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THE EFFECTS OF TEACHER FEEDBACK 
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DRAWING PERFORMANCE 

DISSERTATION 

Presented in Partial Fulfillment of the Requirements for 
the Degree Doctor of Philosophy in the Graduate 
School of The Ohio State University 

By 

Karen Marie Kakas, B.A., M.A., M.F.A. 

* * * * * 

The Ohio State University 
1986 

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Department of Art Education
In memory of my father,

Emile Albert Muehlbauer
ACKNOWLEDGMENTS

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Finally, I offer gratitude to my family, husband, and special friends who provided support and encouragement. I am indebted to the many small and large ways they helped me persevere.
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CHAPTER I
INTRODUCTION

The 1980's have become a period of close examination of our nation's schools. Numerous national and regional studies have reported on the status of education and have recommended preparing young people in the specific skills necessary to function in the computer age, often at the expense of more traditional, non-technical education in the arts and humanities. Art educators have critically examined these reports' recommendations to weigh their significance for the art teaching profession. Packard (1984a) points out this problem in her discussion of a recent Congressional Research Service study of five of these major reports:

"Soft" subjects . . . such as art, are either ignored or targeted for deletion because they are not perceived as contributing to the "new" educational missions of technological supremacy, universal literacy, and an employed work force. When art is included, it is seen as a vehicle for cognitive development, the transmission of historical and cultural knowledge, or the civilizing of society. (p. 266)

Some art educators are understandably nervous as they continue to discuss viable ways to stake their claim on a segment of the general education curriculum, and so they seek to maintain a convincing position on the mission of art education in the schooling of children. One approach
to strengthening this position has been the advocacy of a discipline-based curriculum, i.e., a structured, sequential curriculum that teaches the content of art based on the disciplines of aesthetics, studio art, art history, and art criticism. "In effect, the ideas, principles, concepts and techniques drawn from the four parent disciplines define the discipline of art as we are using it for education" (Greer, 1984, p. 213).

This advocacy of a discipline-based curriculum attempts to redefine art as a "hard" subject, no different than the academic components of the general education curriculum. Discipline-based art education is not a new concept. At the 1965 Penn State Seminar, Barkan (1966) recommended that art educators "synthesize the knowledge in art of the artist, and the knowledge about art of the aesthetician, the critic, and the historian" (p. 243) in order to make art education discipline-centered inquiry.

By the early 1960's, other art educators (Lanier, 1962; Marantz, 1964) began to take a critical view of the studio-based, materials-oriented curriculum. They considered it one-sided, gimmicky, and offering little more than mere exposure to the visual arts. Such art programs did not adequately prepare students to become sensitive and knowledgeable viewers of the arts. Following Barkan's lead, art educators (Chapman, 1978; Efland, 1977; Eisner, 1972) began to advocate a balanced curriculum that featured studio
experiences and the study of art history, art criticism, and the role of art in society.

Disappointing student achievement scores on the visual art segment of the National Assessment of Educational Progress (NAEP), administered in 1974-75 and 1978-79, strengthened the argument that substantial art learning was not occurring in the nation's classrooms (Chapman, 1982). Moreover, the 1981 NAEP assessment revealed similar findings—a general lack of knowledge of art criticism and art history as well as weak drawing and design skills. Quoting the NAEP report, Zimmerman (1984) notes that numerous art teachers "cling to the myth that if they 'teach' art systematically or in a structured way they will destroy natural creativity" (p. 14). Zimmerman continues:

> NAEP has suggested that art teachers move away from free expression and imitative art activities toward the development of art making skills and include more instruction about perceiving, responding to, and evaluating aesthetic aspects of art works if students are to become literate. There is little evidence that such instruction is taking place, presently, in our nation's schools. (p. 14)

But such recommendations were made without consideration of the diverse approaches teachers may actually use in the classroom and without investigating characteristics of art programs which have high scoring students.

As discipline-based art education advocates seek to strengthen art education programs, they have not adequately determined the contributions studio production does make to
art learning. Moreover, art educators have not fully studied the teaching-learning process in studio curricula to reach any conclusions about the nature of effective teaching. Therefore, this study will address two issues related to the concern for quality studio experiences in the art classroom: How do different forms of teacher feedback affect art learning as it is manifested in studio art performance? And does peer interaction also affect this art learning?

**Studio Experience: Help or Hindrance?**

As art educators focus on a discipline-based curriculum and the knowledge that is obtainable through art history and art criticism activities, the studio component is being critically examined. Several proponents of the discipline-based art curriculum strongly negate the value of studio art experiences in the classroom (Broudy, 1979, 1983; Lanier, 1975, 1981). As one of the first art educators to heavily criticize studio practices, Lanier (1975) argues:

> Studio production in art is not necessarily the most effective way to promote increase in scope and quality of visual aesthetic experience. In fact, one might legitimately question whether studio production provides any help at all towards this end, in the absence of any evidence, either speculative or empirical, to support the idea. (p. 30)

He continues:

> Decades of virtually undiluted studio curricula do not seem to have produced a population massively affectionate toward the fine arts. . . . This pre-occupation of art education with studio practice
might well turn out to be the most unwholesome of our many problems. (p. 32)

Instead, Lanier favors an aesthetic dialogue, or talking about art, as the "shortest and most efficient route to broadening and deepening aesthetic response" (p. 33). He also advocates that all studio-oriented activities be organized into elective courses except for the lower elementary grades where children should have opportunities to work with art media (1981).

Broudy (1979) argues that many years of studio-based art programs "have produced neither the skills of expression nor impression that would make the abandonment of these programs unthinkable" (p. 350). He considers studio instruction to be appropriate only for talented youngsters, though he acknowledges that students in the lower elementary grades benefit from opportunities to manipulate and experiment with a variety of art media (Broudy, 1983). This acquaints them with the expressive capabilities of different art forms while they gain insight about the problems of practicing artists. He recommends lowering technical standards for nonartistic students, yet does not specify whether such action is appropriate for all ages (Broudy, 1981).

Broudy (1983) proposes the adoption of an aesthetic education curriculum in which minimal time is devoted to "skills of expression." The bulk of his program focuses on developing skills of aesthetic impression (aesthetic
perception), knowledge of the arts, and art criticism (aesthetic judgment).

Studio activities have also been criticized for their content. In a discussion of what Efland (1976) labels as the "school art style," he views studio projects in the public schools as very different from the experiences of professional artists and questions the relevance of such activities to art learning. In order for art making in the classroom to be substantive, it must mirror the concerns, themes, methods, and media of professional artists, both historical and contemporary.

Studio production does, however, have its advocates. Although Eisner (1978) stresses the importance of art history and art criticism, he eloquently writes of the positive effects of art production. Among the outcomes he cites from such experiences, Eisner explains that children learn:

1. To acquire intrinsic satisfaction from engaging in art activities.
2. That their images are symbols and that these symbols can be used imaginatively.
3. Of the internal evaluation and decision-making necessary to produce visual statements.
4. That they can "transform . . . ideas, images, and feelings" into a visual form (p. 8).
5. That they can portray ideas and emotions that are not physical entities.
6. That "there are ideas, images, and feelings that can only be expressed through visual form" (p. 9).

7. That the "world itself can be regarded as a source of aesthetic experience and as a pool of expressive form" (p. 9).

Eisner concludes: "Work in the arts in sum, provides children with the opportunities to develop the sensibilities that make aesthetic awareness of that world possible. And such awareness provides the content not only for aesthetic experiences, but for art itself" (p. 10).

Other art educators argue that studio lessons help develop perceptual skills (Lansing, 1976; Wachowiak, 1977). Advocates of this approach believe heightened perception and sensory experiences linked with drawing tasks can enhance aesthetic perception. McFee and Degge (1977) promote the importance of seeing creatively to increase sensory responses to form, color, and textures. They argue that "children and young people who develop their ability to see creatively and analytically and draw what they see have a much wider potential for learning and experience" (p. 12). By drawing perceived forms, students learn to know that object, to see details they may otherwise overlook. They truly "experience" the object. Commenting on the potential expressiveness of drawing, McFee and Degge write:

Students learning to look for and recognize the expressive qualities in things will find themselves responding to various emotional qualities
of things based on their own experiences. Their drawings, consequently, will be a combination of those qualities they've learned to see, what they feel about what they see, and how these qualities and feelings may be expressed visually with various media. (p. 74)

Wachowiak (1977), one of the studio-oriented curriculum's major advocates, contends that children experience the design elements and principles of the art-making process in action through their work on studio projects. They may, in addition, become more aware of their environment and develop an aesthetic sense as they reflect on and evaluate their work during the "creative process." He proposes that any such development can be furthered by studying artists whose works relate to the students' own efforts.

Research has yet to determine whether studio activities designed to supplement art appreciation studies actually enhance children's art knowledge. For example, a 6th grade class studying Post-Impressionism may examine the characteristics of Van Gogh's painting style in "Bedroom at Arles," comment on the composition, discuss the expressive qualities and perhaps compare the contents of their own bedrooms with Van Gogh's. But will these students acquire a deeper, more personal and concrete knowledge of Post-Impressionism if they also paint a scene of their own bedrooms using heavy painterly techniques, distortion, and invented colors?

During the art-making process, children are offered an immediate sensory experience with the materials. They may feel the moist clay changing shape under the pressure of
their fingertips; sense the movement of the brush loaded with tempera as it glides across the paper; marvel at the sight of a wet, vibrant purple sitting next to a patch of blue sky and bumped by a tiny chunk of lemon yellow. To reiterate Eisner's (1978) view, children may learn what it means to be an artist as they respond to their work, make choices of colors, rearrange shapes, delete an unwanted section, and alter a line.

Teacher Feedback: Guide But Don't Direct?

The studio curriculum continues to be a major facet of most art education programs and will, no doubt, continue despite criticism. Yet debate continues over the amount and form of teacher feedback considered suitable during the art-making process. Views on this issue are closely linked to a teacher's values (or philosophy) concerning the role of art education. Teaching methodology, therefore, is determined by goals and objectives set for a program.

Lowenfeld's (1957) child-centered philosophy, as presented in the first edition of Creative and Mental Growth (1947), became the standard many art teachers carried into the nation's schools. It continues to draw many adherents. According to Lowenfeld, teachers should respond to children's needs and not impose images or standards of any sort on them. As Lowenfeld (1957) strongly recommends:

All modes of expression but the child's own are foreign to him. We should neither influence nor stimulate the child's imagination in any direction
which is not appropriate to his thinking and perception. The child has his own world of experience and expression. (p. 14)

To Lowenfeld, instructional intervention in children's artistic development is most appropriate when teachers assume the role of "art stimulator." He recommends asking when, where, what, and how questions to stimulate children's recall of their experiences in order to more fully create them in a visual form. He discourages criticizing children's work or offering advice, arguing it inhibits individual expression.

In the 1960's, Barkan (1966) and others (Kaufman, 1966; McFee, 1961) criticized self-expressive, creativity-oriented art programs. They believed such programs contributed little to the art knowledge of young people. They advocated that teachers teach art content. For example, McFee (1961) recommends that art teachers offer "constructive criticism" to their students, a view far afield from Lowenfeld's beliefs.

By the 1970's, influential art education textbooks reflected the change toward a content-oriented philosophy (Chapman, 1978; Eisner, 1972; Gaitskell & Hurwitz, 1975; McFee & Degge, 1978). Many prominent art educators recommend that teachers provide guidance, especially by using skillful questioning strategies with their students. However, they maintain that teachers be flexible and sensitive when offering assistance to guide students' artistic
decision-making. Textbooks from this period use such language as "guide," "encourage," "invite," and "question" in attempts to discourage overdirected teaching in studio activities.

Wachowiak (1977), critical of this cautious approach to teacher intervention, argues:

Where exciting, colorful, successful, and dynamic elementary art programs and practices exist, the classroom art teacher, or the special art teacher, is on the job guiding, challenging, directing, stimulating, questioning, suggesting, approving, prompting, planning, coaching, advising, and organizing. In other words, teaching! (p. 33)

This view of the art teacher's expanded role prompted research into various components of art instruction. Since the 1960's, studies of art instruction have typically addressed issues of motivation, curriculum content, methods of instruction, creativity, and developmental concerns. A number of studies have explored teacher intervention with pupils by focusing on questioning strategies. Clements (1964) was the first art educator to conduct empirical research on questioning in the classroom. He tabulated the kinds of questions asked by teachers and compared their use among different age groups. Armstrong & Armstrong (1977) formulated a categorical model of questions to facilitate student art learning. Hamblen (1984a, 1984b) sought to apply questioning strategy research to art criticism instruction and to the use of effective questioning by teachers about individual student art work. Taunton (1984)
discussed the use of questioning strategies to encourage reflective thinking among students about their work-in-progress.

A number of early studies have investigated the effects of teacher feedback on the production of college student art products (Beittel, 1968; Bradley, 1968; Schwartz, 1964). Recent studies focus on elementary age children (Gerhart, 1983; Heard, 1981; Kratochwill, Rush & Kratochwill, 1979). However, the value of these studies is limited by inadequate research designs and methods which often yield questionable or inconclusive findings. Studies were often conducted with small populations, thereby hindering generalizability. Research on particular instructional issues fails to produce the collective evidence that delineates the effect of teacher intervention in studio art learning experiences. Instead, researchers choose to examine a diversity of topics and rarely replicate their findings or extend another's research efforts. Such practices contribute to what Packard (1984b) contends is a lack of research on effective teaching in art education.

Dorethy's (1981) comprehensive discussion of research problems in art education notes numerous knowledge gaps in the current literature. Inadequate knowledge exists about the relations of evaluation and criticism to art product improvement, the nature of the art-making process, and about teaching methodology in general.
Many unanswered questions remain about art instruction. What is effective art teaching, its components and characteristics? When is teacher talk beneficial? What are effective teacher/student dialogues during the art-making process? Do teachers talk too much or too little during this phase of instruction? What is the form and content of classroom dialogue among teachers and students?

**Peer Interaction: Cooperate Instead of Compete?**

Traditionally, the teacher is viewed as the sole stimulus for learning in the classroom. But some researchers have recently begun to examine the role of peer interaction in learning. Several have studied spontaneous verbal communications that occur among students—"peer learning exchanges" (Cooper, Marquis, & Ayers-Lopez, 1982a, 1982b). Such research focuses on the nature of these exchanges, i.e., their form and function, as well as the developmental aspects of such interaction, and how participation in such communication varies among group members.

Johnson (1981) considers peer interaction a neglected element in education. He reports that a meta-analysis of studies comparing "the relative effects of cooperation with intergroup competition, interpersonal competition, and individualistic efforts on achievement and productivity" indicates "cooperation is considerably more effective than are interpersonal competitive and individualistic efforts"
in promoting achievement and productivity" (p. 7). Johnson uses these conclusions to support his argument that teachers employ strategies to encourage peer interaction.

Other evidence suggests many teachers do not consciously promote this form of learning in their classrooms and may, in fact, discourage such discourse. Art educators have immersed themselves into children's developmental stages as a means of planning suitable curricula, media, and instruction for children. However, they have not attended to the developmental aspect of communication in the classroom, teacher to student or student to student. The investigation of how peer communication affects learning is relatively unexplored in art education. Art teachers may be cautious about encouraging peer interaction for fear that students will copy each other and thus be less original in their art work. But it might be advantageous to learn how spontaneous peer learning affects art performance. Do varying degrees of peer interaction reveal differences in student performance? Does the quality of teacher intervention affect the frequency and nature of peer interaction? In turn, does peer interaction dictate the amount and type of intervention given by teachers?

Studio Art Performance: Assess the Process or the Product?

Various approaches have been used to assess art learning in the classroom. Studio art performance traditionally
serves as the focus of this assessment. However, for many years adherents to the slogan, "It's the process that's important, not the product" devalued any systematic, concrete evaluation in art education. This pronouncement echoes Lowenfeld's (1957) negative views on evaluation of the "art product." Critics of this view argue that art educators need to appraise student art products in order to determine whether the curriculum and teaching methods achieve the objectives set by the art program. For example, do children's paintings reflect what they have learned about subtleties of color values or intensities? Do figure drawings provide evidence of learners' development in seeing subtle contour changes and details?

Countering the myth that the process of making art is the only relevant concern in art education, Eisner (1974) declares that process and product are like two sides of a coin: "Processes can be improved by attending to the product and products improved by making inferences about the process. To neglect one in favor of the other is to be pedagogically naive" (p. 11). Eisner (1971, 1972) and Chapman (1978, 1982) stress the value of evaluating studio performance, but they are vague about how criteria should be selected for these assessments. They also fail to stipulate concrete criteria that may be useful in such evaluations.
More than any other subject in the general education curriculum, art education has tiptoed gingerly through the evaluation mine field. There is general consensus among art educators that because they stress the individual nature of artist self-expression, no absolute standards should be used as criteria in evaluation (NAEA, 1979). Their reluctance to evaluate art products results in a cautious attitude. Evaluation is often approached merely on general terms by emphasizing criteria based on children's developmental levels. For example, is the child learning to use media effectively? Is the child learning to refine and modify ideas for art? (Chapman, 1978)

Evaluation methods used in art education research also reflect this generalized approach to appraisal. Many studies have used evaluation instruments to assess art products for a variety of purposes: to determine children's creativity (Lewis & Mussen, 1969; Trowbridge, 1967), to compare instructional methods (Brouch, 1970; Gregory, 1983; Grossman, 1979; Salome, 1976), and to determine the effects of teacher feedback (Bradley, 1968; Gerhart, 1983; Kratochwill, Rush & Kratochwill, 1979). Researchers have developed lists of criterion statements with rating scales for use in coding art works. Typical criterion lists might include several or all of the following: craftsmanship, color, shape, unity, texture, detail, originality, artistic merit, spontaneity, rhythm, mass, and form. The same criteria are often used
regardless of variation among subject matter, media or form, e.g., collage mosaics and crayon drawings may be assessed with identical criteria.

In contrast, several art educators (Gaitskell & Hurwitz, 1975; Wachowiak, 1977) recommend the development of evaluation criteria that are consistent with the objectives presented in art lessons. More recently, proponents of discipline-based art education have advocated this approach to evaluation (Day, 1985). If, for example, students are to expand their knowledge of color by mixing pigments, an evaluation might note the degree to which they created a variety of colors in their painting compositions.

A review of the literature indicates researchers have largely neglected the use of objective-related criteria in the evaluation of art products. This limitation is questionable when criteria may vary with every studio experience because of differences in media, subject matter, design considerations, and art form.

The Problem

The art education profession strives to increase student art knowledge, but continues to debate the form teacher intervention should take to enhance learning in studio art experiences. Long looked upon as too individualized an endeavor to permit objective study, art production must be thoroughly examined to determine how (in what ways and to what degree) teacher feedback affects performance.
Further study of studio practices may help art educators assess whether such methods should be modified to increase teacher effectiveness. Investigations of peer interaction might also contribute to the understanding of art making processes as they occur in the classroom. Such research may ultimately aid in the development of more effective approaches to studio instruction.

Numerous and diverse viewpoints exist to support the rationale for art education in the general education curriculum, e.g., creative growth, therapeutic benefits, sociocultural knowledge, visual literacy, aesthetic perception, and, finally, art as a body of knowledge. This investigation will examine the studio component of art education from this last perspective, i.e., the discipline-based view.

The purpose of this study is to examine how varying forms of teacher feedback during the art-making process affect 5th grade students' observational and imaginary drawings. The nature of peer interaction and its effect on studio performance will also be studied.
CHAPTER II

REVIEW OF LITERATURE

Introduction

The majority of art education research has focused on studio activities, in particular, drawing and painting modes of expression. Yet, the knowledge base remains limited regarding the teaching-learning process in art production lessons. Chapman (1982) succinctly describes the nature of art education research:

Research literature is dominated by a "developmental," rather than "instructional" view of art education. Studies that demonstrate the effect of art instruction on instructional growth are less numerous than reports on typical stages of artistic development. In most developmental studies, the actual or potential effect of instruction is not well explained because the researcher is more interested in patterns of maturation--patterns of understanding, enjoyment, or skill in art--that are not the result of formal instruction. (p. 106)

The fact that art education research has studied children far more than teachers or curriculum issues leads Chapman (1982) to conclude: "Our research offers little insight into the character of interactions in the classroom, or what students learn" (p. 107).

Developmental and instructional studies ask different kinds of questions. Developmental studies may ask: At the age of five how will children typically draw a human figure? At what age do children begin to create dynamic balance in
their pictures? What percentage of children at age six include necks in their figure drawings? When can we expect children to depict expressive qualities of emotion in their pictures?

Instructional studies focus on other concerns: Will students' drawings differ according to the type of drawing task assigned to them? Is one method better than another to teach contour drawing? What types of evaluative statements positively affect student attitudes about drawing and their drawing performance?

Chapman (1982) speculates that "the scarcity of research on teachers and the teaching of art may be due, in part, to the active and visible role we give to the child, as creator, and the supportive background role we seem to prefer for the art teacher" (p. 107).

The present study is specifically concerned with the role of the art teacher, i.e., what effects the teacher has on art learning as it is manifested in studio performance. This study seeks to investigate to what extent differing forms of teacher feedback will result in different levels of drawing performance. It is hypothesized that greater amounts of concrete teacher feedback will have a positive influence on subjects' drawing and that minimal teacher feedback will adversely affect drawing scores.

A secondary concern of this study is the nature of peer interaction during studio activities, particularly
communication pertaining to art lessons. It is speculated that during the art-making process students influence each other's work far more than art teachers realize. A relationship may also exist between the task, the type of teacher feedback students receive, and the communication which occurs, both among peers and between students and their teacher.

The following questions are to be answered: What forms of teacher feedback are recommended in art education? How have other researchers structured feedback variables and what results occurred in those studies? Based on this information, how will the teacher feedback variable be structured in this study? What sorts of drawing tasks have been used in drawing studies? What kinds of drawing tasks will be appropriate for this type of study, considering the chosen age group, the number of testing sessions, and the types of feedback the researcher will employ? How have researchers scored drawings in other studies? What will be an appropriate method to evaluate the test drawings in order to assess the effects of instruction, i.e., teacher feedback? What methods should be used to analyze peer interaction? To what extent have art educators looked at the issue of communication in the classroom? Can the quantitative portion of the study (analysis of drawing scores) and the qualitative portion (observation of peer communication) complement each other to enrich the understanding of results?
found in both components?

The following areas will be examined in a review of literature which addresses the above questions: (a) the use of drawing tasks in art education research with elementary age children and prominent art educators' views on appropriate drawing tasks, (b) teacher feedback studies in art education and recommendations of prominent art educators, (c) general education researchers' reports about teacher intervention, (d) scoring of studio products in art education research, (e) peer interaction in the classroom, and (f) the issue of combining quantitative and qualitative methods in educational research.

**Drawing Studies**

Drawing studies with elementary school age children have investigated several major issues. They have charted developmental aspects of children's drawings (Colbert, 1984; Golomb, 1973), contrasted the results of various drawing tasks (Golomb & Farmer, 1983; Pariser, 1979; Sorenson, 1978), determined the effects of specific teaching methods on the ability to draw a subject from observation (Rush, Weckesser, & Sabers, 1980; Salome, 1965), and noted the effects of certain forms of teacher feedback on predetermined student behaviors or attitudes (Gerhart, 1983; Heard, 1981). This review focuses on the nature of drawing tasks employed in these studies.
Drawing Task as a Record of Development

Drawing tasks in art education studies have served three major purposes. One aim is to use the drawing task as a means to study developmental characteristics of children's graphic expression (Golomb, 1973; Goodenough, 1926; Harris, 1963). The most frequently used drawing task in these types of studies is the request to draw a human figure. In some studies subjects were not instructed to create drawings depicting human figures, but completed drawings from young children populations were collected and analyzed (Kellogg, 1969). In these cases the drawing task has no purpose other than to serve as a means of obtaining a graphic record from children. For the purposes of the present study, this review will focus on the other uses of drawing tasks in art education research.

Drawing Task as a Variable

In these studies researchers compare subjects' responses to more than one drawing task.

Golomb's developmental look at task variables. Golomb (1973, 1975), who has extensively studied developmental aspects of children's two- and three-dimensional graphic representations, used the drawing task variable to conduct a developmental study of children's spatial organization in their drawings (Golomb & Farmer, 1983). Among children three to seven years of age they administered drawing tasks
based on four themes: (a) draw a family, (b) children playing, (c) a birthday party, and (d) a garden with trees, flowers, and a pond. The above themes varied in familiarity to young children, degrees of compositional complexity, items specified, and in specificity of task. Golomb & Farmer scored the drawings according to spatial composition, directional patterns (sequence of drawing, e.g., right-left, top-to-bottom), location (portions of the paper filled with drawing), and figural differentiation (complexity of the drawn figure).

Golomb and Farmer found that children primarily used a top-to-bottom sequence when drawing the human figure, whereas they used a bottom-to-top sequence when drawing flowers and trees, hence they concluded that graphic starting points are task-dependent. They were specifically interested in whether young children used compositional strategies and sought to achieve balance in their pictures. Results showed that children's ability to relate figures to each other and to the page develops slowly and is achieved by few of the oldest children in their study. Golomb and Farmer found that developmental stages of picture organization progressed from the clustering of figures to the alignment of figures, to simple symmetry, and finally to complex symmetry and thematic unity. Even in this latter stage, children continued to create ambiguous relationships among depicted forms, and they did not specify the importance of drawn
objects and did not use all of the page. Golomb and Farmer (1983) concluded that "true compositional balance is a relatively late achievement and requires planning abilities beyond the capacities of the children we studied" (p. 99).

Of particular interest in the present study was their report that certain arrangements were task-dependent, i.e., varied with the subject being depicted in the drawing. This was similar to Golomb's earlier finding (1975) that "the different representational models and procedures evolve in response to the perceived demands of the task and of the medium and demonstrate the lack of representational uniformity across tasks" (p. 21).

Pariser's task variable study. Also using a drawing task variable to study children's drawing development, Pariser (1979) used what he called "two methods of teaching drawing skills" to investigate how children acquire graphic abilities. He questioned whether children learn from perceptual cues, graphic conventions, or both. He devised two drawing exercises, a blind contour drawing lesson with 4th, 5th and 6th graders, and a copying problem with 1st, 2nd, and 3rd graders. The older groups were asked to observe three-dimensional objects (e.g., small toys) and draw them using the blind contour drawing method, i.e., to not look at their paper while they were drawing the observed object. Pariser cited Nicolaides' (1969) blind contour process as his source for this procedure. The copying
groups listened to Kipling's story, *How the Rhinoceros Got His Skin*, and then used Pariser's large scale illustration of Durer's rhinoceros woodcut as a reference when drawing pictures to illustrate a segment of the story. His illustration was displayed in the classroom so that subjects could refer to it whenever they wished. Pariser did not emphasize accurate representation of his model; he only encouraged them to use his drawing as a starting point for their own pictures.

