs.

Donald persevered through many difficulties in forming his donkey. He first formed the body over two rocks and then assembled the two halves. After this, he formed the head and neck. When each of these pieces had become leather hard, they were assembled. Another difficulty presented itself when the legs had to be joined to the rest of the animal. Here the cooperation of a classmate was utilized.

The finished work indicated that the concepts of the children had been enlarged. Mr. Will Damrau, the principal, expressed his pleasure to the children as he viewed their finished display.



Figure 10. A turtle parlay.



Figure 11. Diane's turtle showing an unusual glaze application.



Figure 12. Work completed during the fourth activity.



Figure 13. A continuation of work completed during the fourth activity.



Figure 14. Monkeys formed by using pinch and coil methods.



Figure 15. Fish influenced by the rock form.



Figure 16. Fishing Birds.



Figure 17. Armadilloes before and after
by Danny.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary. Chapters I and II set forth the hypothesis that an art program in the elementary school would be more successful in fostering the creative development of the child if the developmental level of the child were used as the primary basis for deciding the art curriculum.

It was further hypothesized that every medium presented to the child could be graduated in its presentation. The investigator felt that presentation of techniques in the use of the medium in a gradual sequence would facilitate the child's grasp of the characteristics of the medium as well as develop the child's confidence through a gradual mastery of the medium.

The investigator and a group of twenty-seven fourth graders explored the medium, clay, in a depth study. That is a prolonged use of the medium was utilized, during which techniques used to create form out of the clay were presented in a gradual manner, according to the maturity and interests of both individuals and the group as a whole.

A creative approach to the formation of concepts related to working with the medium was utilized as much as possible. Upon becoming aware of a need or desire to work with the medium, a period of preparation and sorting out of

ideas; modifying of ideas; manipulation of materials; ensued. Thus the individual was led from an awareness of a "problem" to a gradual sorting out of possible solutions to the problem.

Beliefs of educators concerning the stages of development were reviewed. The suggestion made from another in depth study that such a study might prove valuable with a younger age group was cited. A study was made into the nature of creativity; the relation between perception and cognition development; the nature of artistic imagination; the developmental characteristics of the nine-to-eleven year-old; and the implications for art education.

Four units of instruction were explored. The choice of these was made through the use of two primary considerations. One, the interests and developmental characteristics of the child; and two, a gradual sequence in the presentation of techniques relative to working with the medium.

Art experiences centered around one medium were chosen to strengthen the hypothesis that a prolonged concentration on a particular medium; plus a gradual sequence in approach to activities involving the medium would stimulate individual and group creativity. It was felt that this approach would also make the child more confident and independent as his progress would be apparent to both himself and the instructor.

Conclusions. In the opinion of the investigator, the experiment reported reinforces the hypothesis that greater imagination and creative ability can be fostered in the nine-to-eleven year-old through giving primary consideration to the developmental needs of this age group when presenting a medium. Also that a systematically structured approach to the use of the medium facilitates the child's creative growth and makes progress an unavoidable issue.

As this group of children pursued one medium in depth they became familiar with the characteristics of the medium. This enabled them to use clay to express concepts more adequately than would have been possible with one or two isolated experiences. Systematic guidance along with a creative approach to the formation of concepts enabled the students to control the medium.

During this depth study the children had several experiences with the same medium. They experienced the satisfaction of an awareness of their own progress in the skills necessary to the expression of their idea. Each student became familiar with the medium to the extent that he knew before he began what could be done with the medium to produce a desired effect. Thus he was liberated to express his ideas in the manner most satisfying to himself.

It was previously noted that an unexplainable sharp

dip in general creativity occurs at the fourth grade level. However, this group of children, who experienced the use of a medium in depth showed no significant dip in general creativity. Conversely, the group as a whole showed a gradual growth in spontaneity of creative expression.

In contrast, art products produced in the same medium by students of two other fourth grades in the same school showed no significant growth in skill or in spontaneity of design. Products produced toward the end of the academic year, by these students, did not differ significantly from those produced at the beginning of the year.

The evidence indicates that the opportunity to work creatively in depth is what enabled the students in the first group to sustain creative growth more successfully than the students in the other groups. The individual and the group as a whole was enabled to become involved in sustained work in a limited area of creativity. Thus it was possible for them to develop a positive, aesthetic, self-determining orientation.

Mrs. Mae Rockett, who teaches the Bethel School District Television art program, felt that the progress of the students was quite apparent from an observation of their work.

The following year the investigator had the opportunity to observe four of the students in this group when

they took part in an art class conducted on Saturdays. The other students in this smaller group of twelve children were from various schools in the city. During the two sessions when the group used clay as a medium, the four students who had been part of this study experienced little difficulty in manipulating the clay into the forms which each of them desired. In contrast, the other eight students needed guidance in all facets of the activity.

The investigator feels that continued experiments in depth studies in various media, and at different levels of development would be valuable. It would be interesting to note the effect of such studies on the perceptual concepts of the child.

Various sequences of study with a medium might be explored, in order to determine those most valuable in fostering creativity, at a given developmental level.