Pariser stated that these two exercises were selected to reflect the two dominant views on how children learn to draw. The blind contour drawing task was related to the belief that graphic representations are based primarily on perceptual cues. The copying task reflected the view that drawing is learned from graphic conventions, i.e., from other two-dimensional representations.

Based on his analysis of both sets of drawings, Pariser concluded that children used both perceptual cues and graphic conventions for either task, depending on each child's ability to encode visual information and transfer that information into a graphic form. He felt that one unresolved issue was knowing when it is developmentally appropriate to teach children that their drawings can be derived from both graphic conventions and perceptual cues.

Absent from Pariser's report is his rationale for choosing two different tasks for the age groups instead of
having all subjects perform both drawing tasks. Might the completion of both tasks by all subjects provide Pariser additional information about children's acquisition of graphic skills? Yet what is particularly intriguing about Pariser's report is his inclusion of a drawing task that was based on both copying two-dimensional representations and the addition of invented elements.

Sorenson's visual/haptic study. Sorenson (1978) used two drawing assignments in her study on "visual" and "haptic" drawing. By giving two types of drawing instructions, i.e., introducing two very different drawing tasks, she sought to determine whether drawing style is innate or learned. After 3rd and 5th graders completed pretest drawings, they received two drawing tasks, visual instruction and haptic instruction. In the visual drawing task they observed and drew a scale model farmhouse which included miniature dolls, a truck, a pine tree, and a rocking chair. The haptic drawing task consisted of listening to a simulated TV family script which emphasized mood and sensory stimuli and drawing a response to it.

Sorenson also questioned whether grade, sex, and order of drawing task (reversing the order in which subjects received the two drawing tasks) affected differences in student response to the haptic/visual lessons. She found that at all grade levels and with both sexes, the children's drawing styles changed in the direction of the instruction,
i.e., the drawing task. This is similar to Golomb and Farmer's (1983) conclusions about task affected representational methods.

Sorenson (1978) concluded that instruction can change children's drawing styles. Therefore, she recommended that, instead of art teachers focusing on the enhancement of children's innate drawing styles, they develop curricula that could teach children a variety of graphic abilities.

The concern over visual vs. haptic styles of drawing, however, appears to have less relevance in recent years as labeling children as either visual or haptic has become a questionable practice.

Yakel's human figure drawing tasks. In Yakel's (1979) study on young children's (grades K - 2) development of skills in drawing the human figure, he administered five levels of drawing task to determine which task had the greatest success in improving their depiction of figures. In the first task, after being instructed by the teacher about structure of the human form while referring to a slide of an artist's drawing, the subjects drew a human figure and while doing so, referred to a large displayed poster of the slide. In the second task, each subject received a photocopy of an artist's figure drawing, about which the teacher discussed structure and details of the form. After tracing the drawing, children then completed a freehand drawing of the photocopy. In the third task, children received
photocopies of an artist's figure drawing, and after the teacher's discussion of the drawing with the group, they copied the illustration. In the fourth task, the teacher discussed the structure of a live human model. After this introduction, children were instructed to draw the model from observation. And the fifth task served as a control group during which children received their usual art instruction from their classroom teachers and were given no special treatment. Fifteen classes of youngsters received one of these drawing task procedures in 20 lessons over a 10-week period.

Scoring of various drawing tests administered throughout the 10-week period revealed that children displayed the greatest increase in complexity when depicting the human form when they either copied the displayed poster or their individual photocopied drawings, i.e., when they referred to two-dimensional illustrations by adults. Increase also occurred when they drew from live models, but not to the extent that improvement took place with the two-dimensional examples. These results substantiated Yakel's theory that children should copy two-dimensional images before drawing from observed three-dimensional forms. Yakel's study reinforced the view that the use of copying drawing tasks are beneficial with elementary school age children.
Comparing Instructional Methods to Teach an Observational Drawing Task

Researchers have used observational drawing tasks to compare instructional methods, i.e., to determine which form of instruction enhances perceptual drawing skills.

Salome's perceptual training study. Among the earlier studies on teaching methods is Salome's (1965) investigation of the effects of perceptual training on children's observation drawings. Four classes of 4th and 5th grade children participated in a series of drawing lessons which focused on perceptual training. One 4th grade and one 5th grade treatment group received instructional methods designed to develop greater awareness of contours on the objects and the points of maximum information along them. Salome did not explain the "conventional instruction" administered to the control groups. After completion of the lessons, subjects completed posttest drawings of a lamp, a toy truck, and a mounted armadillo.

Salome's data analysis of the posttest drawings showed a significant difference between the 5th grade experimental and control group drawings, but the data revealed mixed results in the 4th grade groups. Based on his findings, Salome recommended that in subsequent testing, researchers use more classes, additional teachers, and random assignment of students to treatments. He also recommended that an unfamiliar object be drawn in the posttest session in order
to discern the effects of training on drawing other subjects. The study's results led Salome to encourage more structured content and direction in the art curriculum. He believed that visual perception, i.e., the ability to notice subtle changes in structure and details on observed forms, would be increased as the result of direct teaching. This would in turn positively affect the quality of children's drawings.

Rush et al.'s contour drawing study. In a later study, Rush, Wekesser, & Sabers (1980) compared the effects of two contour drawing teaching methods with 3rd grade children. They contrasted two instructional methods (teaching strategies) under two viewing conditions of the subject matter, a red tricycle. One method consisted of a modeling approach during which the teacher traced the contour lines of the tricycle with her hand, had children also trace the contours for the class, and demonstrated a contour drawing of the subject while she verbally described the relationship of the drawn lines to the actual contours of the tricycle. In the second method, the teacher presented pre-drawn contour drawing samples of the tricycle for class discussion. The focus of talk about the process was on the two-dimensional sample rather than on the three-dimensional model. Each method was administered under two conditions: subjects drew either one or two views of the tricycle during each of their two drawing sessions. Using a modified version of Salome's (1965)
rating scale, they found that students who received the method using pre-drawn samples had significantly higher drawing scores.

In none of the above studies did the researchers reveal whether any type of teacher feedback was given while subjects worked on their drawings. This leads readers to assume teacher feedback was either nonexistent or was a controlled variable in the experiment.

Marten's fantasy versus nonfantasy study. The use of fantasy versus nonfantasy drawing tasks was studied by Martens (1979). These two types of drawing tasks were viewed as motivational methods along with open ended, closed ended, active and passive motivational techniques which formed other variables in the study. Using a standardized aesthetic evaluation instrument, he assessed 120 2nd graders' pictures, each having completed eight pencil drawings. According to Martens, students produced higher quality drawings under open ended, fantasy/active, and open/active motivational conditions, and therefore, he recommended that these kinds of motivational strategies be used with elementary school age children.

Art Educators' Views on Drawing Tasks

Wilson and Wilson: Their Drawing Task Recommendations

Wilson and Wilson (1982) also advocate the use of fantasy drawing tasks with young children, and provide a
lucid rationale for them. They cite Singer and Singer (1977):

The Singers have observed that the child who has an active imagination is more likely to actively explore her physical environment; that imaginative children smile more than unimaginative children; that they exercise more self-control and are better able to wait patiently and to entertain themselves. Perhaps the most surprising observation made by the Singers is that imaginative children are more able to discriminate between make-believe and reality. (p. 120)

The Wilsons noted that not all imaginative children draw their fantasies. They may express them in other ways, e.g., through acting and music. But they contend that "the combination of drawing and imagining . . . enables them both to flourish" (p. 120). The imagination stimulates the drawing and the drawing stimulates the imagination.

The Wilsons' theories on drawing are based on case studies of children, particularly those who are intensely interested in drawing. Their observations of these talented children and adolescents have formed the foundation for their explanations of young people's "spontaneous" art, which they consider to be the core of children's visual expression. The Wilsons see a dichotomy between children's spontaneous art and the "school art" curriculum they receive from art teachers. They contend that their motivational strategies are inspired by children's spontaneous art they have observed, and through these strategies they wish to bring children's school art more allied with their
spontaneous art. Among their fantasy games, is the "stack-up" game in which the adult, using a script, describes animals the child is to draw: "Draw the horse standing on the elephant's back. . . . Draw the dog on the horse's back. . . . Draw the rooster standing on the dog's head. . . . Draw the flea on the rooster's head" (1982, p. 123).


Think of a huge dinosaur. Have him raise his head way up high. Have him lower his head way down to the ground. Have the dinosaur turn around. Have him move his tail back and forth. Have the dinosaur look angry. Have the dinosaur run away. Have him come back, really close. Put some big black spots on the dinosaur. Have him sprout enormous bat wings. Have him land and look you in the eye. Have him grow three new heads. Have all his heads smile. Give him ten new legs. Have some lollipops stick out of the dinosaur's back. Have flowers grow out of his heads and tail. Frighten the dinosaur and chase him away. Have him come back. Now draw the dinosaur with as many of his changes as you can think of. As you draw you may change him some more if you wish. (1982, p. 128)

The Wilsons also recommend that children be encouraged to create spontaneous story drawings, i.e., narrative make-believe drawings, pictures with a comic strip format. Again, based on their observations of talented children's spontaneous drawings, they believe this drawing approach is natural among children of all ages.
While their book on teaching drawing to children (1982) is dominated by these two drawing approaches—narrative storytelling and fantasy themes—they also acknowledge the benefits of drawing from observation. According to the Wilsons, "Drawing by looking supplies new visual information that is incorporated into the child's current drawing programs" (p. 96). They urge adults to point out characteristics and details of the observed object the child is drawing. And they recommend all sorts of subjects: dolls, dollhouses, toys, kitchen pots and pans, shoes, seashells, musical instruments, the branch of a tree, artwork in museums, and numerous others.

The Wilsons (1982) argue that children's drawings are highly influenced by other graphic representations that permeate our culture—comic books, images from the popular media, drawings and photographs in picture books, as well as the drawings of other children. Yet they do not describe ways to structure these kinds of influences on children's picture making.

The Wilsons' statements on different types of drawing approaches with elementary children reinforces the belief that both fantasy and observation drawing tasks are appropriate with this age group.

**Wachowiak: His Advocacy of Observation Drawing**

For many years Wachowiak (1985) has been a strong advocate of children drawing from observation. Although he
cites the use of imaginary drawing themes with children, his writing has stressed drawing from actual objects—the figure, landscapes, animals, still lifes, nature forms—anything that would be visually stimulating to the student. He maintains: "One of the purposes of emphasizing drawing is that it enables youngsters to increase their latent abilities to perceive, synthesize, and discriminate" (p. 95). To Wachowiak, drawing is synonymous with drawing from observation.

McFee and Degge: Drawing to Increase Perception

McFee and Degge (1977) as well have stressed learning to draw through keen observation. They have provided a sequential framework of drawing tasks for developing visual perception, or as they phrase it, "learning to see." For they believe that increased understanding of the visual environment occurs when it is drawn. They acknowledge that "drawings may be based on artists' inner lives, on the unique ways in which they see, and the particular kinds of experiences they remember. The richer their perceptions, the richer their inner lives" (p. 17). They seem to be claiming that all art at some point originates from perceptual cues.

The literature review has cited authors who recommend that children's drawing tasks focus on both fantasy themes and on drawing from observation. And there is increasing
support and justification for children to also draw by copying two-dimensional models. However, once a drawing task has been selected for children to complete, another concern is what forms of feedback will be provided by teachers while students work on their pictures?

**Teacher Feedback**

**Art Educators' Recommendations**

For many years the Progressive movement in education had a profound effect on the nature of teacher feedback in art education. Eisner (1972) explained: "The Progressives were committed to the idea that the child should be free to develop naturally and that the teacher should function as a guide, not as a taskmaster. This meant that in practice the teacher was not to teach art but to unlock the creativity of the child by providing a stimulating environment and the necessary art media" (p. 49). This child-centered attitude influenced Lowenfeld (1947) whose philosophy of nurturing children's creative self-expression with minimal teacher intervention dominated art education for many years. And his influence in the field continues with the publication of the 7th edition of *Creative and Mental Growth* (Lowenfield & Brittain, 1982). Moreover, in a recent survey of universities teaching art education methods courses for elementary education majors, his book was cited as one of three texts most often used in these courses (Wessel, 1985).
However, in the past 20 years, attitudes have significantly changed regarding the role of the art teacher, i.e., the type of teacher intervention considered suitable in art education. Authors of more recent textbooks stress teaching art as a body of knowledge with concepts to learn and skills to acquire (Chapman, 1978; Eisner, 1972; Gaitskell, Hurwitz, & Day, 1982). These art educators and others stress the importance of teacher guidance, feedback, and the evaluation of studio activities. However, as discussed earlier (see Chapter I), they advocate the use of questioning strategies to encourage reflective thinking by students to avoid being overdirective. These educators adhere to the view that children should be guided to make learning discoveries rather than provide feedback in a concrete manner, thereby preventing discovery learning from occurring.

Questioning strategies. Teacher intervention in the form of questioning is a major component of classroom communication. Skillful questioning strategies are considered an important factor in effective teaching regardless of subject matter. The use of such strategies continues to be recommended by art educators, most recently in the writings of Hamblen (1984a, 1984b) and Taunton (1984).

Hamblen (1984a, 1984b) has studied the use of questions in the art classroom, primarily their use in critical/historical group discussions. She (1985) has devised a "cognitive-level/content-area model" as a systematic means
for constructing questions. Hamblen's system generates questions within six content areas for discussion of a work—type and form, media and technology, audience, context, function, and artisan. She then uses her own cognitive level taxonomy (based on Bloom)—factual, analytical, speculative, and evaluative—to construct questions within one of the content areas. Factual questions ask for a visual inventory of the art work. Analytical questions ask students to categorize, seek reasons, or analyze information to form conclusions, e.g., "Why is this an Impressionist painting?" Speculative questions elicit original ideas or solutions, e.g., thinking of alternative titles for works of art, or inventing what the subjects in the painting might be saying. And evaluative questions seek judgments and ask for criteria in those assessments.

However, Hamblen formulates few recommendations about the use of questions during the art making phase of studio lessons. Her one major recommendation in this area is: "Avoid phrases that imply expectations" (1984b, p. 14). Such questions are actually directives, e.g., "How about adding more trees in the background of your drawing?" or "Don't you think you could make this part of your painting lighter?". According to Hamblen, these pseudo questions tell students what to do, leaving less for them to think about and decide. Hamblen implies that open-ended questions are much more appropriate for what she calls an "instructional dialogue."
Yet her recommendations for formal construction and presentations of questions are applicable to any art teaching context: avoid run-on questions, ambiguous questions, yes-no questions, a question containing an answer, and questions that only elicit short answers.

Of interest to the present study is whether Hamblen has applied her cognitive-level/content area model to studio dialogues with youngsters. If so, is it successfully used in that context? Hamblen has not reported research studies which use her questioning strategies, a shortcoming she or other researchers must address in order to develop a greater knowledge base on the use of questioning in art education.

Taunton (1984) stresses the use of both questions and comments as a means to promote children's introspection during the art making process, but she primarily attends to the question issue. According to Taunton, questions can help children consider visual qualities of media, encourage choices, and assist children's selection of art ideas. Questions also help to develop those ideas, and encourage curiosity, flexibility, and self-evaluation of their art making experience or of their products.

However, several sample questions Taunton (1984) uses to illustrate her goals seem too open-ended and difficult for children to answer: "What do you want to show about yourself in your portrait," "What do you think about your portrait?" and "Why did you decide to use this color?"
(p. 15). Taunton is correct in asserting that unless children become introspective during the art making process, the "doing of art becomes either aimless or mechanical" (p. 15). Presumably, teachers must also guard against "aimless" introspection by formulating questions which contain specific content, e.g., "What do you think about the kinds of lines you are using to draw the hair in your portrait? Do you think they explain the characteristics of that hair style? Why or why not?"

Hamblen and Taunton write lucidly and authoritatively about questioning strategies with art students, but have they produced findings from research studies to support their claims? Have others attempted to study this complex issue? The claimed advantages of the use of questioning are based on speculation rather than on systematic study.

Questions used in teacher/student dialogues during the art making phase of studio lessons may be open-ended but directed toward a formal quality. For example, a teacher might say to a first grader, "What else can you think of to put in your drawing so that your horse isn't lonely and so that we have more things to look at and enjoy in your drawing?". Such a question implies that the amount of content in the drawing could be enhanced in order to have an effective picture that will attract the viewer's attention.

Other questions may be more specific: "How can you achieve a sense of space in your still life drawing?" or
"What differences do you see between the position of the legs in your drawing and the way you see the model standing?". Here, too, the teacher is signaling that the question should be attended to by the student in order to make a more successful drawing. But instead of "telling" the student to overlap more objects or vary their sizes, the student is expected to think about the problem and offer possible solutions to the teacher. Likewise, instead of being told how the drawing differs from the model, the student must again look carefully to note the differences.

Yet, the lack of art education research on questioning strategies prevents art educators from knowing which types of questions are most effective in nurturing children's art performance.

**Directive feedback.** Other art educators have suggested more directive methods in responding to children's work-in-progress (Wachowiak, 1985; Wilson & Wilson, 1982). Wilson and Wilson (1982) strongly favor adult influence on children's picture making. They argue, "We believe that adult assistance is actually necessary to the actuating of the child's spontaneity and creativity" (p. 48). They point out that children have numerous visual influences in their environment, and acquiring good influences both in the form of adult responses and exposure to fine art will benefit them. The Wilsons recommend that when a child is creating "regular scribbles," adults draw along with the child to
display models of rounder circles, straighter lines, squarer lines, or even more complex designs. The adult's drawings are not to be compared with the child's as better circles or lines, but merely to be seen as models for the child to see as other possibilities. They also suggest that enthusiastic verbal praise or descriptive statements (e.g., "You've made a large circle.") are suitable responses in the early developmental stages. As children begin drawing human figure symbols, adults can then ask questions, e.g., "Where are the legs?", or make suggestions about missing parts, as well as draw tadpole figures to serve as models. Or the adult might suggest a drawing topic to the child, e.g., "Make a boy with his dog.". The Wilsons also note that questions about a particular character the child is drawing, e.g., a spaceman, can inform the child about the character as well as help the child create a more complex figure. They (1982) listed the following set of questions:

- How does the spaceman breathe?
- What sort of suit does he wear?
- Does he carry special equipment?
- How does he move through space? (p. 59)

The Wilsons also introduce the concept of "drawing conversations" during which an adult and a child collaborate on a drawing, interacting both verbally and graphically on a picture. The adult is not the "leader", but the adult and child are "merely two players." The Wilsons (1982) speculate:
Because these dialogues are free, playful, stimulating, and fun (for children and adults alike) they may be the very best way to expand the child's narrative abilities, drawing skills, and his inclination toward invention and fantasy. (p. 138)

The Wilsons strongly believe that adult responses and suggestions will accelerate children's drawing development. They (1982) believe that:

If the child's graphic abilities keep pace with her growing perceptions and knowledge about herself and about the world, then her art will be seen by the child as not only satisfactory but pleasing as well, and many more children than presently do so may continue to construct, through drawing, ever more complex and elaborate realities. (p. 61)

For many years Wachowiak (1985) has advocated a high degree of involvement between art teachers and their students during the art making process. He considers evaluative comments, questions, and suggestions crucial to students' development of picture making skills. For example, in his discussion of figure drawing, he recommends the use of leading questions, e.g., "Where is the model's arm the biggest— at the shoulders, elbows, or wrists?", or "How far does the arm reach when held at the side?". But he also recommends more directive and suggestive statements, e.g., reminding them to look before they draw, encouraging them to draw a large figure that fills the page (to have room for the details), telling them to begin the figure with the head at the top of the page, or reminding them about omitted details.
Wachowiak (1985) lucidly summarizes his view about the role of the art teacher:

The special quality that distinguishes high-caliber teachers of art from average instructors is their ability to respond intelligently, sympathetically, and purposefully to the children's creative efforts; to communicate with the youngsters knowledgeably and honestly regarding their progress in art; and to evaluate their studio production seriously and objectively, giving it importance and significance in the students' eyes by the concerned, critical attention paid to it. (p. 34)

Viewpoints continue to vary among art educators on what forms of teacher intervention are most appropriate for art instruction. Teacher feedback, the responses a teacher makes when students are working independently, can range from minimal amounts of feedback as advocated by Lowenfeld (1947) to the emphasis on questioning strategies (Hamblen, 1984; Taunton, 1984) and finally to more directive, suggestive responses (Wachowiak, 1985; Wilson and Wilson, 1982). The following section looks at recent investigations of the teacher feedback issue in considering whether certain types of feedback are more effective than others in influencing student performance.

Art Education Research on Teacher Feedback

Since the 1960's a variety of art education studies have looked at teacher feedback, both with children and adults (college students). Early studies focused on college level populations (Beittel, 1968; Jones, 1965), but more
recent investigations, though not plentiful, focus on elementary school age children. Several are described in the following section.

**Heard's feedback variables.** Heard's (1981, 1982) two drawing experiments with 6th grade students investigated the effects of differing forms of teacher feedback on student attitudes and their drawing performance. One experiment administered three drawing tasks to compare the effects of four levels of feedback: praise, no feedback (a control condition), task specific feedback, and combined praise and task specific feedback. The other experiment used four drawing tasks to contrast praise, no feedback, and usual feedback, the latter two forms serving as control conditions.

Praise was defined as "general positive statements," e.g., "Good drawing." or "You're pretty good at this." (1981, p. 37). The no feedback condition meant that students received no verbal statements of any sort from the teacher. Task specific statements made responses to aspects of subjects' drawings by referring either to well-filled or detailed sections of pictures. In the combination praise and task specific feedback treatment condition, both forms of feedback were offered to subjects while they drew.

The art teachers who agreed to participate in the study, after receiving training sessions, administered a feedback condition to one of their art classes during three weekly art sessions. Three thematic drawing tasks were
used: Hawkeye Homecoming, Helping the Flood Victims, and Roller Skating at the Skating Rink. After a short introduction of the drawing topic, all subjects were instructed to draw a picture representing the assigned theme and were directed to use a high degree of shading with many different grays.

Student attitudes were defined for this study as self-evaluation of their drawings and goals for future drawings. Drawing scores were dependent on what Heard termed "accuracy of representation" and the degree to which drawings filled the paper space.

Heard (1982) hypothesized that the no feedback subjects would obtain both lower attitudinal and drawing scores. However, there were inconsistent results among her groups within the two experiments. These findings led her to suggest that:

stricter controls for individual differences or a levels type of design be used in future studies of this kind. The provisional results of the present study are that teacher verbal feedback influences various pupils and varying groups of pupils in differing ways. The more precise or systematic nature of this differentiation remains to be uncovered. (p. 2981-A)

The length of Heard's experiment (only three drawing sessions) may have contributed to her inconsistent findings. A greater number of testing sessions could have given subjects opportunities to internalize the types of responses they were receiving. Moreover, the large number of teachers
who participated in the study (eight in the first experiment and five in the second) may have contributed to inconsistency in their administration of the feedback variables.

**Gerhart's evaluation variables.** Gerhart's dissertation research (1983) focused on evaluative forms of teacher feedback with 4th grade students on drawing tasks and completion of a tangram puzzle (a Chinese puzzle of geometric shapes which are to be rearranged in numerous ways to form representational objects). He compared the effects of four evaluation methods on student drawing time (their effects on subjects' motivation to spend more time on their drawings), drawing scores (art performance), tangram time (the relation between evaluation method and time spent on a tangram puzzle), and tangram score (creative problem solving performance). The four evaluation methods consisted of (a) evaluation which stressed grades, (b) evaluation stressing peer comparison, (c) self-evaluation, i.e., student responsibility for evaluation, and (4) a control group. According to Gerhart's data, he found no significant differences among drawing scores of pictures completed under the four conditions. He also found no significant difference on time with the tangram puzzle. But he reported that those subjects receiving evaluation which stressed grades spent more time on their drawings, but were less motivated to complete similar tasks at a later date. Both
peer comparison and grades had a negative effect on continued motivation. Although there were no significant differences on tangram times among the groups, the grade-stressing group had significantly higher quality tangram solutions. And finally, subjects who self-evaluated their performance were more willing to work longer on both the art and problem-solving tasks.

Schantz's teacher talk variable. Schantz's (1979) dissertation research also sought to determine the effects of teacher talk on students' studio performance. One class in each of four grade levels (2nd, 4th, 6th, and 8th grades) received two types of instructional treatments in two different art lessons. One lesson contained primarily "learner-oriented" statements and the other contained mainly "teacher-oriented" statements. "Learner-oriented teacher statements attempted to praise, accept, clarify and problem-structure while teacher-oriented statements tended to direct, demean or support the authority of the teacher" (p. 4856-A). A student-teacher was trained to role-play both forms of teacher behavior with the four groups.

Five judges used videotapes and transcriptions to determine the presence of the prescribed statement types and to note nonverbal teacher behaviors, and the amounts of teacher talk (feedback) time and motivational talk time. The judges also evaluated three subjects' art works from each grade level. To assess the art products, the researcher
created a "Locus of Control Index" which gave a ratio score of learner-initiated versus teacher-demanded elements in an art work. Following his data analysis, Schantz (1979) concluded that:

learner-oriented teacher verbal statements had a positive effect on learner decision-making at beyond the .01 level of significance. Teacher-oriented verbal statements appeared to have no significant effect on learner decision-making. It was also found that the amount of learner decision-making in art work decreased as the grade level rose. (p. 4856-A)

He found no relationship between the amounts of teacher talk time and other variables in the study. Schantz's major conclusion from his study was that "there is a definite pattern and relationship among the communication components of art teaching and these relationships have a decisive effect on the degree to which learners make decisions about their art work" (p. 4856-A).

Schantz's construction of his learner-oriented and teacher-oriented statement variables are problematic. His teacher-oriented behavior variable has primarily a negative orientation. Why should directive teacher statements necessarily relate to statements that "demean or support the authority of the teacher?" A teacher can be directive without being demeaning or authoritarian. Cannot teacher-oriented statements also "praise, accept, clarify and problem-structure," words he used to define learner-oriented statements? Also problematic is his selection of three
subjects' art works from each class, an extremely small sample from which to draw his art work data. Schantz's design is also suspect in that the same group received both kinds of teacher behavior, one session for each. A longer study with subjects subdivided to receive only one form of teacher behavior may have made this a more substantive inquiry.

Schantz may be correct in stating that the form of communication between the teacher and students will affect the latter's behavior, one aspect being their decision-making during the art-making process. However, the extreme delineation of his two types of teacher behavior make his findings suspect for these behaviors have little relationship to actual teaching behaviors in the classroom.

Neperud's teaching method variable. Another case of questionable construction of teaching methods is found in an early study (Neperud, 1966). Three forms of teaching conditions were used in this investigation. He selected what he considered to be "commonly used and recommended" teaching methods in art education, which he labeled teacher-centered, cooperative, and child-centered methods. Neperud sought to determine which method contributed to the greatest change in children's drawing development which he defined as learning about visual elements.

In the teacher-centered method, information about visual elements was presented through lecture and demonstration,
during which little attention was given to children's opinions or questions. The teacher provided the drawing topic for the class and a minimum of teacher-student interaction occurred during the art-making phase of the lesson.

The cooperative method was based on the belief that students' participation in the learning experience is more meaningful when student-teacher interaction at the beginning of the lesson enhances students' self-identification with that experience. The presentation of lesson content—the visual elements—was less structured for the content was to evolve from the group dialogue. Although the children were to progress at their own rate and make discoveries, the teacher did actively guide students during the art-making process.

With the child-centered method, emphasis was placed on the children's personal expression and natural development. They selected their drawing ideas and developed and organized these ideas as they wished with no guidance or direction from the teacher who served as a "friendly monitor."

Neperud hypothesized that student drawings would reflect greater use of the visual elements when instruction stressed student-teacher cooperation and interaction as well as information about the visual elements. Eight classes of 5th grade students received one of the three teaching strategies during an eight-week period. Each student completed
six crayon drawings based on two types of drawing instructions: one unstructured in which subjects were to draw about something they had done or wished to do, and the other structured with assigned drawing topics. Following an 11-week experimental period, the post-test results revealed that subjects made significant gains in drawing development only under the teacher-centered method.

What remains questionable is the structure of his three teaching methods. Why was minimal interaction between teacher and students during the drawing stage of the lesson considered a logical characteristic of a teacher-centered teaching method?

The few studies on teacher feedback located and cited above have not contributed greatly to knowledge about the teacher-learning process in studio activities. Findings were either inconsistent or reached significance based on questionable research designs. This supports the view that additional research on teacher feedback is necessary in art education.

General Education Research on Teacher Effectiveness

General education research has a large body of literature on teacher behavior in the classroom, but art education researchers have tended to neglect studying this body of knowledge. What can general education research tell art educators about teacher intervention? Are certain teacher
behaviors more effective than others in fostering student achievement or learning?

**Process-Product Research**

Process-product research is a phrase used in general education research to label research efforts that attempt to correlate specific teacher behaviors with levels of student achievement. Process-product researchers do not attend to teacher-student interaction, but rather seek to determine relationships between specific characteristics of teacher performance and learning outcomes, usually defined as scores on standardized achievement tests. Dominating education research since the mid-1960's, process-product research continues to be the most widely used and cited form of research, but it is attracting fewer adherents among the newer generation of researchers on teaching (Shulman, in press).

Brophy & Good's meta-analysis. Among the critics of process-product research, Brophy & Good's (in press) meta-analysis of process-product research of the 1970's notes both its strengths and weaknesses. In their comprehensive study of this research, they found a number of generic teacher behaviors that seem to correlate with student achievement: (a) amount of content covered, (b) amount of time spent on content, (c) businesslike and task oriented teacher behavior, (d) successful classroom management (both as a social unit and of the pacing of lessons and clarity of expectations),
(e) activities at appropriate difficulty level, (f) student making continuous progress, (g) teacher effectively diagnosing learning needs, and (h) active teaching (presenting information, demonstrating, asking questions, giving feedback, supervising seatwork activities, and monitoring progress).

Focusing on the last of these behaviors—active teaching—Brophy & Good (in press) found the following: teaching effectiveness is related to the degree that (a) objectives are clearly defined, (b) content is outlined, (c) main ideas are stressed and summarized, and (d) review of content is done at the close of a lesson. Moreover, they found that a degree of redundancy is helpful when reviewing relevant lesson content, clarity is essential, and enthusiasm shows some relationship to achievement as well.

They note further that student achievement during independent seatwork is enhanced when teachers explain the work well before students begin to work independently. But the critical factor is that students receive feedback (reactions) while they work. Students should know what work they are accountable for, how to get help when they need it, and what to do when they finish. Moreover, performance should be monitored for completion and accuracy, and students should receive timely and specific feedback.

If these behaviors are reviewed in the context of teaching art, specifically drawing lessons, several of them
stand out as relevant to the purposes of this study. First, adequate time must be allotted to the drawing task. Numerous superficial and incomplete pictures are regularly dashed off in many art classrooms, particularly at the elementary school level where art assignments often lack direction. Second, the drawing task must be a substantive assignment, and the use of suitable learning and performance objectives can increase the substance in an art lesson. Simple-minded drawing lessons which lack learning concepts or skills to master are far too common at the elementary school level. Third, for many years art educators were not "active teachers" and did not deal with the content of art by presenting information, demonstrating, asking questions, giving feedback, supervising seatwork activities, and monitoring progress (Brophy). They have become considerably more active in presenting information, demonstrating, and asking questions. But are elementary art teachers providing adequate feedback through their supervision of studio work-in-progress (seatwork activities) and monitoring of student progress? Are art teachers' feedback too nonspecific, not concrete enough to give students adequate guidance?

Art classroom time is dominated by so-called independent seatwork, yet art education research has devoted little attention to this portion of the teaching-learning process. Prior research studies in art education have not provided adequate answers to the questions about effective feedback
and monitoring of student progress.

Praise

A common form of teacher feedback is praise. Teachers in general assume that praise has a positive effect on students' attitudes and achievement. Art teachers, particularly in the elementary grades, use many praise statements with their students. While teacher praise is typically considered a desirable form of feedback or reinforcement, Brophy (1981b) argues that teacher praise usually does not function as a reinforcer. He defines praise as a means "to commend the work of or to express approval or admiration." But praise is more than feedback about the correctness of a response; rather, praise statements "express positive teacher affect (surprise, delight, excitement) and/or place the student's behavior in context by giving information about its value or its implications about the student's status" (p. 6).

Brophy's (1981b) meta-analysis of praise studies reports:

Teacher praise typically is infrequent, noncontingent, global rather than specific, and determined more by students' personal qualities or teachers' perceptions of students' need for praise than by the quality of student conduct or achievement. (p. 8)

Although the amount of praise varies within classroom contexts, according to analysis of praise frequency, researchers found that it is used infrequently in most classes,
perhaps no more than six percent of the time (Brophy, 1981b). And it is more likely used to encourage students, especially the lower achievers.

Teachers' praise statements often lack credibility because they provide no contingency, are nonspecific, and use repetitive statements that eventually appear insincere. Praise that is uniform and repetitious will eventually be ignored by students. Nonspecific and repetitive praise is a common occurrence in elementary art classrooms where teachers comment on "nice" pictures, "beautiful" paintings, and "well-done" sculptures. They do not explain why the work is beautiful, nice, or well-done. They may also praise students for "hard work" or a "good job." On the other hand, "effective praise leaves the student convinced that the teacher has considered the performance carefully and means what he or she says about it" (Brophy, 1981a, p. 275).

Brophy (1981b) claims that to be effective, praise should not be overused and must relate to specific performance of the student: "praise well, rather than necessarily often" (p. 25). In addition, the context—the classroom kettle of ages and abilities and moods and personalities—in which praise occurs can enhance or diminish its effect. Therefore, he (1981a) speculates:

Perhaps the major function of praise for most teachers is to provide encouragement to students of limited ability who have difficulty with their work or to encourage students of any ability level who are prone to self-doubt or
feelings of frustration and failure. (p. 273)

But he also considers praise useful in a manner relevant to art educators for he (1981a) acknowledges:

Sometimes . . . teacher praise that enumerates specific noteworthy aspects of accomplishments can deepen students' understanding of and appreciation for what they have done. This kind of praise is especially informative when students have been asked to generate creative ideas or solutions to problems, work on complex arts and crafts projects, or complete complex academic activities that can be judged by a variety of criteria. . . . Effective praise of this sort not only informs students that the teacher likes their work but also communicates concepts and language that the students can use to conceptualize and appreciate the work. (p. 294)

Brophy's meta-analysis of praise research supports the claim in this study that the nonspecific praise statements often heard in elementary art classes are inadequate forms of teacher feedback. This information is relevant to the design of the teacher feedback strategies in this study.

Questions

As art educators seek to strengthen the teaching-learning process in art by attending to questioning strategies in the classroom, they must also consider question research in general education. For example, has Hamblen noted Brophy & Good's (in press) report of inconsistent results on the effectiveness of higher level questions versus lower level questions? They (in press) contend that research on questioning must take into account the purpose of and the quality of the questions.
After careful analysis of questioning research literature, both in education and other fields, Dillon (1978, 1982) contends, "Contrary to assumption, the effect of questions upon students has scarcely been investigated--much less demonstrated" (1978, p. 55). He claims that the education profession does not know the effects of questions. Assertions are made, but little research builds the foundations on which to support their claims. Dillon notes that little systematic investigation has been completed about the effects of questions on respondents. Educators traditionally claim that teacher questioning stimulates student thought and discussion. However, Dillon posits that questions may depress student thought and he strongly recommends additional research on the effects of questions in the classroom.

Based on his analyses, Dillon (1978) contends that presumptions cannot be made that the form of the question will affect the quality of the answer or the thought processes used in developing the response. He (1978) argues, "What a question causes in someone else cannot be decided by looking at the question but at the behavior in the someone else" (p. 55). Yet educators assume that a question of a given quality, e.g., an inquiry question, will elicit a response of similar quality, i.e., an inquiry response. Noting education's concern with the use of higher cognitive level questions to foster higher cognitive thinking among students,
Dillon (1982) points out:

The effect of such questions on complex thought processes remains undemonstrated. None of the experiments reviewed here have documented that higher cognitive questions actually promote the assumed cognitive processes in students. (p. 143)

Therefore, Dillon recommends that educators distinguish content from structure when they attempt to classify questions.

Dillon's (1982) most recent analysis of questioning research found only three empirical studies that compared responses to questions and statements, and all reported that questions elicited shorter responses. Dillon uses information theory to explain the time difference. A question elicits information; a statement offers information. The respondent either supplies the information requested or accepts or rejects the information offered. With this difference in mind, Dillon (1982) explains:

In accepting/rejecting the information, respondents bring to bear information and experience which they already possess, together with the structure and organization of what they know. They are left free to adduce all manner of justifications, to make comparisons and adjustments, and so forth. But respondents are less free to do any of that when answering a question. A question specifies a topic, the type of information to be supplied, and also the amount of response that is adequate. (p. 140)

Because of the questionable assertions that the education field continues to make on the merits of questions in the classroom, Dillon (1982) advocates the development of a body of research that examines characteristics of student
responses to teacher questions, further comparison of the uses of questions and statements, the effects of silence on student responses, and the content and structure of questions.

Another approach to studying questioning in the classroom is evident in Morine-Dershimer and Teneberg's (1981) research. A portion of their year-long sociolinguistic study of six 2nd, 3rd, and 4th grade classrooms investigates students' perceptions of teacher questions. They found that, in general, students perceive the purpose of teachers' questions is "to tell" or "to teach," and teachers agreed with students that their questions had an instructional function. They also learned that students' understanding of the function of questions is related to their classroom status, participation in classroom discussions, which is also related to reading achievement. Therefore, "findings on rules of discourse pointed to the probable impetus of an understanding of the rules surrounding classroom questioning for pupil success in school" (p. 44).

Morine-Dershimer and Teneberg (1981) draw out several major points about perceptions of classroom questioning:

1. Teacher questions served to identify the things one ought to know;
2. The answers to questions serve to inform other students;
3. Teacher extension of a question cycle served to indicate to pupils that this is a particularly important cycle. (p. 48)

Their major conclusion is that the nature of questions asked and how students perceive them will affect the quality of
student participation in lessons.

Dillon's (1978, 1982) reservations about the advantages of questions in the classroom support the view that questioning strategies in art lessons may not be as advantageous as art educators contend. Moreover, if questioning serves "to tell" or "to teach" as Morine-dershimer and Teneberg's subjects viewed them, art educators' use of questioning may be more influential than they meant them to be. Further study needs to take place to determine the benefits of questioning in art education dialogues—when they are effective and when other forms of communication may be more appropriate.

**Evaluation of Art Products**

The question of what constitutes suitable assessment of studio performance continues to be a major issue in art education. Therefore, few evaluation paradigms exist in the profession to evaluate drawings. While much of the general education curriculum has access to standardized achievement tests which have their questionable advantages, few standardized tests have been developed for art education and are rarely used in art education research. Standardized tests in art education are not in abundance primarily because of the small market for such tests, their questionable usefulness in a field of non-uniform and un-
systematic curricula, and the expense of printing and scoring adequate tests, particularly those containing art reproductions (Hoepfner, 1984).

The Goodenough-Harris Draw-A-Man Test (Harris, 1963) is perhaps the most frequently used standardized test. Originally intended to measure children's intellectual maturity, it is primarily used to determine children's developmental levels in drawing. However, Colbert (1981) has used it to assess children's figural elaboration (the amount of drawn details) of male or female human figures and related those findings to other measurements in her study.

The majority of art education researchers develop assessment instruments relevant to their particular studies or adapt those created by other researchers to suit the needs of their investigations. Researcher-developed systems of scoring art works have ranged from extremely nonspecific methods, e.g., instructing judges to separate drawings into nine piles sequentially from lowest to highest in artistic quality (Bradley, 1968) to others that have developed complex scoring procedures (Golomb & Farmer, 1983; Kratochwill, Rush, & Kratochwill, 1979).

However, several major scoring methods are typically used in art education research. One system uses a list of descriptors as criteria for assessing art products (Rouse, 1965; Lewis & Mussen, 1969). The art work is rated according
to each criterion on a numerical scale, e.g., a work being assessed for its unity may receive from one to five points. These generic scales are intended for global use, i.e., to be applicable to all art forms.

A second form of measurement uses descriptive phrases which appraise a particular task completed by the student, e.g., drawing or modeling a human figure (Golomb, 1973). A range of descriptions are provided and the child's product is assigned to one of the levels. To assist the rater, sample drawings often accompany the descriptive phrases for each level. Such a system does not give children numerical scores, but places them on a continuum of levels in order for the research to determine, for example, what percentage of five-year-olds draw necks on human figures. This rating procedure generally seeks developmental information about children's art products.

A third system is similar to the first in that it uses criterion categories and a numerical rating scale, but because this form seeks to determine the results of teaching specific curriculum content, the criteria are related to performance objectives for a particular drawing task (Salome, 1965). The products are scored according to the perceived attainment of those objectives.

A fourth category focuses on counting. Using a criterion list, the rater looks for designated visual information
in the work (Kratochwill, Rush, & Kratochwill, 1979). A total score results from a tally of those items seen in the picture. Such a system is often used when the researcher appraises the amount of detail in a drawing (Harris, 1963).

For the purposes of this study the first three scoring methods will be discussed.

Rouse's Descriptive Scale for the Measurement of Art Products

Of the scales designed to serve as global measures of art products, Rouse's Descriptive Scale for the Measurement of Art Products (Rouse, 1965) is the most systematically and carefully developed. Dissatisfied with the rating scales of the early 1960's which deductively used such criteria as "spontaneity," "creativity," and "style" to appraise art products, Rouse sought to create an inductive measure in which characteristics would be operationally defined and which had general capabilities. She claimed that she was developing an instrument to provide descriptive characteristics rather than to assess the quality of products.

After a comprehensive development of the scale, it was field-tested with children in grades two through twelve with drawings, paintings, and three-dimensional constructions. Subsequent revisions resulted in a scale of 20 criteria items, each accompanied by an operational definition and a
list of five possible responses with specific descriptions placed next to each step of the scale (see Table 1 for a sample criterion scale). According to Rouse (1965), "Specifically defined criteria and quantifying steps were found to be necessary for successful rating procedures" (p. 15).

The final version grouped the 20 criteria into six domains:

1. Differentiation/non-differentiation: the degree of variation of shapes, masses, and lines; the amount of texture and detail.

2. Space: the extent to which space, tension, and symbolism are represented.

3. Structural/intellectual: the amount of balance, the degree of unity and dominance, and the level of craftsmanship.

4. Kinesthetic/spontaneity: the thickness or thinness of lines, the range of values, and the level of carefulness or freeness in handling the materials and tools.

5. Internal static/dynamic action: the degree of symmetry, amount of rhythm and transparency (or overlapping).

6. Conformity/nonconformity: the level of originality and the degree of realism or abstraction.

Rouse claimed (1965) that a factor analysis grouped the criteria into the above domains. However, the grouping of a
Table 1

Rouse's Descriptive Scale for the Measurement of Art Products:
Two Examples

Test I: Non-Differentiation/Differentiation Domain

3. Line: Non-Variation/Variation

In regard to line (the representation of objects, action or decoration by strokes or marks created by any medium, which might include string, wire, thread, as well as brush, pencil, crayon, etc.), would you describe the product as: (Note: Do not include obvious textures as line).

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shows no variation in line; lines are all similar</td>
</tr>
<tr>
<td>2</td>
<td>Lines are mainly similar, but some small variation is shown (approximately 75% to 25%)</td>
</tr>
<tr>
<td>3</td>
<td>Shows about 50% varied lines, 50% similar lines</td>
</tr>
<tr>
<td>4</td>
<td>Lines are mainly varied, although some similarity is shown (approximately 75% to 25%)</td>
</tr>
<tr>
<td>5</td>
<td>Lines are extremely varied: shows no similarity in lines (p. 25).</td>
</tr>
</tbody>
</table>

Test VI: Conformity/Non-Conformity Domain

1. Non-Originality/Originality

In regard to originality (shown by inventiveness, uniqueness, non-imitativeness), would you describe the products as:

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shows complete lack of originality; is imitative, stereotyped</td>
</tr>
<tr>
<td>2</td>
<td>Shows mainly imitativeness or stereotype; although some small part may be somewhat out-of-the-ordinary</td>
</tr>
<tr>
<td>3</td>
<td>Shows moderate amount of originality</td>
</tr>
<tr>
<td>4</td>
<td>Shows a good deal of originality</td>
</tr>
<tr>
<td>5</td>
<td>Shows a high degree of originality (p. 33).</td>
</tr>
</tbody>
</table>
number of criteria in their domains seems questionable, e.g., how does craftsmanship relate to unity, or symbolism to depth?

Although Rouse considered her rating scale a descriptive tool rather than an evaluation instrument, the structure of the scale implies apparent standards among the descriptive statements. The structure of the order of the two descriptive statements with the "lack of" or "no evidence of" descriptors placed at the top and such statements with "shows a high degree of" or "are extremely varied" descriptors at the bottom of the scale establishes an implicit standard among criteria. According to Rouse's scale, better art products have more varied lines, have extremely varied shapes; exhibit a high degree of symbolism, a great amount of rhythm, a high degree of originality, and so on.

The inability of Rouse's Scale to serve all products is evidenced by the fact that Packard (1973) used only portions of it when she assessed a variety of art products (tree drawings, cut-paper designs, and paper mosaics). Packard did not consider all portions of the scale appropriate for her diverse art products. In addition, she used the Scale to evaluate rather than to describe the products. A modification of Rouse's Scale (Lewis & Mussen, 1969) has been used in more recent research (Gregory, 1983), but global scales are less popular with current researchers.
Although Rouse's claim of generic uses for her scale is questionable, the use of operational definitions for each criterion level is a noteworthy improvement over earlier scoring instruments of art products.

Golomb's Descriptive Scales

Looking at both drawing and clay modeling from a developmental perspective, Golomb (1973) established detailed criteria for categorizing how various ages of children drew or modeled human figures. She used both a point scale and a structural scale to score the products. With the point scale, one point was awarded for each body part drawn or modeled. The structural scales were divided into six criterion levels to rate the products' organizational qualities. Her descriptions distinguished the various levels that children proceed through in the development of their ability to depict human figures in two- and three-dimensional forms. Small line drawings accompanying Golomb's verbal descriptions increased the scale's precision and contributed to the judges' high inter-rater reliability.

A later study (Golomb & Farmer, 1983) added to Golomb's repertoire of evaluation instruments. To assess children's spatial organization and planning strategies in their drawing, Golomb and Farmer developed the Spatial Composition Scale. It consisted of nine levels of graphic organization
descriptions from "Arbitrary Placement" which received the lowest rating to "Dynamic Balance" which received the highest score. To achieve comprehensive assessment of subjects' drawing, in addition to the Spatial Composition Scale, they used Kellogg's placement patterns and emergent diagrams instruments (1969), a directional patterns test (how forms were placed on the paper), a location test (where the drawing was located on the paper), and figural differentiation (a four-point scoring system Golomb developed for earlier studies). Perhaps their complex scoring system accounts for findings that refute Winner & Gardner's (1981) research claims of preschoolers creating balanced compositions.

Because of her developmental orientation, Golomb uses extremely objective means to score children's drawings based on formal organization (how they fill the space of the picture plane), the representational level of a form (its recognizability), details of objects, and color chosen for forms (real or arbitrary). She is not concerned with aesthetic qualities per se, although the characteristics of drawings she scores contribute to the work's aesthetic quality or expressiveness.

While Golomb uses her rating systems for developmental purposes, it is conceivable other researchers may design lessons which teach spatial concepts to young children
using Golomb and Farmer's Spatial Organization Scale to appraise the effects of that instruction.

Two of Golomb's instruments have been used to measure the effects of instruction (Grossman, 1979), within a developmental perspective. In a study which investigated the effects of an instructional program in clay modeling skills on preschoolers' modeled and drawn human figures, Grossman complemented her own five assessment instruments with Golomb's Structural Evaluation scales. However, one of Grossman's instruments is a refinement of Golomb's structural scale, and they both provide nearly identical information about the figures. Her reasoning for including both is not apparent.

Grossman developed a checklist of details for both the modeled and drawn human figures in which points were scored for the inclusion of details on the body, clothing, and for contextual items. Contextual points were earned for additions such as holding objects, several figures constructed (instead of one), the addition of a base, or other objects combined with the figure.

For the purpose of her study, Grossman's assessment instruments were indeed adequate. The use of several instruments provided a complete picture, and development of different instruments for the modeling and drawing tasks was highly appropriate. Her detailed delineation of characteristics to be noted in the modeled and drawn figures also
provided thorough analysis of the work.

Both Golomb's (1973) and Grossman's (1979) use of sample pictures to accompany a portion of their scoring instruments are highly effective ways of increasing objectivity in scoring drawings and of broadening the judges' understanding of criteria. Golomb's and Grossman's method of using different criteria for different tasks is a significant improvement over earlier global rating scales. These two characteristics are relevant to the design of the evaluation instrument developed for use in this study.

**Salome's Criterion-Based Scoring of Instructional Effects**

Salome's perceptual training study (1965) was perhaps one of the first to measure the effects of instruction using criteria based on specific performance objectives. He developed a three category rating scale to evaluate the amount of visual information in children's drawings. His 15-point scale appraised the drawings according to three criteria: communicative symbol, closure-clarity, and proportion; therefore, each criterion was awarded one to five points. Communication symbol referred to the degree that the drawing represented characteristics of objects based upon the information in the contour lines. Higher scores resulted from the inclusion of more of the "points of maximum information." Closure-clarity assessed the extent that an object and its parts were drawn with lines relevant
to the object. "The more parts enclosed by line which accurately described straight and curved edges of an object and its parts, the higher the rating given on this variable" (p. 22). The proportion criterion appraised the relationship of the parts to the whole—how well the height, width, and size of parts interrelated.

In the discussion of his evaluation methods, Salome (1965) did not explain whether a verbal descriptor was provided for each point on the scale. It is unclear whether the judges merely followed the general criterion definition and selected a number from high to low they thought fit their rating, or whether the judges viewed the actual objects while they scored the drawings. Salome noted inter-rater reliability among the two judges ranged from .76 to .94 at the p < .01 level, an unclear explanation of the correlation. If sample drawings had accompanied the scale to exemplify criterion levels, higher inter-rater reliability may have resulted.

An additional questionable feature of Salome's instrument is the limited number of criteria used in assessing the drawings. Two aspects of contour drawing are not addressed in his rating scale—the ability to see where contour lines begin and end on a form, and the quality of lines drawn. If Salome did not intend to focus specifically on "contour drawing," these criteria may not be relevant, yet he mentions "contour lines" in his explanation of the
Salome later adapted his rating scale (Salome & Szeto, 1976) in a related perceptual training study with college students. He and Szeto maintained the original criteria, but relabeled communicative symbol as differentiation and extended each criterion from a 5-point to a 10-point scale. Judges compared each test drawing to a master diagram which showed the objects (a toy truck, a lamp, and an ice cream cone model) from various angles. However, the authors provided no explanation of the diagram. Using these methods, inter-rater reliability for the judges increased to .90, .90, and .89 drawings of the three objects. This increase in inter-rater reliability over the earlier study may be attributed to Salome's inclusion of the master diagram, but viewing the actual object could have been more useful to the judges.

An amended version of Salome's scale was used in Rush, Wekesser, & Sabers' (1980) contour drawing study. They retained the 10-point scale of Salome's 1976 model, but used no sample diagrams. They also altered the scale by adding two criteria, quality of line and joining lines. Quality of line was described as "ranging from all lines firm, directionally controlled, relevant to object depicted and free of wavering to lines not firm or directionally controlled" (p. 8). Joining lines was described as "One point if lines are joined without overlap or extension of ends beyond
places of joining (allow two errors)" (p. 8). While Rush et al. can be commended for increasing Salome's criteria, their definitions of the additional criteria lack clarity and economy.

Salome's method of relating scoring criteria to a specific drawing task was a definite improvement over the earlier global scoring systems. But his scale may have been strengthened further by expanding the criteria and by providing sample drawings to exemplify rating levels for each criterion.