BIBLIOGRAPHY

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1. Alschuler, Rose; Hattwick, LaBerta. "Easel Painting as an Index of Personality in Preschool Children," Readings in Art Education, Elliot Eisner, David Ecker, editors. Waltham, Massachusetts: Blaisdell Publishing Company, 1966. p. 117-130.
2. Arnheim, Rudolf. Art and Visual Perception, Berkley, University of California Press, 1954. 408 pp.
3. Beittel, Kenneth; Mattil, Edward and others. "The Effect of a 'Depth' V.S. a 'Breadth' Method of Art Instruction at the Ninth Grade Level," Readings in Art Education, Elliot Eisner, David Ecker, editors. Waltham, Massachusetts: Blaisdell Publishing Company, 1966. p. 246-58.
4. D'Amico, Victor. Creative Teaching in Art. Revised Edition. Scranton: International Textbook Company, 1953. 261 pp.
5. Douglas, Nancy and Schwartz, Julia. "Increasing Awareness of Art Ideas of Young Children Through Guided Experiences with Ceramics," National Art Education Association Journal, 8:2-10, Number 2, Spring, 1967.
6. Eisner, Elliot W., "Curriculum Making for the Wee Folk," Research in Art Education, 9:49, Number 3, Spring, 1968.
7. Gaitskell, Charles D. Children and Their Art, New York: Harcourt, Brace and Company, 1958. 446 pp.
8. Kruse, G. "Clay and Young Hands go Together," Illustrated Arts and Activities, 62:8-12, December, 1967.
9. Landman, P. "Free Form Coiling," School Arts, 69:18-19, January, 1970.
10. Lansing, Kenneth M. "The Research of Jean Piaget and Its Implications for Art Education in the Elementary School," National Art Education Association Journal, 7:33-41, Spring, 1968.

11. Lowenfeld, Viktor. Creative and Mental Growth, Fourth Edition. New York: The Macmillan Company, 1964. 412 pp.
12. Lowry, G. "What is the Basis for a Good Art Program?" Arts and Activities, 61:22-25, April, 1967.
13. McFee, June K. Preparation for Art. San Francisco: Wadsworth Publishing Company, Inc. 1961. 338 pp.
14. McFee, June K. "Implications for Change in Art Education," Readings in Art Education, Elliot Eisner, David Ecker, editors. Waltham, Massachusetts: Blaisdell Publishing Company, 1966. p. 181-194.
15. Munro, Thomas, "Children's Art Abilities: Studies at the Cleveland Museum of Art," Readings in Art Education, Elliot Eisner, David Ecker, editors. Waltham, Massachusetts: Blaisdell Publishing Company, 1966. p. 163-80.
16. Petterson, Henry. Creating Form in Clay, New York: Reinhold Book Corporation, 1968. 111 pp.
17. Porteus, Richard, "Ceramics for Beginners," Arts and Activities, 61:21-23, June, 1967.
18. Porteus, Richard, "Ceramics for Beginners: Slab Method," Illustrated Arts and Activities, 62:8-12. April, 1967.
19. Supensky, T. G. "Working with Clay," School Arts, 67:16-20, November, 1967.
20. Torrance, Paul. "Developing Creative Thinking Through School Experiences," A Source Book for Creative Thinking, Sidney Parnes, Harold Harding, editors. New York: Charles Scribner's Sons, 1962. p. 31-48.
21. Wilson, S. "Head 'em Up With Clay," Illustrated Arts and Activities, 61:18-19. June, 1967.

APPENDIX

APPENDIX

TERMS RELATED TO CLAY

Adhering slip - A creamy consistency of liquid clay used as a thin paste to weld individual parts of a clay object together during the forming process.

Bisque - A clay object that has been fired once at a lower temperature than that used for glaze firing. (All objects, in this study, were fired at Cone .06.)

Clay slabs - Rolled, thrown, paddled or pressed clay, producing flat forms with a thickness of one half to one inch depending on the process involved.

Coil-Long, round or flat strips of clay used in a successive application to build hollow shapes.

Cracking - A structural splitting, usually caused by poor jointing, clay incompatibility, or a difference in the moisture content of pieces of clay which have been assembled.

Dipping - Full or partial immersion of an object into a pan or bucket of glaze.

Dry-footing - The procedure that excludes glaze application from the bottom, or foot, of a work by use of wax or other means. Dry-footing makes kiln stacking more simple, thus eliminating the need for stilts.

Draped clay - A clay slab that is placed over a form or mold to conform to a predetermined shape.

Engobes - Decorative liquid clays which are colored by adding oxides and used as underglazes for a color and design medium.

Firing range - The maturation span of a clay body or glaze formula for school use, a span from Cone .06 to Cone 6 is recommended to accommodate the wide range of classroom clay experiences involving varied needs and abilities. (All work in this study was bisque fired at Cone .06, and glaze fired at Cone .04.)

Gloss glaze - A highly reflective glaze (usually applied by brush, dip, or spray methods) that produces a glass-like surface.

Grog - A granular mixture of crushed fired clay particles or other pulverized materials added to clay bodies for strength or for esthetic reasons. (All clay used during these activities contained grog, as it facilitates hand building.)

Hand building - A clay construction method that relies on a nonmechanical means of molding or fabrication as opposed to wheel-thrown or poured processes.

Joining - The adhering of two clay surfaces together, each initially roughened by tool scratches, with applied clay slip added before pressing and sliding together.

Leather-hard - A term used to define the state of semi-dryness in an unfired clay object and to indicate a preferred time for final tooling and carving of the clay surface without misshaping or cracking it. (At this time, the clay possesses a cheese-like texture.)

Pinch pot - A simple bowl-forming method that utilizes the hands only by cupping and pressing into the clay simultaneously to form a hollow shape.

Sculptural - A characteristic quality of the clay-working method that emphasizes a modeled appearance.

Stoneware clay - A high-fire clay body that readily withstands firing temperatures to Cone 6 or higher, but is earthenware at lower temperatures, such as Cone .06. (All clay used in these activities was stoneware clay. Again, because the grog content facilitated hand-building.)

Scoring - A method of joining clay slabs together by alternating tool impressions from one direction then the opposite direction in much the same manner as in stitching or cross-hatching. (Both surfaces to be joined are treated in this manner.)

Wedging - The process of hand manipulation of clay to remove air pockets and to develop the raw clay body into a working consistency with plasticity. (16:104-11).