There are obvious benefits in using criteria related to performance objectives for a specific drawing task (Salome, 1965). If a study has an instructional component, i.e., if instructional methods are compared and if subjects are informed of specific objectives to attain, it is logical that their drawings would be judged on only the objectives delineated to them and about which they received instruction. For example, if depicting three-dimensional space in a drawing was not discussed or explained to subjects, it would be inappropriate to evaluate this aspect in their drawings.

It is also advantageous to use sample drawings in a scoring instrument to illustrate levels of attainment within each criterion (Golomb, 1973; Grossman, 1979). When independent judges of test drawings refer to sample drawings they acquire an understanding of the researcher's definition
of each criterion level, and this mutual understanding among the judges can enhance inter-rater reliability in scoring.

**Colbert's Assessments of Drawing Tasks**

Colbert (1981, 1984a, 1984b) has conducted several major studies which assess drawing products. The 1981 study's scoring procedures used a battery of assessment instruments, including the elaboration segment of the Torrance Test of Creative Thinking Figural Form A, the Goodenough-Harris Draw-A-Man Test, and a rating scale developed by Colbert for her investigation. Her rating scale assessed still life drawings completed both from observation and from memory. Four judges used her check-list to rate "details of objects, patterns, textures, shading, spatial relationships, and three-dimensionality" (p. 28), and they achieved an inter-rater reliability above .90. However, her report did not provide explanations of how each item in the checklist was to be evaluated. She did not explain the number of levels delineated for each criterion, nor did she define how the levels were determined.

In her study of the effects of drawn and verbal descriptions of a geometric object on later drawn and verbal memory tasks, Colbert (1984a) used another checklist system to evaluate the drawing products. Because subjects were instructed to draw the object as accurately as possible,
she developed a comprehensive, 59-item checklist which consisted of "categories of model parts, patterns, textures, relative placement of parts, relative size of parts, three dimensionality, and color relationships" (p. 87). All items referred to how well subjects replicated a unique, three-dimensional geometric form designed by Colbert.

Because the drawing tasks in this study are not completely related to replication of observed phenomena, the use of a scale such as Colbert's is not appropriate. However, a number of her criteria may be relevant to drawing tasks selected for this study.

The evaluation methods in Colbert's recent study (1984b) are more closely allied to Golomb's procedures. Colbert has replaced a detailed checklist with seven levels of drawing representation of a different geometric model. Three judges assigned subjects' drawings to one of these levels, and Colbert tabulated the percentage of subjects within each level. However, her report did not detail how the seven levels were formulated or what they were.

Heard's Use of Sample Drawings

Concern for precise measurement is also evident in Heard's (1981) teacher feedback study. To assess six grade subjects' art products she looked at two criteria—the amount of paper covered by the drawing and accuracy of representation, which she considered a composite view for
detail in preadolescents' drawings.

To score the amount of paper coverage, an acetate grid divided into 56 quadrants was placed over the drawings. The judge received complex instructions on what constituted an acceptably filled quadrant. Points were allotted according to the total number of filled segments.

Accuracy of representation was scored for "spatial orientation, composition, conception of picture, shading, and representation of form" (p. 45). She categorized sample drawings from her pilot study into 15 levels of accuracy of representation which received numerical values from 1 to 29. Because each drawing sample represented a composite score for accuracy of representation, the criteria were not individually rated. When scoring a test picture, judges were to decide where it best fit along the continuum of 15 drawings.

One feature of Heard's accuracy of representation evaluation instrument is problematic. In the presentation of her three drawing tasks, the only criterion specifically mentioned to subjects was "to use as much shading as possible and to use as many different shades of gray as possible" (p. 42). Other than this directive, the teacher only introduced the drawing theme (Hawkeye Homecoming, Helping the Flood Victims, or Roller Skating at the Skating Rink), asked motivational questions, and instructed subjects to draw a picture about the theme.
Therefore, subjects' drawings were rated on several criteria not discussed with them by their teacher. Heard's task specific variable was described as making statements that referred to some aspect of the drawing or to sections of the drawing that were well-filled or well-detailed. Yet Heard did not clarify if these feedback statements specifically addressed all criteria used in scoring accuracy of representation.

While the use of sample drawings for each task is commendable, the lack of relationship between the evaluation criteria and performance objectives delineated to students is a weak feature of the evaluation.

The literature review on scoring children's art work provided evidence of diverse evaluation methods, yet reported increased use by researchers of criteria based on performance objectives for a specific task. This has occurred more often in studies which use observational tasks where issues of verisimilitude dominate the evaluation. The use of sample drawings to aid scoring of criteria is also a factor in a number of studies. These two components of recent evaluation instruments are relevant to the design of the scoring instrument for this study.

Student Communication In The Classroom

In recent years education researchers have looked at communication in the classroom to learn more about the
teaching-learning process. They are paying increasing attention to student communication, both student to student (peer interaction) and student to teacher. Some researchers are particularly interested in the effect of peer interaction on student learning.

Steinberg and Cazden (1979) note that peer studies usually center on products of teaching— who learns how much. But they and others (Cooper, Marquis, & Ayers-Lopez, 1982a, 1982b) are interested in the process of peer teaching, i.e., how children teach each other. The process aspect of peer interaction is the focus of this literature review.

General Education and Peer Interaction

General education researchers have looked at two forms of peer interaction when reporting its educational benefits. One type of interaction is structured by the teacher, e.g., small group projects requiring collaborative efforts, or peer tutoring when one child is designated to assist another (Allen, 1976). Another type of peer exchanges consists of spontaneous interactions (Cooper, Marquis, & Ayers-Lopez, 1982a, 1982b). Given the purposes of this study, the following review will focus on only the latter form of peer interaction.

According to Cooper et al. (1982a, 1982b), spontaneous peer interaction is an "information exchange" unstructured or unplanned by the teacher, occurring while students work
independently on lessons. The theoretical foundation for their studies is derived from Piaget and Bandura. Piaget (1959) has argued that peer interaction reduces egocentrism and enhances intellectual growth; Bandura (1977), a social learning theorist, posits that the peer group provides a source of models for observational learning.

Research by Cooper et al. (1982b) on peer interaction has focused on several issues: (a) the form and function of spontaneous peer learning, (b) developmental patterns of peer interaction that are task oriented, (c) identification of characteristics of effective peer learning discourse, and (d) how members of a group vary in their participation in such communication. They have studied kindergarten and 2nd grade children in naturalistic and experimental settings in their investigations.

In the naturalistic environment a participant observer visited a kindergarten and 2nd grade classroom to audiotape children's conversations as they worked in small groups and to record field notes on pertinent contextual information, e.g., seating arrangements and nonverbal behaviors. These groups were unstructured by their teachers who encouraged them to interact as they worked on their lessons. The researchers were looking for patterns of behavior which they could categorize into "instructional episodes." Based on analysis of their data, Cooper et al. (1982b) categorized
seven learning episode functions from the children's conversations:

1. Teacher bid: A child spontaneously offers information or help to a peer.

2. Learner bid: A child seeks information from another.

3. Pacing: A child comments on another's rate of work or attends to others with nonteaching statements.

4. Management: A child attempts to control behavior of others.

5. Self-evaluation: A child makes a positive or negative statement about his or her work.


7. Collaboration: Children participate in a cooperative task or alternate teacher and learner roles during completion of a task.

In the classroom setting, Cooper et al. (1982b) studied the relationship between social context and peer learning, i.e., how roles of teacher and learner were negotiated between peers and who were more successful negotiators and why. Their data underscored the importance of a social network in spontaneous peer learning: "Young children tend to have more ready access to others in their class, but by 2nd grade this access is limited, with most peer learning occurring within a network of close
friendships" (p. 73). Other differences between the two age groups were also found. For example, the younger children made more teaching statements, used pacing to draw attention to their work, and sought to manage behavior for its own sake. Older students used pacing and managing imbedded in teaching or learning sequences to help achieve their learning goals. Evidence showed more collaborative episodes among the older students, and, in general, kindergarteners were more interactive than 2nd graders.

In the experimental setting, pairs of children from kindergarten and 2nd grade classes met two times to complete a game task which used a pan balance scale and six lead weights. The object of the game was to find which pairs of blocks would balance the scale so that a rod would point to a clown's face at the bottom of the scale. In one session, the children performed the task cooperatively, i.e., they had equal amounts of information concerning the shared problem; the other session was didactic, i.e., each member of a pair from the first session was asked to teach another child how to complete the task.

Using the experimental method, the researchers were able to compare individuals and age groups in the same task and to study children who have difficulty with communication tasks. They found that children used distinctly different communication styles in the two situations. Children in the didactive session used more directives and questions, but
offered fewer labels for the blocks and made fewer evaluative comments on their peers' progress. When children were teachers, they also often pointed to the materials and combined verbal and nonverbal discourse to show their peers what to do with the blocks.

In the cooperative sessions children were less directive toward one another and more focused on whether they were finding the matching pairs of blocks. Evaluative comments were not directed to the partner but toward the equipment, e.g., "the pointer is pointing to the clown's face" (1982a, p. 182). Cooper et al. also found numerous differences between the age groups. Kindergarten children expressed more directives, questions, and criticism; they also showed and demonstrated more often to their partners. The younger children were significantly more interactive than the older subjects. The researchers speculated, "It appears that the younger children required a higher density of such exchanges in order to accomplish the same progress as older dyads" (1982a, p. 182).

From both studies Cooper et al. (1982a) affirmed "the significance of informativeness in effective peer learning" (p. 190). They explained:

The experimental task highlighted the helpfulness of precise communication, whether by gesture in pointing or showing, or by using labels to distinguish the particular block of interest. Likewise, in the classroom the children who were spontaneously selected as teacher were those who
were capable of providing clear and informative feedback. (p. 190)

Among their recommendations for future study, Cooper et al. expressed the need for additional developmental work, both experimental and naturalistic, to further identify skills which relate to effective peer learning. They also suggested future research on the relationship between peer learning and teacher-student and student-teacher interactions.

Art Education and Peer Interaction

Art educators have only recently begun to investigate peer interaction during art lessons. This review documents two researchers who have looked at this aspect of communication in the classroom.

Alexander's first grade classroom. Alexander (1984) used ethnographic techniques (audiotape recordings and field notes) to document conversations among her first grade students. She was interested in learning how task might affect student conversations; therefore, she compared talk which occurred during a "free day" drawing lesson (when students worked independently with their choice of media) with conversations during a structured painting session on self-portraits. From her analysis of the conversations, she developed a typology (category system) of the types of talk that took place. Ninety-five percent of the conversations
grouped themselves into four kinds of talk: (a) social—
talk about the students' social life, e.g., sports activi-
ties or birthday parties; (b) fantasy and play—conversa-
tions which related imaginary topics or play acting to
their pictures; (c) art media or procedures—talk about
their art materials and how they were using them, e.g.,
questions about color mixing or positive responses to some-
one's colors; and (d) issues of verisimilitude—negative
and positive comments about the accuracy of their art work.

Alexander (1984) found that conversations about media,
procedures, and verisimilitude occurred more often during
the portrait painting lesson and that fantasy and play
dialogues took place more often during the free days. She
noted that there were few times in students' school day
when they had opportunities for social talk and for fantasy
and play. She acknowledged that it is difficult for art
teachers to suppress social talk, and, moreover, high
restrictions on talking in general decrease the other three
forms of talk which she regards as educational benefits.
In addition, Alexander claimed that her findings on the high
degree of talk related to verisimilitude refuted the belief
among art educators that these concerns appear later, pri-
marily about the fourth grade level.

Alexander's study is significant because her investiga-
tion of peer interaction may be the first ever reported in
the art education literature. However, additional information was needed to make it an investigation more valuable to the field. Questions that other art educators might ask include: Among the four types of talk she categorized, what percentages of the total talk did each type comprise? What was the dominant type of conversation during the portrait lesson and during the free choice lesson? Did she notice to what degree her students' performance was influenced by their conversations on media, procedures, and verisimilitude? Was her interaction different with the students during these two types of art sessions? And if so, how might that factor have affected the frequency of certain types of talk? And finally, Alexander reported on "more" and "less" amounts of talk of a certain type, but did not give the reader a clear picture of what these "more" and "less" frequencies mean.

Swann's preschool study. Swann's (1985) ethnographic study of peer culture looked at a preschool group of 15 children. She analyzed 20 hours of videotaped art time to look for patterns of behavior, patterns that might indicate how peer influence influences the art process. She divided peer influence into two major categories, influence displayed by the "self" and influence derived from the "object" (the art work). She then subdivided each category into smaller units. The "self" exerted influence by (a) acting as an authority figure, (b) telling about personal
experiences, (c) peer teaching, and (d) threatening or teasing others. She found that peer teaching occurred more often with children of lesser status who attempted to use this means to gain status over younger children. Peer teaching generally consisted of volunteering information on how to use materials.

The "object" exerted influence by (a) children's selective sharing of materials and space, (b) their competing for materials and objects, and (c) copying the art of others, which served to recognize the status of another child. The "self" also influenced the status of an "object" by (a) bragging about one's art, (b) critiquing art of others, and (c) designating one's art as a gift. Swann found children requested approval through their art objects, yet they infrequently received approval when they asked for it.

Swann's division of peer influence into "self" and "object" categories is problematic. This division seems awkward, for peers (or the self) are exerting influence whether their picture is being copied by others or whether they are verbally telling someone how to paste a scrap of red construction on a drawing. Perhaps the "object" influence might be labeled a "task" influence. Or the two major categories of influence could be differentiated as verbal and nonverbal behaviors. Despite reservations about Swann's basic organization of her typology, her
sub-categories inform art educators of kinds of influences that occur during art sessions and the design of her analysis procedures is valuable information for others who plan similar observational studies.

Art Education and Student/Teacher Communication

Dialogues that take place between student and teacher are another aspect of classroom communication under investigation. Although this study's primary observational issue is peer interaction, these conversations can not be analyzed in isolation from comments directed by students toward the teacher or by teacher to student. Therefore, Taunton's recent research is pertinent to consider.

Taunton's (1985) interest in the aesthetic development of children has led her to analyze dialogues between teacher and child in an observational study of three preschool classrooms' "art time" over an eight-week period.

Taunton looked for patterns which occurred in teacher initiated conversations and in child initiated conversations. Teacher initiated conversations included (a) talk about the lesson, (b) statements that sought to induce reflection or decision-making by the child, (c) praise statements (numerous), (d) lesson concept statements, (e) management statements, and (f) evaluative comments on art products, which were either nonspecific or were supported with a criterion statement.
Analysis of audiotape transcriptions and observational notes also showed that differences in activities in the three classes affected the types of conversations. In the more structured classroom, praise or evaluation was used more often to motivate the children. In this group the teacher stressed basic perceptual discrimination, following instructions, and finishing a work. In the group with less structured art activities, the teacher stressed management of materials, talk about intentions and actions while working, and talk about the materials while working. More dialogue was initiated by the children in this group. In the third group the teacher provided praise, evaluation, encouragement, and also made suggestions. She talked a great deal about qualities of visuals and materials, and asked questions to extend children's ideas. She also urged children to extend more effort on a project.

Child initiated conversations consisted of (a) exchanges about the lesson (requests for assistance or materials that often included intentional statements about their pictures), (b) statements about the tasks (descriptive comments about the content of their pictures), (c) evaluative comments about their work, and (d) statements about their ability or motivation.

Because praise statements are a common practice with young children, other art educators might seek additional clarification on her praise category. What was the
difference in the frequency of praise statements among the groups? Was the praise primarily nonspecific or concrete? If both types occurred, was their relative proportion similar throughout the classes?

While her report did not elaborate on the relationship of child initiated conversations to the tasks, Taunton's findings on patterns of communication between teacher and child—the types of talk that took place and the fact that dialogue varied with task differences—add to the small body of knowledge in art education on this subject.

The research of Cooper et al., Alexander, Swann, and Taunton are particularly relevant to the design of the peer communication variable in this study.

A Multiple Perspective in Educational Research

Changes in Educational Research Methodology

Historically, education researchers have used experimental methods adopted from psychology to pursue their investigations. This research methodology, often labeled "quantitative" or "positivist" is derived from statistical theory and analysis (Sevigny, 1981). But many researchers have become dissatisfied with the view that all data must be quantifiable in order to be meaningful in educational research. Researchers have argued that quantitative approaches do not provide all the answers to complex research questions. Moreover, critics see limitations in this
singular approach in analyzing social phenomena, and are interested in a broader picture of educational settings through the use of more holistic means of gaining understandings about teaching and learning.

These researchers advocate observational methods that are descriptive in nature (labeled by Shulman as "interpretive") which they believe generate broader knowledge of numerous aspects of educational settings.

Evertson and Green (in press) have comprehensively discussed the concerns and methods of observational research. They describe observation in educational research as "systematic, deliberate, and question-specific" (p. 10). They remind researchers that one observational approach will provide only one view of the phenomena being studied; therefore, that view is broadened when multiple research methods are used. Evertson and Green cite numerous recent studies (late 1970's and early 1980's) which have used multiple perspective analyses to learn more about the teaching-learning process: "These studies demonstrate the richness of information and the complementarity of view that can be obtained by systematically building on different approaches" (p. 11).

Evertson and Green (in press) fully describe four broad systems for recording and storing observational data—category systems, descriptive systems, narrative systems, and technological records. All but the category systems are
"open" systems, i.e., categories are not selected a priori but evolve from analysis of the data.

Narrative systems and technological records have no preset categories, for the meaning is viewed as context-specific. In narrative systems, behavior or events are recorded orally or in written records to obtain detailed accounts of observed phenomena. Technological records are obtained with photographs, audiotapes, and/or videotapes. These records sample a specified time period and are analyzed at a later date (Evertson & Green, in press).

Descriptive systems may have preset categories as multiple aspects of specified behaviors are recorded. Both written records and audio and videotaping are often used. Here, too, meaning is viewed as context-specific.

In contrast, category systems use predetermined categories, checklists, or rating scales. They are used to code selected behaviors numerically. Regarding these four systems, Evertson and Green suggest (in press), "The key is not which is best but which is most suited for the question under study and which will adequately represent the segment of reality being observed" (p. 22).

Doing educational research can be compared to Collingwood's remarks about doing history— that it looks at both the outside and inside of an event (Shulman, in press). Collingwood maintains that the two focuses are not incompatible and, in fact, they are required to "co-mingle" in order
to acquire a better understanding of history. Shulman argues this distinction helps to clarify the use of "positivist and interpretive research" (also labeled quantitative and qualitative) in education.

In agreement with Evertson and Green, Shulman (in press) advocates eclectic research methods, but he, too, maintains that the eclecticism must be disciplined and that the nature of the research problem should determine the appropriate research strategies.

Multiple Perspectives in Art Education Research

The use of multiple perspectives in art education research is uncommon. Until recently, researchers have primarily used experimental methods when investigating research questions. Statistical analyses have been used in developmental studies, instructional methods research, and other investigations prevalent in the field.

But by the early 1980's, art educators became increasingly interested in exploring other research methods with a descriptive focus, often using ethnographic techniques, e.g., audio and videotaping, field notes or journals, interviews, and/or participant observation. Sevigny (1977, 1981) was an early advocate of these methods in art education research. He labels his multiple perspective approach "triangulated inquiry," and he argues his methodology provides richer descriptions which, in turn, shed more light on
a complex educational issue. In his argument for multiple research methods, Sevigny (1981) claims:

Past research has failed to carefully map out the complexity of classroom learning. It has proceeded to data processing before understanding the contexts against which the variables are considered. Past efforts have relied too heavily on available and popular instruments because they were convenient, not because they were most appropriate to the real questions that were being asked. . . . Finally, they have failed to interface the quantitative and qualitative data, since they had little regard for the contributions each can make to the other. They have failed to perceive the strength that could be found in their combined capacity for rich description. (p. 68)

More recently, an issue of Studies in Art Education (1982) featured several articles which echoed Sevigny's methodological recommendations. This interest in descriptive research is also reflected in the addition of an observational studies category in the annual Seminar in Art Education Research (1983).

The literature in general education and in art education suggests the use of multiple perspectives, i.e., complementary research methodologies, can provide more expansive answers to educational questions by taking into account the complex nature of the teaching-learning process.

Conclusion: Theoretical Foundations for the Study

The literature review has provided the theoretical foundations for the design of this study. Various components of the study are summarized below with relevant
references cited in this chapter.

Drawing Tasks

The use of drawing task as a variable in art education research (Golomb & Farmer, 1983; Pariser, 1979) influenced the design of this study. Because this investigation was to be conducted "over time" and because the nature of student/teacher dialogues is affected by change in drawing task (Taunton, 1985), this study contains varied types of drawing tasks based on three drawing approaches discussed in the literature.

Observational drawing has been highly recommended at the elementary level (McFee & Degge, 1977; Wachowiak, 1985), but this method is often neglected by classroom teachers who are responsible for teaching art to most of the nation's elementary students. Therefore, two of the drawing tasks in this study stress observational drawing.

Fantasy themes are a second drawing approach often advocated in the elementary grades (Wachowiak, 1985; Wilson & Wilson, 1982). Children are enthusiastic about such drawing assignments, and those who are self-critical of their representational drawing ability generally feel more confident when creating fantasy pictures. Two fantasy oriented drawing tasks were developed to complement the observational component of this study.
Copying from two-dimensional images has become an increasingly acceptable drawing method to use with children (Pariser, 1979; Wilson & Wilson, 1982). Some educators recommend this as a preparatory stage before drawing from three-dimensional objects. This approach is combined with fantasy elements in two additional drawing tasks for the present study. Therefore, subjects completed six drawing tasks as the experimental portion of this investigation.

Teacher Feedback

Three forms of teacher feedback were designed for this study—minimal, questioning, and directive. They were derived from art education literature which in varying degrees advocates these three strategies. The minimal feedback strategy reflects the educational philosophy that children should solve their artistic problems without intervention. This is based on the argument that children's artistic growth is best derived from their own "creative self-expression" with minimal influence from others (Lowenfeld, 1947). Though this approach is rarely recommended by prominent art educators today, many elementary classroom teachers have been and are continuing to be taught this philosophy.

Analysis of praise research (Brophy, 1981a, 1981b) indicates effective praise is specific, i.e., related to certain characteristics noted in task performance. Yet,
nonspecific praise is commonly used in elementary classrooms. Therefore, to further structure the minimal feedback strategy to simulate typical elementary teacher responses, a large degree of nonspecific praise was included as part of the minimal feedback strategy. However, praise statements in the other two feedback methods were primarily concrete, to reflect Brophy's (1981a, 1981b) description of effective praise.

The second strategy, questioning feedback, was designed for this study based on the assumption that questioning strategies will elicit reflective thinking by students about their work (Hamblen, 1984a, 1984b; Taunton, 1984), often implicitly recommended in many prominent art educators' writings. They claim that using these strategies is an effective way to aid transfer of learning to future lessons. These advocates believe that if children are led to "discover" learning, these discovered learnings are more meaningful to them. Therefore, they prefer to ask leading questions to guide a child's thinking rather than to "tell" or "explain" about unsatisfactory portions of a child's picture. But general education research has not adequately explained the effects of questions in the classroom (Dillon, 1978, 1982). And although the benefits of questioning strategies are praised by art educators, no art education research literature supports these claims with reports on studies that compare their use with other teaching strategies.
This study sought to learn if questioning feedback methods are as beneficial as art educators contend.

Directive feedback, the third strategy developed for this study, is grounded on the view that direct, concrete statements to students about their work-in-progress will provide guidance and information which can more effectively build their knowledge base about art concepts (Wachowiak, 1985; Wilson & Wilson, 1982; Youngblood, 1984). It is assumed that students will subsequently use this knowledge base to increase their decision-making skills in the art making process. In addition, these skills may contribute to their ability to be self-critical and reflective about their work. The directive feedback strategy was placed in this study to determine if this approach would enhance student drawing performance to a greater degree than the minimal feedback or questioning feedback methods.

The above three teaching strategies were incorporated in this study to reflect three different belief systems among art educators on how children best learn to create visual images. The present study was designed to compare the effects of these three forms of teacher feedback on subjects' performance of the six drawing tasks--two observational, two fantasy, and two combining observation and fantasy.
Scoring of Test Drawings

The development of the evaluation instrument for this study is based on three major findings in the literature on scoring drawings in art education research. First, there is increasing use of assessment criteria related to specific performance objectives for a drawing task (Salome, 1965; Colbert, 1981, 1984). Second, the use of sample drawings have helped to increase independent judges' understanding of levels within the rating scale, thereby enhancing inter- and intra-rater reliability (Golomb, 1973; Grossman, 1979; Heard, 1981). And third, the use of a 5-point rating scale for each criterion is a suitable continuum for scoring, and each level of the criterion must be clearly defined to the judges (Rouse, 1965).

Therefore, an evaluation instrument was developed for use in this study that accounted for all three factors. This was done by creating scoring criteria for each drawing task related to performance objectives which were delineated to subjects when the task was introduced. In addition, sample drawings accompanied each drawing criterion to illustrate a high and low level of achievement on a 5-point rating scale. The independent judges received explanations of the various criteria during their training sessions.
Peer Communication

The literature supported the position that when teachers encourage peer interaction, student learning is stimulated (Cooper et al., 1982a, 1982b). However, art educators have conducted little systematic research in this area. Reports by Alexander (1984) and Swann (1985) have raised more questions than they have answered. Therefore, an added component on peer communication was a relevant addition to this study. Investigating the relationships among teacher feedback, drawing tasks, and peer communication, rather than considering one of the variables alone, can provide a more complete way to study the elusive process of art learning.

Multiple Research Methods

The literature has supplied ample evidence of increasing use of multiple perspectives in education research and of the benefits of this approach in studying the teaching-learning process (Evertson & Green, in press). Although art educators have moved more slowly in this direction, they have begun to use ethnographic techniques to complement quantitative data (Sevigny, 1977). These reports confirm the advantages of designing the present study with a multiple research methodology—the juxtaposition of experimental data with descriptive data which is also quantified.
In summary, the present study was designed to experimentally test whether the three different forms of teacher feedback administered to 5th graders would contribute to measurable performance differences on six drawing tasks. The observational (or descriptive) component of the study was designed to analyze the nature and effects of peer interaction during the art making phase of each drawing task. With this dual perspective, the study sought to determine relationships among the forms of teacher feedback, the kinds of drawing tasks, the types of peer interaction, and the types of communication directed by subjects toward the researcher.
CHAPTER III

METHOD

Experimental Design

Three levels of teacher feedback (minimal, questioning, and directive) formed between-subject groups in the study. Six levels of drawing task (The Great Horned Owl, Fantasy Flying Creatures, Outerspace Toys, Outerspace Creatures, Underwater World of Sea Creatures, and The Peaceable Kingdom) were manipulated as a within-subjects variable across each teacher intervention cell. Therefore, the design was a 3 (Feedback Method) x 6 (Drawing Task).

Observational Design

Group communication, i.e., peer interaction and subject interaction with the researcher, both verbal and nonverbal, was studied naturalistically through analysis of video and audiotape recordings of each testing session. Additional data about subjects were gathered by means of a pre-treatment questionnaire, a self-evaluation check list for each drawing task, and post-treatment interviews. Further contextual information was gathered by interviewing the participants' classroom teachers.
Subjects

The 5th grade population from the Columbus, Ohio, City School District was sampled for the study. This population was chosen because of upper elementary children's more self-critical attitudes and because the literature revealed no art education studies on peer interaction with that age group. Moreover, 5th graders were more capable of providing written responses to the questionnaires and of responding thoughtfully on self-evaluations. Middle school scheduling ruled out the use of a 6th grade sample; their attendance throughout the school day in segmented courses under several teachers would have restricted the arrangement of treatment sessions. Therefore, fifty-four 5th grade students were randomly selected from three elementary schools whose populations came from upper lower and lower middle class families. The sample consisted of 27 girls and 27 boys with a racial mix of 31 Blacks, 22 Caucasian, and 1 Asian. Eighteen subjects were randomly assigned to each level of feedback.

Procedures

Teacher Feedback

The three levels of teacher feedback were designed as minimal feedback, questioning feedback, and directive feedback strategies which were administered during the art
making phase of each drawing task. Below is a description of each feedback method.

**Minimal feedback.** The minimal form of teacher feedback stressed non-intervention by the researcher during the art making process. The researcher emphasized that subjects were to make their own decisions about their work. If a subject asked for assistance or guidance, the researcher responded in a nonspecific manner in order to encourage subjects' decision-making.

Both specific and nonspecific praise statements were part of the minimal feedback strategy. Examples of nonspecific praise were "You're working very hard today," "You've done a good job," or "That's an interesting creature." Concrete or specific praise was included to facilitate completion that might otherwise have been impossible given the demands of observational drawing. That is, observation drawing often produces anxiety in children of this age because they are so self-critical and because many of them lack experience in this drawing approach. Therefore, concrete praise helped to reassure them that they were indeed meeting one of the performance objectives. This form of praise included such statements as: "You've started a good, large owl" or "You're doing a good job inventing the patterns on the chest of the owl" or "I like the way you're using a variety of browns on the owl." Both forms of praise were administered to serve
as a means of voicing approval of subjects' efforts and ideas; therefore they were similar to evaluative statements.

In this method the researcher spent the least amount of time circulating among subjects. After monitoring the subjects for several minutes, she sat nearby to observe the group and write brief field notes regarding the overall mood of the group that day, record who was absent, and add remarks about attitudes and working habits of various subjects during that particular task. From time to time she returned to the group to observe their progress, but verbalized very little with them.

**Questioning feedback.** This teacher feedback method encouraged subjects to reflect about their work. The researcher asked questions related to objectives discussed at the beginning of the testing session. Questions referred to specific aspects of the work-in-progress, but allowed for a large degree of open-ended reflection by subjects. The researcher initiated such dialogue as well as responded in this manner when asked for assistance by subjects. Questions offered in the observational drawing tasks often referred to structural characteristics of the object observed by the subject. For example, "How many heads high is your toy?" or "Where is he wide; where is he narrower?" Questions during the fantasy drawing tasks typically addressed future plans for their drawings. Examples of such
questions included: "What are you planning to do on your body to decorate it?" and "What could you do to make the ears more interesting?". The former type of question did not express an opinion about the picture, but served to reinforce an objective or stimulate more intense looking. However, the latter reflected the researcher's view that the ears needed improvement.

The researcher circulated more often among the groups receiving this feedback method than the minimal feedback group. But periodically she moved away from them to avoid interacting too extensively with them. Concrete praise was also offered to subjects. This included statements referring to specific qualities in the drawings related to objectives delineated for the task. Far more interaction between the researcher and subjects was expected to occur during Questioning Feedback than in the Minimal Feedback group.

Directive feedback. Subjects in the third teacher feedback group received concrete, directive feedback while performing the drawing tasks. The researcher regularly offered suggestions and explanations, either when they were requested by subjects or when the researcher felt that a subject needed such feedback. The researcher's viewpoint on what she believed needed attention in the drawings was more obvious than with the questioning strategies of the second method. However, the concrete nature of the
questions did indicate to subjects the researcher's concerns about their drawings.

Directive feedback took several forms from general to specific within three basic categories: (a) explanations or informative statements, (b) suggestions, and (c) direct requests. Explanations often referred to characteristics of an observed object. For example, the researcher called the subject's attention to a certain incorrectness in the drawing of a perceived object and explained how they were different: "Compare your drawing of the overall shape of the owl with the owl as you see it. See how much wider the owl is. You need to fill him out a bit more." She ended the explanation with a directive. Another direct request was combined with concrete praise: "You've thought of good ways to put patterns on the wings. It's not important to completely fill up the owl, but in the time you have left, be sure to draw a portion of the owl's chest patterns." Directive statements also reminded the subject in general terms of one of the objectives, e.g., "Be sure to invent colors on your toy, Lisa." In addition, a directive referred to a procedure: "Start at the top of the owl and work your way down" or "Use a dark color first to outline it." Or the researcher asked the subject to start over or informed a subject that a portion of the drawing was too empty and needed additional attention.
When a subject asked for assistance, the researcher may have offered one or more suggestions, depending on the advice asked for. For example, if the subject asked for color suggestions to put on the wings of a creature, the researcher would talk about other colors already in the drawing that the subject might choose to repeat or the researcher might have offered several color suggestions for the subject to decide among.

After subjects receiving directive feedback began drawing, the researcher moved systematically among group members to comment on progress, draw attention to portions of drawings needing attention, make suggestions, and respond to questions. Concrete praise was used at times to indicate that objectives were being well met, e.g., "You're thinking of good ways to show the owl's patterns. Those jaggedy marks going different directions give us good information about the chest area," or "I like those unusual patterns on your creature's legs." As during the questioning feedback procedures, from time to time the researcher moved away from the group to write brief observations.

**Drawing Tasks**

Subjects attended six 60 minute drawing task sessions, two focusing on observational drawing, two focusing on fantasy drawing, and two that combined observation with fantasy drawing. Titles of the six drawing tasks were:
1. Task 1: The Great Horned Owl (observation).
2. Task 2: Fantasy Flying Creatures (fantasy).
3. Task 3: Outerspace Toys (observation).
4. Task 4: Outerspace Creatures (fantasy).
5. Task 5: Underwater World of Sea Creatures (observation/fantasy).

Four drawing tasks were completed on 12 x 18 inch drawing paper with an assortment of colored markers. Each subject received a cigar box containing approximately 20 markers with several types of points: broad-tipped, medium tipped, brush, and fine pointed. The Great Horned Owl was drawn with a limited number of markers, primarily in shades of brown, and with white conte crayons. The Peaceable Kingdom was completed on white drawing paper with fine point black markers.

Instructional motivation, i.e., all discussion of each task before distribution of materials, was identical for all treatment groups. (See Appendix B for detailed descriptions of drawing task introductions.)

The performance objectives for each drawing task are listed below:

1. The Great Horned Owl: (a) draw one large owl that fills the paper space, (b) observe the owl characteristics and record them in the drawing, (c) invent ways to depict
the owl's patterns and textures, (d) use a variety of lines and marks in the drawing, (e) strive for correct proportion of the owl, and (f) use a variety of colors in the drawing.

2. Fantasy Flying Creatures: (a) draw a large creature that fills the paper space, (b) create an original creature, (c) create unusual parts or shapes for the creature, (d) decorate the skin or surface in a pleasing way, (e) use an obvious color plan for the creature, and (f) depict an obvious mood for the creature.

3. Outerspace Toys: (a) draw a toy so that it fills most of the paper or add one or more toys to fill the paper, (b) draw all the parts and details of the toy, (c) have the sizes of the different parts of the toy fit together correctly (proportion), and (d) invent an obvious color plan for the toy.

4. Outerspace Creatures: (a) draw the creature so that it fills the paper space, (b) create an original creature, (c) create unusual parts or shapes for the creature, (d) decorate the skin or surface in a pleasing way, and (e) invent an obvious color plan for the creature.

5. Underwater World of Sea Creatures: (a) draw a well-filled composition, (b) draw a variety of sizes of fish, (c) draw a variety of fish shapes, (d) draw a variety of patterns on the fish, and (e) invent an obvious color plan for the composition.
6. The Peaceable Kingdom: (a) create a well-filled composition, (b) draw many animals in the composition, (c) draw a variety of sizes of animals, (d) relate the sizes of animals to each other correctly (proportion), and (e) depict three-dimensional space in the drawing by including a horizon line, making animals larger in the foreground and smaller in the background, and by overlapping animals.

Task Order

The order of task was varied to explore whether differences in order would affect drawing scores. It was speculated that the task of drawing from observation in an early testing session could pose attitudinal constraints that might inhibit subjects; whereas the opportunity to draw a fantasy subject might be less inhibiting as a beginning task. In other words, would subjects' anxiety levels about their performance be affected by whether they first had an observation or a fantasy task? Would they, therefore, tend to score higher when starting with a fantasy task than with an observation drawing with which they had little previous experience? If the Great Horned Owl and the Outerspace Toys were considered more difficult tasks by subjects, would performance be stronger when they were placed third and fourth in the series rather than first or second? To consider this issue, three levels of Task Order were devised:
Level One. The six drawing tasks were administered in the following order: (a) The Great Horned Owl, (b) Fantasy Flying Creatures, (c) Outerspace Toys, (d) Outerspace Creatures, (e) Underwater World of Sea Creatures, and (f) The Peaceable Kingdom.

Level Two. The second order of drawing tasks was: (a) Fantasy Flying Creatures, (b) The Great Horned Owl, (c) Outerspace Creatures, (d) Outerspace Toys, (e) Underwater World of Sea Creatures, and (f) The Peaceable Kingdom.

Level Three. The third level consisted of the following task order: (a) Outerspace Creatures, (b) Outerspace Toys, (c) Fantasy Flying Creatures, (d) The Great Horned Owl, (e) Underwater World of Sea Creatures, and (f) The Peaceable Kingdom.

Because of their greater complexity, the placement of the last two drawing tasks (Underwater World of Sea Creatures and The Peaceable Kingdom) remained unchanged within the three orders.

Data Collection Procedures

Experimental measures. Criterion-referenced evaluation was used to assess student art products on the basis of performance objectives established for each drawing task. Thus a different list of criteria were used to score each drawing. Three judges selected from the art education
doctoral population at The Ohio State University were trained to score the experimental drawings. The researcher also rated the drawings, and subjects completed self-evaluations of their drawings. Scoring procedures are detailed in Chapter Four.

**Observational measures.** During each testing session a small audiotape recorder was placed in the center of the subjects' work area and a video camera with a built-in microphone was positioned on a table at one end of the subjects' work area. This enabled the researcher to see all subjects and their drawings. The researcher believed that two audio recordings would increase the amount of conversation which could be analyzed. The entire meeting time of every testing session was recorded. Detailed explanation of analysis procedures is in Chapter Four.

Other observational measures included the Student Art Attitude/Information Questionnaire (see Appendix A) and the Post-Treatment Student Interview (see Appendix D) and the Classroom Teacher Interview (see Appendix D).

**Testing Sessions**

To facilitate the observation dimension of the study, the three 18-member cells of the experimental design were divided into nine small groups. Each group of six subjects was randomly selected from one 5th grade classroom. Therefore, subjects were tested in groups of six, each receiving
one form of teacher feedback and one type of task order. Subjects received instruction in a room provided by the elementary school. They sat at individual desks grouped closely together or at one large table, depending on furniture available in the classroom.

Pre-Treatment Session

At a pre-treatment session, the researcher introduced herself and briefly explained the types of art sessions they would attend. It was explained that she was interested in learning more about how children learn to draw and what they talk about when they are drawing their pictures. The researcher also introduced subjects to the recording equipment to be used throughout testing. Subjects had the opportunity to look through the viewfinder of the video camera and to hear their voices on the audiotape recorder. The researcher explained that she and an assistant would be the only ones viewing and listening to the tapes for several subjects appeared concerned that other teachers or the principal might view them or listen to them.

The researcher expressed her need to learn more about the subjects, e.g., their previous art experiences and their attitudes about art activities. To supply this information, they responded to a written questionnaire (see Appendix A). The researcher read each question aloud, explained what it meant, and waited for subjects to write their answer before
going to the next one. After subjects completed the questionnaire, the researcher explained that she also needed information about how they currently drew pictures and asked them to create a drawing that contained at least three animals. Her directions were as follows: "In order for me to know more about you, how much experience you have in art, and the way you draw pictures, I would like you to draw a picture that contains at least three animals. They can be any kind of animals. You can choose any way that you wish to make the picture—what animals you wish to include, how you organize them, what else you put in the drawing with them, and how you use the markers. When you have finished it, put your name on the back, and I will save them." The researcher told participants that she planned to save all their drawings in order to compare the drawings with each other, and so subjects could review their drawings during their post-treatment interview.

Drawing Task Structure

Each drawing task session had the following format: (a) introduction of the drawing task, which included discussion of the theme and visual resources, e.g., photographs, reproductions, illustrations, and objects; (b) explanation of the performance objectives during the discussion of the visual or during a short drawing demonstration; (c) distribution of materials; (d) periodic
interaction with subjects during the art making process; and (e) collection of drawings and art materials.

Throughout the sessions the researcher emphasized that there was no "one right way" to make a good drawing, but there were guidelines that could help them make more successful drawings. Such guidelines were the performance task objectives they were to consider as they worked on their pictures. The researcher stressed that practicing and spending more time on drawing contributed to improvement in their drawings. Therefore, in these sessions they were practicing to become better drawers and were instructed to do their best. It was explained that drawings might vary among group members because some participants had more practice or experience in drawing than others.

To encourage peer interaction, the researcher told subjects it was acceptable to talk to each other about their drawings—share ideas, ask for advice, discuss objectives, or offer suggestions and evaluative comments. She explained that she was interested in learning what students talk about when they work on art.

Post-treatment Interviews

Interviews with subjects. Post-treatment interviews were conducted individually with each subject (see Appendix D). The researcher asked subjects to express their attitudes about attending the sessions and which drawing tasks
they enjoyed most and least. The researcher read the performance objectives for each drawing and subjects rated themselves on each criterion. The researcher also showed them drawings of the same themes completed by students not involved in the study and asked subjects to rate them according to several criteria. In addition, she asked what suggestions the subjects would make to the drawer if she or he continued work on the picture. All interviews were audiotaped.

**Interviews with classroom teachers.** After post-treatment interviews were completed with subjects, the researcher also interviewed their classroom teachers (see Appendix D). The teachers were questioned on the following areas: (a) their view on the benefits of art education for elementary age children, (b) how often they taught art lessons, (c) examples of lesson content, (d) how they got ideas for art lessons, (e) the nature of the feedback they provided while students worked on the art assignments, (f) if they would use an art education textbook specifically designed for classroom use, and (g) the nature of peer interaction in their classroom.
Chapter IV first reports the scoring of the experimental drawings, the data analysis completed on the drawing scores, and results of those statistical procedures. The second section describes the observational data analysis methods and subsequent findings.

Experimental Findings

Scoring

Scoring by Independent Judges

During the evaluation process each judge independently rated the randomly arranged drawings according to how well each drawing satisfied task objectives. Each drawing objective was scored 1 (low) to 5 (high). The evaluation instrument was produced as a tagboard packet with one criterion statement printed at the top of each sheet. Below the objective were positioned two color photographs of sample drawings (completed by other 5th grade populations) which exemplified a high and low rating of the specified criterion (see Appendix C).

The criterion scores were totaled for a drawing and the mean of the three judges' scores of that drawing was used in the data analysis. Intra-rater reliability was controlled by requiring the judges to rescore a group of randomly selected drawings they had previously rated. Pearson Product
Moment analysis showed .69, .80, and .88 correlation coefficients for the three judges. Inter-rater reliability indicated high correlations of .91, .92, and .97.

**Self-evaluations by Subjects**

To complement the external evaluation, the researcher had subjects complete a self-evaluation checklist on each of their drawings as part of their post-treatment interviews. The independent judges and subjects used identical scoring criteria (see evaluation instrument in Appendix C), but subjects did not have access to sample drawings as they completed their self-assessments.

**Scoring by the Researcher**

A decision was made to add the researcher's evaluations of the test drawings to the experimental data. Despite the high inter-rater correlation among the judges, the raw data indicated a degree of variance among their scores on a number of drawings. There were instances when drawings received three different scores, e.g., a 2, 3, and 4 (on the 1-5 rating scale) for a criterion. Because of this disparity, the researcher questioned whether her scoring would differ from the independent judges' ratings. Would her scores be more consistent with one of the judges than the others?

An additional experimental component was inserted into the study with the decision to compare the differences between subjects' self-evaluations and the scoring by both the
independent judges and the researcher.

**Data Analysis**

**Statistical Procedures**

Analysis of variance methods for mixed designs were used to analyze the data (Kirk, 1982). The following statistical analyses were completed on the score data:

1. A 3 (Feedback Method) x 3 (Task Order) on each drawing task.

2. A 3 (Feedback Method) x 3 (Task Order) on each drawing type (six drawing tasks collapsed into three task types: observation, fantasy, and combined observation/fantasy).

3. A 3 (Feedback Method) x 3 (Task Order) x 3 (Judge) on each drawing task. The three Judge levels consisted of independent judges, researcher judge, and subject judges.

4. A 3 (Feedback Method) x 3 (Task Order) x 2 (Judge) on each drawing task.

5. A 3 (Feedback Method) x 3 (Task Order) x 2 (Judge) on each performance criterion of The Great Horned Owl Drawing Task to determine which criteria elicited the greatest disparity between the independent judges' and the researcher's scoring.

Post hoc analyses were conducted to compare means in significant main effects and interactions.

Explanations of the construction of the second through fifth statistical analyses are provided before results are presented.
Drawing Task as Three Task Types

Although the drawing tasks were viewed as separate entities with varying difficulty levels and differing performance objectives, they had been originally chosen as examples of three types of drawing categories, i.e., observation, fantasy, and observation/fantasy. Therefore, after a data analysis was planned on each of the six drawing tasks, a second analysis was conducted to explore whether significant differences occurred among types of drawing tasks. Therefore, The Great Horned Owl and Outerspace Toys mean scores were combined to form Observation mean scores; Fantasy Flying Creatures and Outerspace Creatures mean scores were combined to form Fantasy mean scores; and Sea Creatures and Peaceable Kingdom mean scores were combined to form Combined Observation/Fantasy mean scores.

Rationale for Further Judge Analyses

The disparity between research and independent judge scores prompted the decision to select the drawing task with the highest level of significance and to conduct a subsequent analysis of variance on mean scores of each performance criterion for that task. The researcher wondered if certain criteria elicited greater score variance between the two Judge levels. And if so, what may have contributed to those conditions? Was a particular criterion more difficult to score than others? Did a misleading sample illustrate that criterion? Was there inadequate training by the researcher
on scoring that criterion?

The first Judge statistical analysis which reported on three levels of the Judge variable did report on which tasks the researcher's and independent judges' mean scores varied significantly from each other. However, the subjects' elevated scoring had substantially contributed to the high levels of significance in that analysis. Therefore, the researcher chose to rerun the test, omitting the Subject level, to obtain a clearer picture of which drawing task revealed the highest significance level on the researcher and independent judge mean scores. The results of the second Judge analysis led to the selection of The Great Horned Owl Drawing Task for analysis of the independent judges' and researcher's scoring of its six performance criteria.

Feedback Method Effects

Main Effects

A significant main effect for Feedback Method was found in the 3 (Feedback Method) x 3 (Task Order) analysis of The Great Horned Owl Drawing Task (Task 1, observation drawing), F (2, 38) = 6.02, p<.0001 (see Table 2). An LSD (least significant difference) post hoc analysis on the group means of the Feedback Method main effect indicated the Directive Feedback Method (M = 20.37) > Questioning Feedback Method (M = 17.83) = Minimal Feedback Method (M = 16.51), p<.05. Subjects who received directive feedback performed at a much
Table 2

3 (Feedback Method) x 3 (Task Order) on Each Drawing Task: ANOVA Summary Table

### Drawing Task 1: The Great Horned Owl

<table>
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<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
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<td>Feedback Method</td>
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<td>131.08</td>
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### Drawing Task 2: Fantasy Flying Creatures

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### Drawing Task 3: Outerspace Toys

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### Drawing Task 4: Outerspace Creatures

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### Drawing Task 5: Underwater World of Sea Creatures

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### Drawing Task 6: The Peaceable Kingdom

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higher level than either questioning feedback or minimal feedback subjects. However, no significant difference was found between the mean scores of subjects receiving the latter two feedback methods.

When a 3 (Feedback Method) x 3 (Task Order) x 3 (Judge) analysis was completed in which missing scores were filled in with mean scores of each feedback method/task order group, the above main effect showed lower significance, $F(2, 40) = 7.44$, $p<.002$ (see Table 3). This test also reported a significant main effect for Feedback Method in the Fantasy Flying Creatures Drawing Task (Task 2, fantasy drawing), $F(2, 40) = 4.72$, $p<.01$. A Tukey post hoc analysis indicated Directive Feedback ($M = 17.38$) = Questioning Feedback ($M = 16.80$) > Minimal Feedback ($M = 14.65$). Directive feedback and questioning feedback groups did not perform significantly different from each other, but they both excelled over minimal feedback groups.

The 3 (Feedback Method) x 3 (Task Order) x 2 (Judge) analysis also reported a Feedback Method main effect in the Fantasy Flying Creatures Drawing Task, but it was somewhat less significant, $F(2, 45) = 3.81$, $p<.03$ (see Table 4).

Additional Feedback Main effects were found in four of the six performance criteria for The Great Horned Owl Drawing Task (see Table 5).

1. Size: $F(2, 43) = 4.51$, $p<.02$.

2. Invention of Patterns: $F(2, 43) = 3.87$, $p<.03$. 
Table 3
3 (Feedback Method) x 3 (Task Order) x 3 (Judge) on Each
Drawing Task: ANOVA Summary Table

### Drawing Task 1: The Great Horned Owl

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Table 4

3 (Feedback Method) x 3 (Task Order) x 2 (Judge) on Each Drawing Task: ANOVA Summary Table

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#### Criterion: Owl Characteristics

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#### Criterion: Invention of Patterns

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#### Criterion: Variety of Lines and Marks

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#### Criterion: Proportion

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#### Criterion: Variety of Colors

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4. Variety of Colors: $F(2, 43) = 5.27$, $p < .009$.

According to these findings, Feedback Method had the greatest effect on the Variety of Lines and Marks criterion.

Tukey post hoc analyses of the means for each criterion yielded the following results.


2. Invention of Patterns: Directive Feedback ($M = 3.18$) $>$ Minimal Feedback ($M = 2.52$) $=$ Questioning Feedback ($M = 2.44$), $p < .05$.


In the above criteria, directive feedback subjects received the highest drawing scores, but they did not vary greatly from questioning feedback subjects on two of the four criteria. In none of the criteria did questioning feedback and minimal feedback subjects significantly differ from each other. Little difference in performance occurred between directive feedback and minimal feedback subjects on the Variety of Colors criterion, yet great disparity took place...
these groups on the Variety of Lines and Marks criterion.

The small number of Feedback Method main effects indicated that the different feedback levels did not result in differences in performance that were predicted. Only during two drawing tasks, The Great Horned Owl and Fantasy Flying Creatures, did directive feedback methods relate to significantly higher mean scores, and in the latter task, although they exceeded minimal feedback ratings, directive feedback results were similar to questioning feedback means.

Performance on the Outerspace Toys Drawing Task was uniformly low for minimal feedback, questioning feedback, and directive feedback subjects (M = 11.83, 11.91, and 11.97, respectively). Likewise, little variation occurred in performance on the Outerspace Creature Drawing Task: M = 16.13 (Minimal Feedback), 16.65 (Directive Feedback), and 18.12 (Questioning Feedback). On the Underwater World of Sea Creatures Drawing Task greater variation of means was evident among the Minimal Feedback, Questioning Feedback, and Directive Feedback Methods (M = 13.77, 14.56, and 15.48, respectively), but they did not vary enough to reach significance. And finally, little variation was reported in The Peaceable Kingdom Drawing Task: M = 13.83 (Minimal Feedback), 13.83 (Questioning Feedback), and 14.47 (Directive Feedback).

Although subjects who received directive feedback generally obtained the highest drawing scores throughout the six tasks, they achieved significance in only two drawing
tasks, one observation and one fantasy type. This contra­dicts the hypothesis that directive feedback would more posi­tively affect drawing performance, especially during the observation and observation/fantasy drawing tasks. Also, minimal feedback subjects' performance was not as low as had been expected, for their scores were often similar to ques­tioning feedback subjects' ratings.

Feedback Method Interactions

A number of Feedback Method interactions were signifi­cant in several statistical analyses and are reported below. The Fisher test, the protected least significant difference test, was completed to determine which pairs of means in the interactions were significantly different from each other (Keppel, 1982).

3 (Feedback Method) x 3 (Task Order) analysis of The Peaceable Kingdom Drawing Task. Analysis of this observation/fantasy drawing (Task 6) indicated a significant Feedback Method x Task Order interaction, \( F (4, 40) = 2.86, p<.04 \) (see Figure 1). The Fisher analysis reported that within Task Order 1 questioning feedback subjects outperformed directive feedback subjects \( (p<.05) \) and minimal feedback sub­jects performed nearly as well as the questioning feedback group (see Table 6 for means). Among Task Order 2 subjects, the directive feedback group excelled over both the minimal and questioning feedback groups, \( p<.01 \). And within Task
Mean drawing scores for the Feedback Method × Task Order interaction (The Peaceable Kingdom Drawing Task): $F(2, 86) = 2.80$, $p < .036$. 
### Table 6
Feedback Method Interaction Means

3 (Feedback Method) x 3 (Task Order) analysis of The Peaceable Kingdom Drawing Task: Feedback Method x Task Order Interaction

<table>
<thead>
<tr>
<th>Feedback Method</th>
<th>Task Order 1</th>
<th>Task Order 2</th>
<th>Task Order 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal</td>
<td>16.08</td>
<td>10.83</td>
<td>15.33</td>
</tr>
<tr>
<td>Questioning</td>
<td>16.42</td>
<td>11.72</td>
<td>13.78</td>
</tr>
<tr>
<td>Directive</td>
<td>13.56</td>
<td>16.95</td>
<td>12.60</td>
</tr>
</tbody>
</table>

3 (Feedback Method) x 3 (Task Order) analysis of Observation/Fantasy Task Type: Feedback Method x Task Order Interaction

<table>
<thead>
<tr>
<th>Feedback Method</th>
<th>Task Order 1</th>
<th>Task Order 2</th>
<th>Task Order 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal</td>
<td>28.97</td>
<td>25.58</td>
<td>30.22</td>
</tr>
<tr>
<td>Questioning</td>
<td>33.00</td>
<td>25.78</td>
<td>27.50</td>
</tr>
<tr>
<td>Directive</td>
<td>29.19</td>
<td>32.67</td>
<td>27.53</td>
</tr>
</tbody>
</table>

3 (Feedback Method) x 3 (Task Order) x 3 (Judge) analysis of The Great Horned Owl Drawing Task: Feedback Method x Judge Interaction

<table>
<thead>
<tr>
<th>Feedback Method</th>
<th>Ind. Judges</th>
<th>Researcher</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal</td>
<td>14.02</td>
<td>16.80</td>
<td>19.72</td>
</tr>
<tr>
<td>Questioning</td>
<td>14.86</td>
<td>17.08</td>
<td>19.93</td>
</tr>
<tr>
<td>Directive</td>
<td>16.98</td>
<td>20.12</td>
<td>20.28</td>
</tr>
</tbody>
</table>

3 (Feedback Method) x 3 (Task Order) x 3 (Judge) analysis of the Outerspace Creatures Drawing Task: Feedback Method x Judge Interaction

<table>
<thead>
<tr>
<th>Feedback Method</th>
<th>Ind. Judges</th>
<th>Researcher</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal</td>
<td>16.33</td>
<td>14.73</td>
<td>20.00</td>
</tr>
<tr>
<td>Questioning</td>
<td>17.43</td>
<td>17.23</td>
<td>20.27</td>
</tr>
<tr>
<td>Directive</td>
<td>16.65</td>
<td>18.36</td>
<td>19.63</td>
</tr>
</tbody>
</table>
Table 6 (continued)

3 (Feedback Method) x 3 (Task Order) x 3 (Judge) analysis of the Underwater World of Sea Creatures Drawing Task: Feedback Method x Task Order x Judge Interaction

<table>
<thead>
<tr>
<th>Task Order</th>
<th>Feedback Method</th>
<th>Ind. Judge</th>
<th>Researcher</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Minimal</td>
<td>12.89</td>
<td>11.67</td>
<td>20.50</td>
</tr>
<tr>
<td></td>
<td>Questioning</td>
<td>16.58</td>
<td>15.00</td>
<td>21.25</td>
</tr>
<tr>
<td></td>
<td>Directive</td>
<td>15.73</td>
<td>15.60</td>
<td>17.60</td>
</tr>
<tr>
<td>2</td>
<td>Minimal</td>
<td>13.47</td>
<td>14.06</td>
<td>15.72</td>
</tr>
<tr>
<td></td>
<td>Questioning</td>
<td>14.06</td>
<td>12.67</td>
<td>17.17</td>
</tr>
<tr>
<td></td>
<td>Directive</td>
<td>15.72</td>
<td>14.75</td>
<td>21.50</td>
</tr>
<tr>
<td>3</td>
<td>Minimal</td>
<td>14.89</td>
<td>14.92</td>
<td>19.17</td>
</tr>
<tr>
<td></td>
<td>Questioning</td>
<td>13.72</td>
<td>12.83</td>
<td>14.20</td>
</tr>
</tbody>
</table>

3 (Feedback Method) x 3 (Task Order) x 2 (Judge) analysis of the Outerspace Creatures Drawing Task: Feedback Method x Judge Interaction

<table>
<thead>
<tr>
<th>Feedback Method</th>
<th>Independent Judges</th>
<th>Researcher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal</td>
<td>16.33</td>
<td>14.73</td>
</tr>
<tr>
<td>Questioning</td>
<td>17.43</td>
<td>17.23</td>
</tr>
<tr>
<td>Directive</td>
<td>16.65</td>
<td>18.36</td>
</tr>
</tbody>
</table>

Feedback Method x Task Order x Judge Interaction

<table>
<thead>
<tr>
<th>Task Order</th>
<th>Feedback Method</th>
<th>Independent Judges</th>
<th>Researcher</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Minimal</td>
<td>19.50</td>
<td>19.75</td>
</tr>
<tr>
<td></td>
<td>Questioning</td>
<td>19.17</td>
<td>19.50</td>
</tr>
<tr>
<td></td>
<td>Directive</td>
<td>16.72</td>
<td>19.17</td>
</tr>
<tr>
<td>2</td>
<td>Minimal</td>
<td>16.61</td>
<td>15.50</td>
</tr>
<tr>
<td></td>
<td>Questioning</td>
<td>17.45</td>
<td>16.42</td>
</tr>
<tr>
<td></td>
<td>Directive</td>
<td>16.67</td>
<td>19.50</td>
</tr>
<tr>
<td>3</td>
<td>Minimal</td>
<td>12.87</td>
<td>9.80</td>
</tr>
<tr>
<td></td>
<td>Questioning</td>
<td>15.67</td>
<td>16.40</td>
</tr>
<tr>
<td></td>
<td>Directive</td>
<td>16.56</td>
<td>16.42</td>
</tr>
</tbody>
</table>

3 (Feedback Method) x 3 (Task Order) x 2 (Judge) analysis of the Great Horned Owl Drawing Task Criteria/Variety of Lines and Marks: Feedback Method x Judge Interaction

<table>
<thead>
<tr>
<th>Feedback Method</th>
<th>Independent Judges</th>
<th>Researcher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal</td>
<td>2.56</td>
<td>3.06</td>
</tr>
<tr>
<td>Questioning</td>
<td>2.52</td>
<td>3.39</td>
</tr>
<tr>
<td>Directive</td>
<td>3.32</td>
<td>4.50</td>
</tr>
</tbody>
</table>
Order 3 minimal feedback subjects received higher scores, but did not reach significance.

Although the Task Order variable appeared to affect scores of the feedback methods in varying ways, The Peaceable Kingdom Drawing Task was placed identically in all three task orders, i.e., all subjects received it as their last drawing task. Therefore, the Task Order effect may have been caused by another factor, the small group means, which will be discussed in Chapter Five.

3 (Feedback Method) x 3 (Task Order) analysis of observation/fantasy task type. This test found a significant Feedback Method x Task Order interaction, F (4, 45) = 3.04, p<.03 (see Figure 2 and Table 7). The Fisher test indicated that minimal feedback subjects received the highest scores over both questioning and directive feedback subjects when they received Task Order 3, but this difference did not reach significance. Questioning feedback subjects scored highest of the levels when they received Task Order 1, but this difference also did not reach significance. However, within Task Order 2, the directive feedback subjects' superior rating over minimal and questioning feedback groups was significant, p<.05.

3 (Feedback Method) x 3 (Task Order) x 3 (Judge) analyses. These analyses reported three drawing tasks with significant Feedback Method interactions:

1. The Great Horned Owl Drawing Task (Task 1,
Table 7

3 (Feedback Method) x 3 (Task Order)
on Each Drawing Task: ANOVA Summary Table

<table>
<thead>
<tr>
<th>Task Type: Observation Drawing</th>
<th>Source of Variance</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feedback Method</td>
<td>2</td>
<td>100.06</td>
<td>50.03</td>
<td>1.30</td>
<td>.284</td>
<td></td>
</tr>
<tr>
<td>Task Order</td>
<td>2</td>
<td>1.32</td>
<td>.66</td>
<td>.02</td>
<td>.981</td>
<td></td>
</tr>
<tr>
<td>Method x Order</td>
<td>3</td>
<td>25.44</td>
<td>8.48</td>
<td>.22</td>
<td>.882</td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>40</td>
<td>1541.26</td>
<td>38.53</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
<td>1668.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Task Type: Fantasy Drawing</th>
<th>Source of Variance</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feedback Method</td>
<td>2</td>
<td>134.34</td>
<td>67.17</td>
<td>2.86</td>
<td>.068</td>
<td></td>
</tr>
<tr>
<td>Task Order</td>
<td>2</td>
<td>66.82</td>
<td>33.41</td>
<td>1.42</td>
<td>.252</td>
<td></td>
</tr>
<tr>
<td>Method x Order</td>
<td>4</td>
<td>162.83</td>
<td>40.71</td>
<td>1.73</td>
<td>.159</td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>45</td>
<td>1057.09</td>
<td>23.49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>53</td>
<td>1421.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Task Type: Observation/Fantasy Drawing</th>
<th>Source of Variance</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feedback Method</td>
<td>2</td>
<td>22.17</td>
<td>11.09</td>
<td>.51</td>
<td>.604</td>
<td></td>
</tr>
<tr>
<td>Task Order</td>
<td>2</td>
<td>58.14</td>
<td>29.07</td>
<td>1.34</td>
<td>.272</td>
<td></td>
</tr>
<tr>
<td>Method x Order</td>
<td>4</td>
<td>264.14</td>
<td>66.04</td>
<td>3.04</td>
<td>.027</td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>45</td>
<td>978.00</td>
<td>21.73</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>53</td>
<td>1322.45</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 2.

Mean drawing scores for the Feedback Method x Task Order interaction (Observation/Fantasy Task Type): $F(4, 45) = 3.04, p<.027$. 

**TASK ORDER**

- **Task Order 1**: Great Horned Owl, Fantasy Flying Creatures, Outerspace Toys, Outerspace Creatures, Sea Creatures, Peaceable Kingdom
- **Task Order 2**: Fantasy Flying Creatures, Great Horned Owl, Outerspace Creatures, Outerspace Toys, Sea Creatures, Peaceable Kingdom
- **Task Order 3**: Outerspace Creatures, Outerspace Toys, Fantasy Flying Creatures, Great Horned Owl, Sea Creatures, Peaceable Kingdom
observation), Feedback Method x Judge, $F(4, 71) = 2.68$, $p<.04$ (see Figure 3).

2. Outerspace Creatures Drawing Task (Task 4, fantasy), Feedback Method x Judge, $F(4, 78) = 3.72$, $p<.008$ (see Figure 4).

3. Underwater World of Sea Creatures (Task 5, observation/fantasy), Feedback Method x Task Order x Judge, $F(8, 78) = 3.05$, $p<.005$ (see Figure 5).

Simple effects analysis of the Feedback Method x Judge interaction in The Great Horned Owl Drawing Task showed that according to both independent judges and researcher ratings, directive feedback subjects excelled over both minimal and questioning feedback subjects, $p<.01$ (see Table 6 for means). However, no significance occurred between feedback method means when subjects rated themselves. Across all Judge levels directive feedback subjects received the highest scores.

Further analysis of the Outerspace Creatures Drawing Task's Feedback Method x Judge interaction showed one Judge level with significant variation among the feedback method scores: the researcher rated both questioning and directive feedback groups significantly higher than minimal feedback groups, $p<.01$ (see Table 6 for means). Questioning feedback subjects received higher scores when appraised by the independent judges, but this difference did not reach significance. Minimal feedback subjects rated themselves highest among the three feedback groups, but this, too, did not
Mean drawing scores for the Feedback Method x Judge interaction (The Great Horned Owl Drawing Task): \( F(4, 71) = 2.68, p<.039. \)
Mean drawing scores for the Feedback Method × Judge interaction (Outerspace Creatures Drawing Task): $F(4, 78) = 3.72, p < .008.$
Mean drawing scores for the Feedback Method x Task Order x Judge interaction (Underwater World of Sea Creatures Drawing Task): $F(8, 78) = 3.05, p < .005$. 

**Figure 5.**

Task Order 1: Great Horned Owl, Fantasy Flying Creatures, Outerspace Toys, Outerspace Creatures, Sea Creatures, Peaceable Kingdom

Task Order 2: Fantasy Flying Creatures, Great Horned Owl, Outerspace Creatures, Outerspace Toys, Sea Creatures, Peaceable Kingdom

Task Order 3: Outerspace Creatures, Outerspace Toys, Fantasy Flying Creatures, Great Horned Owl, Sea Creatures, Peaceable Kingdom

Method 1: Minimal Feedback
Method 2: Questioning Feedback
Method 3: Directive Feedback
approach significance.

Fisher analysis of the Feedback Method x Task Order x Judge simple effect in the Underwater World of Sea Creatures Drawing Task indicated that a highly significant difference occurred between independent judges' scoring of minimal feedback groups among subjects who received Task Order 1, $p<.01$ (see Table 5 for means). Likewise, the researcher's scoring of questioning feedback subjects yielded significance over minimal feedback subjects within Task Order 1, $p<.05$. In three instances subjects' self-evaluations were significantly different among the three feedback methods: (a) the directive feedback mean was greater than the questioning feedback mean within Task Order 1 ($p<.01$), and (b) the directive feedback mean was higher than both questioning and minimal feedback means within Task Order 2 ($p<.01$). All other mean comparisons of feedback methods did not reach significance.

$3 \times 3 \times 2$ analysis. The analysis of the Outerspace Creatures Drawing Task (Task 4, fantasy) yielded two significant interactions: (a) Feedback Method x Judge, $F(2, 39) = 11.64$, $p<.0001$ (see Figure 6); and (b) Feedback Method x Task Order x Judge, $F(4, 39) = 3.06$, $p<.03$ (see Figure 7). Further analysis of the Feedback Method x Judge interaction reported that the independent judges had scored questioning feedback subjects significantly higher than minimal feedback subjects ($p<.05$),
Method 1: Minimal Feedback
Method 2: Questioning Feedback
Method 3: Directive Feedback

Figure 6.

Mean drawing scores for the Feedback Method x Judge interaction (Outerspace Creatures Drawing Task): $F (2, 39) = 11.64, p < .0001.$
Mean drawing scores for the Feedback Method x Task Order x Judge interaction (Outerspace Creatures Drawing Task): $F(2, 39) = 3.06, p<.028$. 

**Figure 7.**

Task Order 1: Great Horned Owl, Fantasy Flying Creatures, Outerspace Toys, Outerspace Creatures, Sea Creatures, Peaceable Kingdom

Task Order 2: Fantasy Flying Creatures, Great Horned Owl, Outerspace Creatures, Outerspace Toys, Sea Creatures, Peaceable Kingdom

Task Order 3: Outerspace Creatures, Outerspace Toys, Fantasy Flying Creatures, Great Horned Owl, Sea Creatures, Peaceable Kingdom

Method 1: Minimal Feedback

Method 2: Questioning Feedback

Method 3: Directive Feedback

Independent Judges

Researcher Judge
and the researcher had rated directive feedback subjects superior to both questioning and minimal feedback subjects $p<.05$ and $p<.01$, respectively (see Table 6 for means).

Simple effects of the Feedback Method x Task Order x Judge interaction in the Outerspace Creature Drawing Task indicated that within Task Order 1 minimal feedback subjects were rated superior to directive subjects by the independent judges ($p<.01$); however, the reverse took place within Task Order 3. Within Task Order 1 independent judges ranked questioning feedback subjects above directive feedback subjects ($p<.01$) but had scored questioning feedback subjects higher than minimal feedback subjects within Task Order 3 ($p<.01$). The researcher's evaluations varied significantly within both Task Order 2 and 3: when subjects received Task Order 2, the directive feedback group excelled over both minimal and questioning feedback groups, $p<.01$. However, within Task Order 3 the researcher rated both the directive and questioning feedback groups superior to the minimal feedback group, $p<.01$. Within Task Order 1 the two Judge levels agreed on the higher rating for minimal feedback subjects; they also agreed on questioning feedback subjects receiving better scores in Task Order 3. But within Task Order 2 independent judges gave the questioning feedback group the highest mean, and the researcher rated the directive feedback group superior.
3 (Feedback Method x 3 (Task Order) x 2 (Judge) analysis of The Great Horned Owl drawing criteria. The Variety of Lines and Marks analysis indicated a significant Feedback Method x Judge interaction, $F(2, 43) = 4.85, p<.01$ (see Figure 8). Fisher analysis showed directive feedback subjects excelled over questioning feedback subjects, and the latter performed better than minimal feedback subjects when judged by the researcher, $p<.01$ and $p<.05$, respectively. The independent judges' scoring also indicated directive subjects superior to questioning feedback subjects ($p<.01$), but differences between the questioning and minimal feedback groups were not significant.

Summary

Analysis of the Feedback Method variable across the six drawing tasks showed small amounts of significant main effects and interactions. Two drawing tasks (The Great Horned Owl and Fantasy Flying Creatures) yielded significance with directive feedback subjects excelling over the others. But generally, little differences occurred among mean scores of the three feedback methods. Significant interactions indicated some differences among Task Orders and even greater differences among Judge levels for the feedback methods. However, it is believed that the Feedback Method x Task Order interactions can be attributed to the small group differences in mean scores. And the Feedback Method x Judge
Mean drawing scores for the Feedback Method x Judge interaction (Great Horned Owl Drawing Criteria/Variety of Lines and Marks): $F(2, 43) = 4.85, p < .013$.

Mean drawing scores for the Task Order x Judge interaction (Great Horned Owl Drawing Criteria/Proportion): $F(2, 43) = 5.41, p < .008$.
interactions showed inconsistencies among which feedback methods were rated highest by both Judge levels. These inconsistent ratings of feedback methods within task orders contributed to the lack of significant results for this variable.

Task Order Effects

Main Effects

3 (Feedback Method) x 3 (Task Order) analysis. This analysis of variance yielded significant main effects for Task Order on the following drawing tasks (see Table 2):

1. The Great Horned Owl (Task 1, observation drawing), $F(2, 38) = 6.56, p<.05$.

2. Outerspace Toys (Task 3, observation drawing), $F(2, 40) = 3.35, p<.05$.

3. Outerspace Creatures (Task 4, fantasy drawing), $F(2, 38) = 5.77, p<.04$.

An LSD post hoc analysis of The Great Horned Owl Task Order main effect showed Task Order 3 ($M = 20.71$) > Task Order 2 ($M = 17.70$) = Task Order 1 ($M = 16.72$), $p<.05$. This meant that subjects who had completed this observation drawing as their fourth task excelled over those who had completed it as their first or second drawing task.

Analysis of the Outerspace Toys Task Order main effect revealed Task Order 1 ($M = 13.09$) > Task Order 3 ($M = 10.76$) = Task Order 2 ($M = 11.82$), $p<.05$. In this instance,
subjects who drew the outerspace toys as their third task outperformed those who drew them as their second or fourth task.

Post hoc analysis of the Outerspace Creatures Task Order main effect indicated that Task Order 1 (M = 18.21) = Task Order 2 (M = 17.55) > Task Order 3 (M = 15.12), p<.05. Subjects performed best when Outerspace Creatures was the fourth task, rather than when they drew them as their first or third task.

From this analysis, it appeared that subjects excelled on the above drawing tasks (both observation and fantasy) when they were completed as their third or fourth task rather than their first or second. This somewhat confirms the view that performance on observation drawings might be lower if subjects completed them early in the study. But it was not expected that performance on one of the fantasy drawings would also be higher when it was completed later in the study.

Feedback Method x Task Order analyses. When the 3(Feed­back Method) x 3(Task Order) x 3 (Judge) analysis was con­ducted on the drawing tasks, the Task Order main effect in The Great Horned Owl Drawing Task increased to $F (2, 40) = 9.21$, p<.0005 (see Table 3). In this second analysis, the Outerspace Creature Drawing Task also showed a Task Order main effect increase, $F (2, 45) = 6.17$, p<.004. And the Outerspace Toys Drawing Task which had yielded a Task Order
main effect in the single Judge level analysis was not significant when results were tested with scores from the three Judge levels. The subsequent two level Judge analysis again indicated Task Order main effects in The Great Horned Owl Drawing Task and the Outerspace Creatures Drawing Task, $F(2, 40) = 7.73, p < .002$ and $F(2, 45) = 7.47, p < .002$, respectively. Significance increased with the addition of the researcher and subject judge levels, then decreased in The Great Horned Owl Drawing Task and increased further in the Outerspace Creatures Drawing Task when the subject judge level was omitted from the analysis. Post hoc analyses of the Task Order main effect in these two drawing tasks provided similar findings to those reported on the first 3 (Feedback Method) x 3 (Task Order) analysis.

3 (Feedback Method) x 3 (Task Order) x 2 (Judge) analysis of The Great Horned Owl's performance criteria. Four Task Order main effects were reported in the analysis of The Great Horned Owl Drawing Task's six performance criteria (see Table 5):

1. Size: $F(2, 43) = 6.17, p < .004$.
2. Variety of Lines and Marks: $F(2, 43) = 5.20, p < .01$.
3. Proportion: $F(2, 43) = 3.16, p < .05$.

Tukey post hoc analyses of the means for each criterion yielded the following results:

1. Size: Task Order 3 ($M = 4.21$) > Task Order 2 ($M =
3.45) = Task Order 1 (M = 3.27), p<.05. And the Task Order 3 mean was also significantly greater than the Task Order 1 mean, p<.01.

2. Variety of Lines and Marks: Task Order 3 (M = 3.72) > Task Order 2 (M = 3.00) = Task Order 1 (M = 3.06), p<.01.

3. Proportion: Task Order 3 (M = 2.75) = Task Order 2 (M = 2.79) = Task Order 1 (M = 2.18). Although this criterion reached significance at p<.05, Tukey analysis showed the difference between Task Order 3 and Task Order 1 needed an additional .03 value to achieve a significant difference between the two means.

4. Variety of Colors: Task Order 3 (M = 4.31) > Task Order 1 (M = 3.73) = Task Order 2 (M = 3.96), p<.01.

Through these main effects on the owl criteria, subjects who had drawn the owl as their fourth task excelled over subjects who had drawn it first. And on two of the criteria these same subjects outperformed those who had drawn the owl as their second task. These results duplicated the Task Order findings from the first analysis on The Great Horned Owl Drawing Task.

The Task Order main effects seemed to confirm the hypothesis that subjects would perform better on observation drawing tasks when they were completed later in the study, for this occurred on The Great Horned Owl and Outerspace Toy Drawing Tasks. However, the fact that outerspace toys were drawn best as the third task rather than as the fourth, made
Task Order main effects unclear.

**Task Order Interactions**

3 (Feedback Method) x 3 (Task Order) analysis. A significant interaction was apparent within The Peaceable Kingdom Drawing Task (Task 6, observation/fantasy drawing) during the first analysis of the Feedback Method and Task Order variables (see Figure 1). Table 8 reports the means which were compared in the Fisher test. This analysis indicated that significant differences in mean scores occurred between Task Order 1 and 2 at all Feedback Method levels. And significant differences were also evident between Task Order 2 and 3 in the minimal and directive feedback scores. The highest score within Task Order 1 was found among questioning feedback subjects; the highest within Task Order 2 was among directive feedback subjects; and the highest in Task Order 3 was among minimum feedback subjects.

3 (Feedback Method) x 3 (Task Order) analysis of task types. Statistical significance was indicated for the Observation/Fantasy drawing task type simple effect: Teaching Method x Task Order, $F (4, 45) = 3.04, p < .03$ (see Figure 2). And the Fisher test of pairwise comparisons showed that significant differences between Task Order groups were evident only among questioning feedback subjects (Task Order 1) whose mean score was superior to both Task Order 2 and Task Order 3 subjects, $p < .05$ (see Table 8 for means). However, subjects within Task Order 3 who received either minimal or directive
Table 8
Task Order Interaction Means

3 (Feedback Method) x 3 (Task Order) analysis of The Peaceable Kingdom Drawing Task: Task Order x Feedback Method Interaction

<table>
<thead>
<tr>
<th>Task Order</th>
<th>Minimal FB</th>
<th>Questioning FB</th>
<th>Directive FB</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16.08</td>
<td>16.42</td>
<td>13.56</td>
</tr>
<tr>
<td>2</td>
<td>10.83</td>
<td>11.72</td>
<td>16.95</td>
</tr>
<tr>
<td>3</td>
<td>15.33</td>
<td>13.78</td>
<td>12.60</td>
</tr>
</tbody>
</table>

3 (Feedback Method) x 3 (Task Order) analysis of Observation/Fantasy Task Type: Task Order x Feedback Method Interaction

<table>
<thead>
<tr>
<th>Task Order</th>
<th>Minimal FB</th>
<th>Questioning FB</th>
<th>Directive FB</th>
</tr>
</thead>
<tbody>
<tr>
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<td>3</td>
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<td>27.33</td>
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</table>

3 (Feedback Method) x 3 (Task Order) x 3 (Judge) analysis of the Underwater World of Sea Creatures Drawing Task: Feedback Method x Task Order x Judge Interaction

<table>
<thead>
<tr>
<th>Judge</th>
<th>Task Order</th>
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<th>Questioning FB</th>
<th>Directive FB</th>
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</thead>
<tbody>
<tr>
<td>Independent</td>
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<td>16.58</td>
<td>15.73</td>
</tr>
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<td></td>
<td>2</td>
<td>13.47</td>
<td>14.06</td>
<td>15.72</td>
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<td></td>
<td>3</td>
<td>14.89</td>
<td>13.72</td>
<td>14.93</td>
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<tr>
<td>Researcher</td>
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<td>15.00</td>
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<td></td>
<td>2</td>
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<td></td>
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<td>19.80</td>
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3 (Feedback Method) x 3 (Task Order) x 2 (Judge) analysis of the Outerspace Toys Drawing Task: Task Order x Judge Interaction

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<tr>
<th>Task Order</th>
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<th>Researcher</th>
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<td>15.73</td>
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</table>
Table 8 (continued)

3 (Feedback Method) x 3 (Task Order) x 2 (Judge) analysis of the Outerspace Creatures Drawing Task: Task Order x Judge Interaction

<table>
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<th>Task Order</th>
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<th>Researcher</th>
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3 (Feedback Method) x 3 (Task Order) x 2 (Judge) analysis of the Outerspace Creatures Drawing Task: Feedback Method x Task Order x Judge Interaction

<table>
<thead>
<tr>
<th>Judge</th>
<th>Task Order</th>
<th>Minimal FB</th>
<th>Questioning FB</th>
<th>Directive FB</th>
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</thead>
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</tr>
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<td>Researcher</td>
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</tr>
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</table>

3 (Feedback Method) x 3 (Task Order) x 2 (Judge) analysis of The Great Horned Owl Drawing Task Criteria/Proportion: Task Order x Judge Interaction

<table>
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<th>Task Order</th>
<th>Independent Judges</th>
<th>Researcher</th>
</tr>
</thead>
<tbody>
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<td>1</td>
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<td>2</td>
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<td>3</td>
<td>2.94</td>
<td>1.56</td>
</tr>
</tbody>
</table>

3 (Feedback Method) x 3 (Task Order) x 2 (Judge) analysis of The Great Horned Owl Drawing Task Criteria/Variety of Colors: Task Order x Judge Interaction

<table>
<thead>
<tr>
<th>Task Order</th>
<th>Independent Judges</th>
<th>Researcher</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.91</td>
<td>4.56</td>
</tr>
<tr>
<td>2</td>
<td>3.28</td>
<td>4.64</td>
</tr>
<tr>
<td>3</td>
<td>3.81</td>
<td>4.81</td>
</tr>
</tbody>
</table>
feedback scored higher than their counterparts in Task Order 1 and 2, but neither of these differences reached significance. Therefore, only when subjects received questioning feedback did significance differences occur among Task Order mean scores.

3 (Feedback Method) x 3 (Task Order) x 3 (Judge) analysis. Analysis of the Underwater World of Sea Creatures Drawing Task (Task 5, observation/fantasy drawing) yielded one significant Task Order interaction, Teaching Method x Task Order x Judge, $F(8, 78) = 3.05, p<.005$ (see Figure 5). Further analysis showed that when independent judges rated questioning feedback subjects, Task Order 1 scores were significantly higher than those in Task Order 3, $p<.01$ (see Table 8 for means). Task Order 1 subjects who received questioning feedback scored themselves much higher than Task Order 2 subjects, $p<.01$. The only significance which occurred among directive feedback mean scores were the high self-evaluations in Task Order 2 which reached significance over Task Order 1, $p<.01$. When scored by the researcher, no significance differences occurred among any means within the three Task Orders.

3 (Feedback Method) x 3 (Task Order) x 2 (Judge) analysis. This analysis yielded three significant interactions. Testing of the Outerspace Toys Drawing Task (Task 4, observation drawing) showed a Task Order x Judge interaction, $F(2, 40) = 3.53, p<.04$ (see Figure 9). The Fisher test indicated
Mean drawing scores for the Task Order x Judge interaction (Outerspace Toys Drawing Task): $F(2, 40) = 3.53$, $p < .039$. 

**Figure 9.**
the independent judges rated both Task Order 1 and Task Order 2 subjects above Task Order 3 subjects, \( p < .01 \) (see Table 7 for means). The researcher's appraisals also showed similar differences, but at a lower level, \( p < .05 \).

The Outerspace Creature Drawing Task (Task 4, fantasy drawing) analysis indicated two significant interactions: (a) Task Order x Judge, \( F (2, 39) = 3.89, p < .03 \) (see Figure 7); and (b) Feedback Method x Task Order x Judge, \( F (4, 39) = 3.06, p < .03 \) (see Figure 7). Further analysis showed that both the independent judges and the researcher rated Task Order 1 subjects superior to both Task Order 2 and Task Order 3 subjects, \( p < .01 \) (see Table 8 for means). However, no level of significance was found between Task Order 2 and Task Order 3 means.

Fisher analysis of the three-way interaction reported both Judge levels, when rating minimal feedback subjects, gave those who received Task Order 1 superior scores over Task Order 2 subjects and also appraised Task Order 2 subjects above Task Order 3 subjects, \( p < .01 \) and \( p < .01 \), respectively. Likewise, the independent judges and the researcher rated questioning feedback subjects in Task Order 1 above Task Order 2 subjects, \( p < .05 \) and \( p < .01 \), respectively. And independent judges scored questioning feedback subjects within Task Order 2 higher than Task Order 3 subjects, \( p < .05 \), but this did not occur when questioning feedback subjects were evaluated by the researcher. Among directive feedback
Figure 10.

Mean drawing scores for the Task Order x Judge interaction (Outerspace Creatures Drawing Task): $F(2, 39) = 3.89$, $p<.029$. 
significant differences occurred among the three task orders when they were judged by the researcher. In this case, both Task Order 2 and Task Order 3 subjects excelled over Task Order 3 subjects with those in Task Order 2 having the highest scores, \( p < .01 \) and \( p < .01 \), respectively. Therefore the two judges agreed that across all feedback methods Task Order 1 subjects excelled over the other Task Order levels, except for the researcher's higher rating of Task Order 2 subjects who received directive feedback.

3 (Feedback Method) x 3 (Task Order) x 2 (Judge) analysis of The Great Horned Owl performance criteria. Analysis of the Proportion criterion yielded a Task Order x Judge significant interaction, \( F(2, 43) = 5.41, p < .008 \) (see Figure 8). Further analysis showed that when rated by the independent judges, Task Order 3 subjects excelled over Task Order 1 subjects \( (p < .05) \), but were similar to Task Order subjects. However, the researcher judged both Task Order 2 and Task Order 3 subjects superior to Task Order 1 subjects, \( p < .01 \). Therefore, the independent judges awarded highest scores to Task Order 3 subjects, and the researcher gave the highest ratings to Task Order 2 subjects.

The Variety of Colors criterion also yielded a Task Order x Judge interaction, \( F(2, 43) = 4.26, p < .02 \) (see Figure 11). Further analysis showed the only significance occurred between Task Orders when scored by the independent judges. Greater differences were found between Task Order 2
Figure 11.

Mean drawing scores for the Task Order x Judge interaction (Great Horned Owl Drawing Criteria/ Variety of Colors): $F (2, 43) = 4.26$, $p < .02$. 

**TASK ORDER**

*Task Order 1:* Great Horned Owl, Fantasy Flying Creatures, Outerspace Toys, Outerspace Creatures, Sea Creatures, Peaceable Kingdom

*Task Order 2:* Fantasy Flying Creatures, Great Horned Owl, Outerspace Creatures, Outerspace Toys, Sea Creatures, Peaceable Kingdom

*Task Order 3:* Outerspace Creatures, Outerspace Toys, Fantasy Flying Creatures, Great Horned Owl, Sea Creatures, Peaceable Kingdom
and Task Order 3 ($p < .01$) than between Task Order 1 and Task Order 2 ($p < .05$).

**Summary**

While the majority of Task Order mean pairs did not reach significance, the Task Order main effects and significant interactions indicated that no one Task Order group consistently outperformed other Task Order groups. It appeared that differences in drawing tasks, feedback methods, and judges' scores contributed to these mixed results. The nature of these inconsistent findings strengthened the position that Task Order differences in this study were primarily related to differences among small group performance.

**Judge Effects**

**Main Effects**

$3$ (Feedback Method) x $3$ (Task Order) x $3$ (Judge) analysis. The Judge main effect was highly significant across all drawing tasks in this analysis (see Table 3):

1. The Great Horned Owl, $F (2, 71) = 54.28$, $p < .0001$.
2. Fantasy Flying Creatures, $F (2, 83) = 72.55$, $p < .0001$.
4. Outerspace Creatures, $F (2, 78) = 33.96$, $p < .0001$.
5. Underwater World of Sea Creatures, $F (2, 78) = 86.66$, $p < .0001$.
6. The Peaceable Kingdom, $F (2, 80) = 68.73$, $p < .0001$.

Post hoc analyses (Tukey) of the Judge main effect in
each drawing task revealed the following significant differences among means, \( p < .05 \):


In five of the six drawing tasks, subjects' self-evaluation mean scores were significantly higher than both the researcher and independent judge means, and in two drawing tasks the researcher's scores were significantly greater than independent judges' ratings. In only one drawing task was an independent judges' score greater than the researcher's, but it did not reach significance.
3 (Feedback Method) x 3 (Task Order) x 2 (Judge) analysis. In this second analysis of the Judge variable, four main effects occurred in five of the six drawing tasks (see Table 6):

1. The Great Horned Owl, $F(1, 38) = 141.88, p < .0001$.
2. Fantasy Flying Creatures, $F(1, 42) = 6.22, p < .017$.
3. Outerspace Toys, $F(1, 40) = 30.47, p < .0001$.
4. Underwater World of Sea Creatures, $F(1, 40) = 7.82, p < .008$.

In the first three tasks above, the researcher's scores were higher scores; in the fourth task, the independent judges awarded the higher ratings. The greatest disparity between the two Judge levels took place in The Great Horned Owl Drawing Task. This finding led to the following analysis of that task's drawing criteria.

3 (Feedback Method) x 3 (Task Order) x 2 (Judge) analysis of The Great Horned Owl performance criteria. This test yielded significant Judge main effects on five of the six criteria (see Table 4):

1. Owl Size, $F(1, 43) = 75.79, p < .0001$.
2. Owl Characteristics, $F(1, 43) = 151.12, p < .0001$.
3. Variety of Lines and Marks, $F(1, 43) = 102.73, p < .0001$.
4. Proportion, $F(1, 43) = 18.47, p < .0001$.
5. Variety of Colors, $F(1, 43) = 247.33, p < .0001$.

The significance levels indicated that the greatest
The difference between the independent judge and researcher scoring was on the Variety of Colors and the Owl Characteristics criteria. The least disparity between the judges' scores was on the Invention of Patterns criterion. In this case the independent judges' scores were higher, but they did not reach significance. On all other criteria the researcher awarded higher scores.

**Summary.** The Judge main effects indicated a three-level scoring continuum. The independent judges awarded the lowest scores, the researcher gave ratings somewhat higher, and subjects' self-evaluations dominated the highest scores.

**Judge Interactions**

3 (Feedback Method) x 3 (Task Order) x 3 (Judge)

analysis. The following Judge interactions reached statistical significance in this analysis (see Table 3, p. 123):

1. The Great Horned Owl (Task 1, observation drawing):
   Feedback Method x Judge, \( F(4, 71) = 2.68, p<.04 \) (see Figure 3, p. 139).

2. Outerspace Creatures (Task 4, fantasy drawing):
   Feedback Method x Judge, \( F(4, 78) = 3.72, p<.008 \) (see Figure 4, p. 140).

3. Underwater World of Sea Creatures (Task 5, observation/fantasy drawing): Feedback Method x Task Order x Judge, \( F(8, 78) = 3.05, p<.005 \) (see Figure 5, p. 141).

Fisher analysis of The Great Horned Owl means showed
that subjects' self-evaluations were greater than the independent judges and researcher scores for both minimal and questioning feedback subjects, $p < .01$ (see Table 9 for means). Directive feedback subjects' self-appraisals, although similar to the researcher's ratings, were significantly higher than the independent judges' evaluations, $p < .01$. Across all feedback methods the researcher's scores were greater than the independent judges'. Among minimal feedback subjects the difference reached $p < .05$, but increased to $p < .01$ with questioning and directive feedback subjects. In spite of the variation among the Judge levels, all three gave the highest evaluations to directive feedback subjects.

Further analysis of the Feedback Method x Judge interaction in the Outerspace Creatures Drawing Task also showed great contrast between subjects' self-evaluations and scores awarded by the other judges for minimal and questioning feedback subjects, $p < .01$ (see Table 9 for means). However, in the Directive Feedback level, scoring by both subjects and the researcher exceeded the independent judges' ratings, $p < .01$ and $p < .05$, respectively. But independent judges awarded means above the researcher's to the minimum feedback and questioning feedback groups, though not significantly higher.

The Fisher test on the Underwater World of Sea Creatures Feedback Method x Task Order x Judge interaction showed again that within the three Task Orders and the three Feedback Methods, subjects continued their high self-evaluations,
Table 9
Judge Interaction Means

3 (Feedback Method) x 3 (Task Order) x 3 (Judge) analysis of The Great Horned Owl Drawing Task: Judge x Feedback Method Interaction

<table>
<thead>
<tr>
<th>Judge</th>
<th>Minimal FB</th>
<th>Questioning FB</th>
<th>Directive FB</th>
</tr>
</thead>
<tbody>
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<tr>
<td>Researcher</td>
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<tr>
<td>Subject</td>
<td>19.72</td>
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<td>20.28</td>
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</table>

3 (Feedback Method) x 3 (Task Order) x 3 (Judge) analysis of the Outerspace Creatures Drawing Task: Judge x Feedback Method Interaction

<table>
<thead>
<tr>
<th>Judge</th>
<th>Minimal FB</th>
<th>Questioning FB</th>
<th>Directive FB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent</td>
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<td>16.65</td>
</tr>
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<td>Researcher</td>
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<tr>
<td>Subject</td>
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<td>19.63</td>
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</table>

3 (Feedback Method) x 3 (Task Order) x 3 (Judge) analysis of the Underwater World of Sea Creatures Drawing Task: Feedback Method x Task Order x Judge Interaction

<table>
<thead>
<tr>
<th>Order</th>
<th>Judge</th>
<th>Minimal</th>
<th>Questioning</th>
<th>Directive</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>12.89</td>
<td>16.58</td>
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<td>Researcher</td>
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<td></td>
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<td>Independent</td>
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<td>Researcher</td>
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<td></td>
<td>Subject</td>
<td>19.17</td>
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3 (Feedback Method) x 3 (Task Order) x 3 (Judge) analysis of the Outerspace Creatures Drawing Task: Judge x Feedback Method Interaction

<table>
<thead>
<tr>
<th>Judge</th>
<th>Minimal FB</th>
<th>Questioning FB</th>
<th>Directive FB</th>
</tr>
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<td>Researcher</td>
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Table 9 (continued)

3 (Feedback Method) x 3 (Task Order) x 2 (Judge) analysis of the Outerspace Creatures Drawing Task: Judge x Task Order x Judge Interaction

<table>
<thead>
<tr>
<th>Order</th>
<th>Judge</th>
<th>Minimal</th>
<th>Questioning</th>
<th>Directive</th>
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<td>1</td>
<td>Independent</td>
<td>19.50</td>
<td>19.17</td>
<td>16.72</td>
</tr>
<tr>
<td></td>
<td>Researcher</td>
<td>19.75</td>
<td>19.50</td>
<td>19.17</td>
</tr>
<tr>
<td>2</td>
<td>Independent</td>
<td>16.61</td>
<td>17.45</td>
<td>16.67</td>
</tr>
<tr>
<td></td>
<td>Researcher</td>
<td>15.50</td>
<td>16.42</td>
<td>19.50</td>
</tr>
<tr>
<td>3</td>
<td>Independent</td>
<td>12.87</td>
<td>15.67</td>
<td>16.56</td>
</tr>
<tr>
<td></td>
<td>Researcher</td>
<td>9.80</td>
<td>16.40</td>
<td>16.42</td>
</tr>
</tbody>
</table>

3 (Feedback Method) x 3 (Task Order) x 2 (Judge) analysis of the Outerspace Creatures Drawing Task: Judge x Task Order Interaction

<table>
<thead>
<tr>
<th>Judge</th>
<th>Task Order 1</th>
<th>Task Order 2</th>
<th>Task Order 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent</td>
<td>18.46</td>
<td>16.91</td>
<td>14.34</td>
</tr>
<tr>
<td>Researcher</td>
<td>19.43</td>
<td>17.91</td>
<td>15.03</td>
</tr>
</tbody>
</table>

3 (Feedback Method) x 3 (Task Order) x 2 (Judge) analysis of the Outerspace Toys Drawing Task: Judge x Task Order Interaction

<table>
<thead>
<tr>
<th>Judge</th>
<th>Task Order 1</th>
<th>Task Order 2</th>
<th>Task Order 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent</td>
<td>16.36</td>
<td>15.17</td>
<td>13.06</td>
</tr>
<tr>
<td>Researcher</td>
<td>17.09</td>
<td>18.08</td>
<td>15.73</td>
</tr>
</tbody>
</table>

3 (Feedback Method) x 3 (Task Order) x 2 (Judge) analysis of The Great Horned Owl Drawing Task Criteria/ Variety of Lines and Marks: Judge x Feedback Method Interaction

<table>
<thead>
<tr>
<th>Judge</th>
<th>Minimal FB</th>
<th>Questioning FB</th>
<th>Directive FB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent</td>
<td>2.56</td>
<td>2.52</td>
<td>3.32</td>
</tr>
<tr>
<td>Researcher</td>
<td>3.06</td>
<td>3.39</td>
<td>4.50</td>
</tr>
</tbody>
</table>

Proportion: Judge x Task Order Interaction

<table>
<thead>
<tr>
<th>Judge</th>
<th>Task Order 1</th>
<th>Task Order 2</th>
<th>Task Order 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent</td>
<td>2.48</td>
<td>2.80</td>
<td>2.94</td>
</tr>
<tr>
<td>Researcher</td>
<td>1.89</td>
<td>2.78</td>
<td>1.56</td>
</tr>
</tbody>
</table>

Variety of Colors: Judge x Task Order Interaction

<table>
<thead>
<tr>
<th>Judge</th>
<th>Task Order 1</th>
<th>Task Order 2</th>
<th>Task Order 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent</td>
<td>2.91</td>
<td>3.28</td>
<td>3.81</td>
</tr>
<tr>
<td>Researcher</td>
<td>4.56</td>
<td>4.64</td>
<td>4.81</td>
</tr>
</tbody>
</table>
p<.01 (see Table 9). Only among directive subjects in Task Order 1 and minimal feedback subjects in Task Order 2 did little variation occur between their ratings and those of the other Judge levels. Among all means within Task Order 1 and Task Order 2 the independent judges' mean scores were higher than the researcher's, but these differences did not reach significance. Only among minimal feedback subjects in Task Order 2 and Task Order 3 were the researcher's ratings higher than the independent judges, but these differences also did not reach significance. The remaining pairwise comparisons showed higher scoring by the independent judges, but again, none reached significance.

3 (Feedback Method) x 3 (Task Order) x 2 (Judge) analysis. This analysis yielded four significant interactions:

1. Outerspace Toys (Task 3, observation drawing):
Task Order x Judge, F (2, 40) = 3.53, p<.04 (see Figure 9, p. 156).

2. Outerspace Creatures (Task 4, fantasy drawing):
Feedback Method x Judge, F (2, 39) = 11.64, p<.0001 (see Figure 6, p. 143).

3. Outerspace Creatures: Task Order x Judge, F (2, 39) = 3.89, p<.03 (see Figure 10, p. 158).

4. Outerspace Creatures: Feedback Method x Task Order x Judge, F (4, 39) = 3.06, p<.03 (see Figure 7, p. 144).

Further analysis of the Outerspace Toys interaction
indicated that the researcher's scores were significantly greater than the independent judges' among Task Order 2 subjects (p<.01) and Task Order 3 subjects (p<.05) (see Table 9 for means). The least disparity between the judges' scores occurred among Task Order 1 subjects and the greatest difference was found in Task Order 3.

Fisher test analysis of the Task Order x Judge interaction in the Outerspace Creatures Drawing Task showed one significant pair of means (see Table 9 for means). The researcher scored subjects in Task Order 1 higher than the independent judges' ratings, p<.05. The researcher's mean scores were also higher for the other Task Orders, but they did not reach significance.

Further analysis of the Feedback Method x Judge interaction in the Outerspace Creatures Drawing Task indicated minimum feedback subjects received higher scores from the independent judges (p<.01) who also gave questioning feedback subjects higher ratings, but without reaching significance. However, the researcher awarded a higher mean to directive feedback subjects, p<.01.

Simple effects analysis of the Outerspace Creatures' three-way interaction reported inconsistencies between the two Judge levels (see Table 9 for means). The researcher mean for minimal feedback subjects within Task Order 1 was greater than the independent judge mean, and for minimal feedback subjects within Task Order 2, the independent judge
mean was higher, but neither of these comparisons reached significance. However, the independent judges' mean score was significantly greater for minimum feedback subjects in Task Order 3. Researcher means were higher for questioning feedback subjects in Task Order 1 and Task Order 2, but no comparisons in this feedback level reached significance. While the independent judges awarded higher ratings to directive feedback subjects in Task Order 3, the researcher gave superior scores to directive feedback subjects in Task Order 1 and Task Order 2, both $p<.01$.

Analysis of The Great Horned Owl drawing criteria significant interactions also revealed inconsistency between the Judge levels. The Variety of Lines and Marks Method x Judge interaction yielded significance for the researcher's means above the independent judges' across all Feedback Method levels, $p<.01$. Simple effects analysis of the Variety of Colors Task Order x Judge interaction also indicated greater researcher means for all Task Order levels, $p<.01$. However, the Proportion Task Order x Judge effect showed independent judges' means greater among the three task orders and significant within Task Order 1 and 2, $p<.01$.

**Summary**

The Judge main effects and interactions showed that subjects receiving all feedback methods and task orders generally evaluated their drawings at a much higher level than the assessments awarded by the independent judges and the
researcher. Differences between the independent judges and the researcher were less consistent, although the researcher tended to award higher scores. A tally of the interactions which included Feedback Method x Judge indicated 21 of 30 pairs of means were not significantly different. Of the nine pairwise comparisons reaching significance, five were due to higher researcher scores for directive feedback subjects.

Observational Findings

The researcher selected three groups as representative of all nine groups for detailed analysis of peer interaction and communication with the researcher taking place throughout the six drawing task testing sessions. Each group had received one of the three feedback methods; therefore, one minimal feedback group, one questioning feedback group, and one directive feedback group were studied. These three groups were selected for several reasons. First, they had good attendance, i.e., fewer subjects missed a session. Second, they were verbal groups, i.e., they communicated frequently with each other. And finally, each group had a representative mix of subjects: one or more subjects whose drawings surpassed the others, one or more subjects easily frustrated with their inadequate drawing ability or with aspects of the assignment, one who tended to manage the others, and several who methodically worked at each drawing task and expressed little anxiety regarding the task.
Audiotapes of the six testing sessions were transcribed by a typist, and they were subsequently retranscribed and edited by the researcher. The researcher and a trained assistant cognizant of the purposes of the study simultaneously viewed the videotape of a session and followed along with the transcription to code verbal behaviors, i.e., to categorize the different kinds of talk which occurred. In some cases the videotape successfully recorded parts of conversations which were unintelligible on the audiotape and in other cases the audiotapes enhanced the record of the videotaped conversations. Relevant nonverbal communication was documented as well.

The researcher began the analysis with a general list of possible categories to use in coding the peer conversations. This working typology initially included such categories as Teacher Bid, Learner Bid, Management, Comment to Others About Self's Picture, and Show Picture to Others. These beginning categories were partially based on Cooper et al.'s (1982b) typology and supplemented with the researcher's additions derived from field notes taken during the sessions. However, this study's typology evolved primarily throughout the analysis of tapes, becoming increasingly complex as additional sessions were viewed. Collaboration with an assistant was necessary to ensure increased objectivity on placement of statements within the typology and agreement on new categories as they surfaced in the tapes (see Table 10).
<table>
<thead>
<tr>
<th>Peer Interaction</th>
<th>Minimal Feedback</th>
<th>Questioning Feedback</th>
<th>Directive Feedback</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment on subject</td>
<td>121</td>
<td>192</td>
<td>143</td>
<td>456</td>
</tr>
<tr>
<td>Talk about self's picture</td>
<td>167</td>
<td>84</td>
<td>176</td>
<td>427</td>
</tr>
<tr>
<td>Look at another's picture</td>
<td>116</td>
<td>115</td>
<td>159</td>
<td>390</td>
</tr>
<tr>
<td>Talk related to materials</td>
<td>148</td>
<td>157</td>
<td>84</td>
<td>389</td>
</tr>
<tr>
<td>Evaluation of self</td>
<td>101</td>
<td>32</td>
<td>90</td>
<td>223</td>
</tr>
<tr>
<td>Management</td>
<td>32</td>
<td>51</td>
<td>106</td>
<td>189</td>
</tr>
<tr>
<td>Show picture to others</td>
<td>36</td>
<td>25</td>
<td>56</td>
<td>137</td>
</tr>
<tr>
<td>Evaluation of others</td>
<td>76</td>
<td>23</td>
<td>35</td>
<td>134</td>
</tr>
<tr>
<td>Teacher bid</td>
<td>46</td>
<td>43</td>
<td>15</td>
<td>104</td>
</tr>
<tr>
<td>Comment on peer's picture</td>
<td>34</td>
<td>18</td>
<td>44</td>
<td>96</td>
</tr>
<tr>
<td>Procedural statements</td>
<td>24</td>
<td>13</td>
<td>21</td>
<td>58</td>
</tr>
<tr>
<td>Question peer about his/her picture</td>
<td>29</td>
<td>11</td>
<td>11</td>
<td>51</td>
</tr>
<tr>
<td>Learner bid</td>
<td>21</td>
<td>6</td>
<td>6</td>
<td>33</td>
</tr>
<tr>
<td>Frustration gesture</td>
<td>12</td>
<td>6</td>
<td>7</td>
<td>25</td>
</tr>
<tr>
<td>Ask for peer opinion</td>
<td>6</td>
<td>10</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>Comment on difficulty level of task</td>
<td>6</td>
<td>10</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Supportive comments</td>
<td>15</td>
<td>0</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td><strong>Sub Totals</strong></td>
<td><strong>991</strong></td>
<td><strong>796</strong></td>
<td><strong>966</strong></td>
<td><strong>2,753</strong></td>
</tr>
</tbody>
</table>

| Communication to Researcher              |                  |                      |                   |       |
| Comment about picture                    | 1                | 77                   | 115               | 193   |
| Show picture to researcher               | 38               | 78                   | 48                | 164   |
| Ask for researcher's opinion             | 28               | 64                   | 50                | 142   |
| Ask about or comment on                 | 22               | 46                   | 56                | 124   |
| Self-evaluative comment                  | 6                | 37                   | 64                | 107   |
| Ask researcher for advice or guidance   | 11               | 22                   | 54                | 87    |
| Comment on or question about materials   | 8                | 21                   | 40                | 69    |
| Comment on or question about subject     | 5                | 33                   | 27                | 65    |
| Watch researcher talk with another subject| 5              | 15                   | 29                | 49    |
| **Sub Totals**                           | **124**          | **393**              | **483**           | **1,000** |

| Totals                                   | 1,115            | 1,189                | 1,449             | 3,754 |
Statements were first coded by subject within each group, then subtotals were tallied for the entire group by category within a drawing task, and finally the group's grand total was calculated for each category in the typology (see Table 10). Table 10 illustrates the final typology and totals of tallied statements for each of the three groups within each category. Chi square analyses were completed on the group totals within each category to determine which deviations among the observed frequencies were significant.

The Typology: Peer Interaction

Subjects' conversations fell within two major types: conversations directed toward peers and statements or questions addressed to the researcher. The following categories of peer interaction are discussed in the order of their total frequency within the groups, beginning with those occurring most often. Chi square data are included where relevant.

Comment on subject. Conversations about the subject matter were most prevalent in all groups during the Underwater World of Sea Creatures and Peaceable Kingdom drawing tasks ($X^2 = 123.18$, $p<.01$). In these tasks subjects used numerous photographs and illustrations of exotic fish, other sea life, and mammals, reptiles, amphibians, and birds. They often called someone's attention to an unusual creature or asked
for a response to it. The questioning feedback group exceeded both the minimal and directive feedback groups in frequency of this talk ($X^2 = 15.66, p < .01$, and $X^2 = 6.88, p < .01$, respectively). Examples included:

1. "What's that on his back?" (Reference to toy.)
2. "He has some funny looking ears." (Reference to horned owl.)
3. "This one's real unusual." (Reference to toy.)
4. "Ooh, neato!" (Reference to fish photograph.)
5. "Ooh, the colors are pretty." (Reference to fish.)
6. "Let me see the tree frog."

**Talk about self's picture.** These were nonevaluative comments about subjects' drawings to their peers. They usually consisted of statements about what they planned to draw or a description of something already placed in their pictures. Subjects talked more frequently about their drawings during fantasy drawing tasks ($X^2 = 13.26, p < .01$) and observation/fantasy drawing tasks ($X^2 = 45.28, p < .01$). Greater frequency also occurred in the minimal feedback group and directive feedback group ($X^2 = 31.86$ and $X^2 = 26.78$, respectively, both at $p < .01$). Examples included:

1. "Looks like a teddy bear."
2. "This one's going to have measles or poison ivy."
3. "I'm on his ear now."
4. "I'll make a fish swimming in the air."

**Look at another's picture.** This was nonverbal attention
to another's drawing, often occurring in all groups. It occurred under two conditions: either a peer looked at another's drawing when asked to do so or voluntarily glanced at or studied a neighbor's picture. Subjects who were insecure about their drawing ability tended to be active lookers at others' pictures. In some cases the "artist" in the group, the one member viewed as the best drawer by his or her peers, was frequently observed by group members. Directive feedback subjects looked at others' pictures most frequently: $X^2 = 6.72$, $p < 0.01$ (over questioning feedback subjects) and $X^2 = 6.42$, $p < 0.05$ (over minimal feedback subjects).

**Talk about materials.** This consisted of conversations about markers, paper, or other items used in the task, e.g., the books during The Peaceable Kingdom session. In all groups, subjects regularly requested markers or offered them to others. But the minimal feedback and questioning feedback groups exceeded the directive group in frequency of these comments: $X^2 = 17.10$ and $X^2 = 21.52$, respectively, both $p < 0.01$. Less talk about materials occurred during tasks with fewer color options, e.g., The Great Horned Owl and The Peaceable Kingdom drawing tasks. Examples included:

1. "Do you have a blue like this or darker?"
2. "These books are nice."
3. "Are you through with that book, Jon?"
4. "I like markers better."

**Evaluation of self.** Evaluation of self focused on
assessment of a subject's drawing, usually negative in form, but occasionally positive. At times the subject's statement was a global comment on ability to draw a particular subject or capacity to draw in general. Evaluation of self statements took place more often during the observation and observation/fantasy drawing tasks: $X^2 = 13.00$ and $X^2 = 22.56$, respectively, both at $p<.01$. Both the minimal feedback and directive feedback groups generated a great number of self-evaluative statements: $X^2 = 34.76$ and $X^2 = 26.64$, respectively, both at $p<.01$. Examples included:

1. "I messed up bad."
2. "I can't draw."
3. "I think I did the head o.k. that time."
4. "Worst body I've ever done."

**Management.** Management talk criticized another's behavior, e.g., talking, silliness, or bumping a neighbor. Management frequency was related to the composition of the group. Several groups contained subjects whose behavior elicited more management remarks than those groups with well-behaved participants. The greatest amount of management statements occurred in the directive feedback group: $X^2 = 38.62$, $p<.01$. Examples included:

1. "Shut up you all; you're talking too much."
2. "I need some more room."
3. "Miss X (classroom teacher) said we have to behave."
4. "You better get started."
Show picture to others. This category consisted of both verbal and nonverbal communication. Peers showed their pictures to others by holding them up for one or more peers to see, poking a neighbor to obtain attention to the drawing, or by calling someone by name to get attention to look at their work. Minimal feedback subjects engaged in a greater proportion of showing pictures to others: $X^2 = 11.11, p<.01$. Verbal examples included:

1. "Look at mine."
2. "Mine looks like slime (holds up picture to show others)."
3. "Look at this; he's bleeding."
4. "Look at how many colors I got."

Evaluation of others. Evaluations of peers' drawings were generally positive remarks about their work. At times they were offered as supportive comments to contradict the peer's negative assessment of a drawing. Evaluation also served to give recognition to the best "artist" in the group. Evaluation of others occurred most frequently in the minimal feedback group: $X^2 = 13.61, p<.01$. Examples included.

1. "His is creative."
2. "Joe's doing good."
4. "That's too small."

Teacher bid. In this instance a subject gave advice, information, or suggestions to a peer. In several groups one
member assumed this role and tended to offer teacher bids more than anyone else in the group. Teacher bids were often unsolicited, i.e., they did not occur because of another's learner bid. This category was more evident in the minimal feedback and questioning feedback groups: $X^2 = 14.76$ and $X^2 = 12.56$, respectively, both at $p<.01$. Examples included:

1. "Just make the claws inside your body."
2. "The details is what matters."
3. "You could make it yellow." (Response to a peer's question about a possible color for slime.)
4. "The bubbles go straight up." (Reference to how bubbles come from a fish's mouth.)

Comment about peer's picture. Comments consisted of nonevaluative responses to a peer's drawing. The minimal feedback and directive feedback groups were more likely than the questioning feedback group to respond to others' pictures: $X^2 = 4.32$ ($p<.05$) and $X^2 = 10.08$ ($p<.01$), respectively. Examples included:

1. "It looks like a bald-headed lady."
2. "He has all sorts of things on his nose."
3. "That looks like the one from last week."
4. "My God, that's a big nose!"

Procedural statements. In this category, subjects commented on the degree of completion of a task or remarked about various components of a task. No significant differences in frequency occurred among the groups.
Examples included:
1. "Mine's done."
2. "Look how fast I'm coloring."
3. "I can't finish this."
4. "It's easier to trace them. I'm not tracing."

**Question peer about his or her picture.** Inquiries about a peer's drawing occurred most frequently in the minimal feedback group: $X^2 = 7.22, p<.01$. Examples of this category included:
1. "Where is his nose?"
2. "What are you drawing?"
3. "How did you make that?"
4. "How many fish do you got?"

**Learner bid.** During a learner bid, a subject asked a question or made a statement indicating the need for advice, assistance, or information. At times learner bids received a teacher bid, but more often, they received no response. Learner bids took place most frequently in the minimal feedback group: $X^2 = 7.26, p<.01$. Examples included:
1. "I don't know how to make bubbles coming out of their (fish) mouths."
2. "I don't know what color to make it."
3. "What color is slime—green?"
4. "Think I should make two of them, Tom?"

**Frustration gesture.** This category consisted of both verbal and nonverbal behavior which expressed frustration
with a subject's efforts on the drawing task. Pounding a fist on the table, grimacing, and other facial expressions of obvious distress were nonverbal examples. Frustration gestures primarily took place during the observation and observation/fantasy drawing tasks: $X^2 = 7.84$, $p < .01$. They were more prevalent in the minimal feedback group, but did not reach significance. Examples of verbal statements, often accompanied by a nonverbal gesture included:

1. "Oh, God!"
2. "Oh, no!"
3. "Darn!"

**Ask for peer opinion.** Occasionally when showing a picture, an opinion was solicited. This opinion either was to be an assessment of the drawing or a response to a question about how the subject might complete a portion of it. Peer opinions were similar in frequency among the three groups. Examples included:

1. "He is kind of ugly, ain't he?"
2. "Does this look funny looking enough?"
3. "Like my picture?"
4. "Does that look neat with the horn on its nose?"

**Comment on difficulty level of task.** Occasionally a subject remarked about how difficult a drawing task seemed. Here, too, no significant differences occurred in how often these comments were made. Examples included:

1. "This is hard."
2. "Yours' is easy (to draw)."

Supportive comments. Such statements served to reassure a peer about the difficulty of the task for everyone and often occurred in response to a peer's frustrated comment or negative self-evaluation. The minimal feedback group exceeded other groups in supportive comments to others: $X^2 = 5.26$, $p < .05$. Examples included:

1. "Ain't nobody's going to look perfect."
2. "Don't worry about it."
3. "There's some mess up on everybody's."

The Typology: Communication Between Subjects and Researcher

The following categories reflected conversations between subjects and the researcher. They, too, are described in the order of their total frequency within the groups, beginning with those occurring most often.

Comment about picture to researcher. These consisted of non-evaluative statements about their drawings which either provided information about plans for the picture or described it. Both the directive and questioning feedback groups exceeded the minimal feedback group in talk about their pictures with the researcher: $X^2 = 113.00$ and $X^2 = 72.12$, respectively, both at $p < .01$. These remarks occurred only once in the minimal feedback group. Examples included:

1. "I got to make his legs."
2. "I'm going to do the rest in yellow."
3. "He has veins all over him."
4. "Do you see that? That's fire."

**Show picture to researcher.** Subjects used verbal or nonverbal means to show their drawings, i.e., draw attention to their work. Nonverbally, they held them up in the air to get the researcher's attention to look at their pictures. This category related to another which consisted of questions to obtain the researcher's opinion. For an opinion was often solicited when the picture was shown. Showing also tended to be accompanied with a procedural statement. This behavior occurred most frequently in the questioning feedback group: $X^2 = 13.11, p < .01$. Verbal examples included:

1. "Look at this."
2. "I'm done."

**Ask for researcher's opinion.** As mentioned above, when a drawing was shown to the researcher, the subject often requested an opinion about the work. They either asked for an evaluative response or for a response regarding a quality in the drawing or planned additions to the piece. Opinions were solicited more often by questioning feedback subjects ($X^2 = 6.66, p < .01$) and directive feedback subjects ($X^2 = 5.65, p < .05$). Examples included:

1. "Do you think I have to draw any more?"
2. "Does this look all right?"
3. "Does this look like a humanoid?"
4. "Miss Kakas, how's that?"
Ask about or comment on procedure. Similar to the procedure category in peer conversations, subjects discussed completion of pictures or drawing procedures. Frequency of this conversation took place more often in the directive feedback group ($X^2 = 13.96$, $p<.01$) and the questioning feedback group ($X^2 = 7.78$, $p<.01$). Examples included:

1. "Do we draw both of 'em?"
2. "May I start over again?"
3. "Can I use my imagination to put in another one?"
4. "I'm almost finished."

Self-evaluative comment to researcher. Self-evaluations, predominantly of a critical nature, were either global or specific to the task, or they referred to a portion of their drawings. These statements addressed to the researcher were more prevalent in the directive feedback and questioning feedback groups: $X^2 = 46.42$ and $X^2 = 20.93$, respectively, both at $p<.01$. Examples included:

1. "I messed up bad."
2. "The wing is terrible."
3. "I think I should make another one."
4. "I can't get the legs."
5. "Now that looks ridiculous."
6. "See, I can't draw."

Ask researcher for advice or guidance. These statements reflected the subject's desire for assistance. These requests occurred most often in the directive feedback group:
$X^2 = 27.14, p < .01$. Examples included:

1. "Miss Kakas, would you come here and help for a minute?"
2. "I'm having trouble with the lion's head."
3. "Coach me on this head now."
4. "Show me how to make slime."
5. "Does the land go clear down into the water?"

Comment on or question researcher about materials.

Talk with the researcher about markers and other materials occurred most frequently in the directive feedback group:

$X^2 = 20.02, p < .01$. Examples included:

1. "Can I have another piece of paper?"
2. "I need a pencil to draw this."
3. "Miss Kakas, I need a white."
4. "Miss Kakas, this (marker) is running out."

Comment on or question researcher about the subject.

Questioning feedback and directive feedback subjects exceeded minimal feedback subjects in conversations with the researcher about subject matter: $X^2 = 19.18$ ($p < .01$) and $X^2 = 13.78$ ($p < .01$), respectively. Examples included:

1. "Miss Kakas, when elephants have their horns, do you know if it's the male or female?"
2. "Can his neck turn all the way around?" (Reference to the horned owl.)
3. "Do you have lions?" (Reference to lion photographs.)
4. "This sea horse is pregnant." (Reference to
Watch researcher talk with another subject. Occasionally when the researcher was interacting with a subject another member of the group, as evidenced by nonverbal body movement and eye direction, listened to the conversation. This took place most often in the directive feedback group: $X^2 = 15.56, p < .01$.

Summary

Coding subjects' verbal and nonverbal behaviors throughout the testing sessions provided evidence that significant differences in communication occurred, both among peers and between subjects and the researcher. The majority of the differences were noted when the typology categories were compared across feedback methods, but disparity was also apparent when categories were compared across drawing task types. In general, minimal feedback subjects interacted far more often among themselves than with the researcher. The directive feedback group was the most verbal of the three groups, and those subjects interacted more often with the researcher than the other groups, although the questioning group's percentage of talk with the researcher was similar. Chapter Five will discuss factors believed to have contributed to the variance in communication among the subjects.
Chapter Five explains the experimental and observational results, points out relationships between them, draws conclusions from the analysis of the data, makes recommendations for further research, and discusses implications of the study to art educators.

Discussion of Experimental Findings

Appropriateness of Drawing Tasks and Materials

The three types of drawing tasks developed for this study—observation, fantasy, and observation/fantasy—were an appropriate grouping for 5th graders. In addition, the use of a thematic approach seemed beneficial to learning outcomes. The repetition of a number of performance objectives throughout several assignments appeared to contribute to subjects' understanding of them and subsequent inclusion in their drawings. The Creatures in Art orientation for each drawing task also held subjects' interest during the six week period.

There was concern whether subjects would tire of using colored markers for all drawing tasks, but they were popular with most subjects who were especially pleased with the variety of colors available to them. A few subjects were frustrated about the unavailability of pencils. This led to the decision to furnish small practice sheets of paper in an
attempt to reduce anxiety about putting an unerasable mark on a clean, white sheet of paper. In spite of occasional grumbling about the lack of pencils, the variety of types of markers as well as their numerous colors was a positive influence on subjects. Moreover, by drawing with markers for an extended period, subjects had the opportunity to increase their skills with them, an indepth approach with art media that elementary school age children do not often experience (Eisner, 1974).

Observation drawing tasks. All subjects were inexperienced in drawing three-dimensional objects from observation, and they expressed high levels of frustration when working on them. Yet, during post-treatment interviews, when subjects were asked to relate their favorite and least favorite drawing lessons and why, 46% of their responses indicated observation drawing tasks as their favorites (The Great Horned Owl or Outerspace Toys). In addition, 47% considered an observation drawing their most successful picture. Many subjects were pleased with their owl drawings and more than expected were proud of their efforts on the outerspace toys. Evidently, having the opportunity to review all six drawings at the completion of the study allowed them to reflect on and appreciate qualities in their pictures that were not acknowledged while they worked on them.

However, those subjects who were most self-critical of
their general drawing ability were less enthusiastic about these tasks, for observation drawing tasks also received 32% of the negative responses. In spite of these less favorable attitudes, it was apparent that subjects were stimulated and challenged by the observation assignments.

These findings confirm Wachowiak's (1985) and Wilson and Wilson's (1982) recommendations for observation drawing with children. In addition, if these subjects had had regular experiences with observation drawing at an earlier age, their general skill level would have been higher and their anxiety levels would have been lower. This observation agrees with Wachowiak's (1985) view that teachers should introduce children to observation drawing as early as the first grade.

**Fantasy drawing tasks.** The second most favored types of drawings were the fantasy assignments—32% viewed them as favorites and 25% considered these their most successful drawings. During the testing sessions, subjects responded with enthusiasm to the topics (Fantasy Flying Creatures and Outerspace Creatures), enjoyed looking at and talking about the visual resources selected for each task, and displayed much less anxiety while drawing them. At times, they talked about plans for their pictures or described characteristics of their creatures, or expressed narrative-like comments about the content of the drawings ("Here's the man, here's the wife."). Because of these tasks' obvious popularity
during the testing sessions, it was surprising that they were listed as favorites less often than the observation tasks.

**Observation/fantasy drawing tasks.** Twenty-two percent of the responses favored a drawing task that featured copying from two-dimensional sources and inventing additional aspects for the drawings (Underwater World of Sea Creatures and The Peaceable Kingdom). Twenty-eight percent viewed them as their most successful pictures. When these figures were combined with those for observation drawings, 68% of the favored pictures resulting from observation or observation/fantasy drawing.

However, The Peaceable Kingdom drawing task received many negative responses: 32% did not favor this assignment and 41% thought it was their least successful drawing. In general, they considered it a very difficult task. Yet a small number (8%) had listed it as a favorite task and 10% considered it one of their better drawings. When combined with the Underwater World of Sea Creatures' negative ratings, observation/fantasy drawing tasks received 46% of the least favorite and 48% of the worst drawing responses.

Drawing from two-dimensional illustrations was more difficult for subjects than expected. Although Wilson and Wilson (1982) maintain that children learn to draw by often referring to two-dimensional models, these children were inexperienced with this drawing procedure. Several subjects
did talk about and show the researcher drawings they had copied from cartoon characters in comic strips. This type of copying was based on flat, two-dimensional drawings and were easier to reproduce than photographs and illustrations of animals in foreshortened positions.

Subjects were less frustrated when copying the sea creature illustrations because these visual resources exhibited a two-dimensional quality which made them easier to draw. Whereas, the more complex structures of animals were very frustrating to subjects who were not often pleased with their distorted results. In addition to the foreshortening problem, subjects had difficulty recording the basic structure of animals.

Another problematic feature of The Peaceable Kingdom drawing task was the inclusion of a three-dimensional space objective. This was more difficult than had been anticipated. Few subjects were comfortable with their attempts at depicting three-dimensional space, and their performance seemed below the level expected for this age group. Many drew two base lines to suggest depth; a number used overlapping successful. In general, however, results were poor.

If this study were replicated with 5th graders, it is recommended that The Peaceable Kingdom drawing task be simplified by requiring students to draw fewer animals and by excluding the spatial objective. Moreover, fewer and larger animal illustrations should be provided, and they
must be selected carefully to avoid difficult, foreshortened views.

Feedback Method

Subjects' drawing performance across all drawing tasks had been expected to vary significantly as a result of receiving one of the three feedback methods. It had been predicted that subjects who received directive feedback would gain higher scores on their drawings. This view was grounded on the assumption that feedback which included suggestions, directives, and concrete praise would more positively affect subjects' performance. It was assumed that subjects who received minimal feedback would reflect less about their work, would consider performance objectives less often, and would, therefore, receive lower drawing scores. It was further assumed that subjects receiving questioning feedback would be more reflective about their pictures, refer more often to performance objectives, and would receive a middle range of scores between high directives and low minimalis. These expected results did not occur.

Directive feedback subjects tended to receive higher scores than the other two groups, but they were significantly higher in only two of the six drawing tasks. They were superior to both minimal feedback and questioning feedback groups in The Great Horned Owl drawing task; and they excelled over minimal feedback subjects in the Fantasy Flying
Creatures drawing task, but earned scores only slightly above questioning feedback subjects. In addition, the ratings for questioning feedback and minimal feedback subjects were often similar to each other, and occasionally their scores were above those received by directive feedback subjects.

Feedback Method mean scores exhibited additional significance when they interacted with the Task Order variable. These interactions indicated the presence of significant differences when one small six-member group was compared to another, either within or between feedback methods. These interactions revealed that small group differences were greater than when the small group scores were combined to form the 18-member feedback method mean. In other words, less difference between feedback method means were evident after the small group means were totaled and averaged.

**Task Order**

Task Order main effects indicated that subjects who completed The Great Horned Owl as their fourth drawing task excelled over those who drew it as their first or second task. When drawing the Outerspace Toys, superior results were found among subjects who drew them third, rather than second or fourth. And the Outerspace Creatures drawing task was best performed when subjects drew them fourth and first rather than third. These findings might lead to the
assumption that these specific tasks did elicit better scores due to the order of when subjects' completed them.

However, examination of the Task Order x Feedback Method significant interactions showed the highest rated Task Order group varied with the form of feedback received. For example, on The Peaceable Kingdom drawing task, Task Order 1 subjects excelled when they received minimal feedback and questioning feedback; Task Order 2 subjects were rated superior when they received directive feedback. In contrast, on the Underwater World of Sea Creatures drawing task, Task Order 3 subjects were rated highest when they received minimal feedback and Task Order 1 subjects outperformed the other Task Orders when they received questioning feedback or directive feedback. The mixed results in these interactions supported the position that Task Order effects were actually "small group effects." That is, certain small groups receiving various feedback methods tended to excel at different times over other small groups. The study had been designed so that only one small group received both Task Order 1 and minimal feedback or Task Order 2 and questioning feedback. Therefore, the Task Order x Feedback Method interactions indicated that none of these nine combinations excelled over all others throughout the drawing tasks. Instead, group means varied from task to task. In essence, the Task Order variable did not report about order effects, but provided an account of small group differences.
Factors Affecting Lack of Significance for the Feedback Method Variable

Lack of significance in this study parallels the findings in other recent art education teacher feedback studies (Gerhart, 1981; Heard, 1981). The recent feedback investigations have not reported one teaching strategy more successful than another in affecting student achievement in studio activities. General education research has concluded that teacher feedback during independent seatwork is one of the major factors contributing to student achievement (Brophy & Good, in press). Yet when art education researchers compared various forms of teacher feedback, few substantive answers were found. These results may substantiate the view that there is no one best procedure for teaching any given content, but various ways may be employed successfully, depending on the nature of the teacher, the group, individuals within the group, and the content to be learned (Brophy & Good, in press). On the other hand, inadequate research design may have contributed to the lack of substantive findings in this study and in others. Research methods may be providing inadequate information and inappropriate comparisons might be being made. Yet, this area of art education research seems to be in the infant stage, and this study and others may have laid the groundwork for future more fruitful investigations.

It is conceivable that the use of multiple research methods in the present study has contributed to better
understanding of factors which influenced non-significant findings when studying teacher feedback. The following discussion describes several factors that influenced the results in this study.

**The researcher factor.** While the three feedback methods had been designed to be distinctly different from one another, when practiced by the researcher, they became increasingly similar. Several conditions contributed to a degree of homogeneity in administration of feedback methods.

First, early in the study, the researcher's appraisal of a minimum feedback group's high anxiety level during an observation drawing task prompted modification of praise statements for these subjects to also include concrete praise. This modification helped reinforce task performance objectives with minimal feedback groups. It is speculated that if all praise had remained nonspecific with the minimal feedback groups, their drawing scores would have been lower.

Second, because the forms of feedback mandated in the Minimum Feedback and Questioning Feedback methods were less natural to the researcher, she had to make conscious efforts to refrain from offering suggestions or guidance, particularly during the observation and observation/fantasy drawing tasks. An amount of directive behavior (questions, suggestions, or reminders about various objectives) was apparent in the minimum feedback and questioning feedback groups, but occurred far less often than with directive feedback subjects.
But these instances of directiveness may have influenced subjects' behavior and subsequent drawing scores.

Third, the researcher did not maintain highly consistent behavior throughout all groups as she had planned. While the drawing task introductions were consistent in all groups, the varied characteristics (the group context) of each group affected teacher feedback to a group and to individuals within it. For example, when subjects exhibited high anxiety or frustration with a task, increased amounts of positive feedback and supportive comments were given. Among minimal feedback subjects the researcher occasionally initiated questions or suggestions as a means of being more supportive of their efforts. Among the questioning and directive feedback groups she was not consistent in feedback related to the performance objectives. For example, the degree to which she stressed the size criterion for a creature in a drawing varied among groups. She was also inconsistent as to when she asked directive feedback subjects to begin again if a creature was too small.

The researcher also exhibited more directive behavior during the Observation and Observation/Fantasy drawing tasks than during the Fantasy drawing tasks. During Observation task sessions she often explained the structure of a portion of the observed object, directed a subject to notice a particular contour on the object, demonstrated a drawing of a troublesome segment of the object (usually a foreshortened
portion), and instructed subjects where to begin when drawing the object.

At times the researcher did not adequately manage a group to reduce the amount of disruptive behavior which may have inhibited concentration levels and completion rates on drawings, thereby affecting their test scores. This was particularly apparent in the directive feedback group analyzed in Chapter Four. Believing that one subject's nervous laughter was related to insecurity about his drawing ability, the researcher did not consistently quiet his behavior. He was not always disruptive, but the presence of another insecure subject proved to be a volatile and negative influence in this group.

The subject factor. Irregular attendance by a number of subjects also affected mean scores. A portion of this problem would have been solved if, before the pre-treatment session, the researcher had ensured all subjects were students with excellent attendance records. If their classroom teachers noted any with problem attendance, substitutions would have been made. However, not all attendance problems were controllable. At various times throughout the weeks of testing, subjects missed a session or left early because of practices scheduled for end-of-the-year concerts. In one instance a subject was removed from a testing session to be punished for misbehavior which had occurred earlier in the day. On another day a group left early for a field trip to
the Coca-Cola Bottling Company. The researcher was not informed prior to the testing session so that she might have rescheduled the meeting. Some rescheduling of testing sessions did occur, but as the end of the school year approached, greater amounts of school time were filled with field trips, talent shows, and awards assemblies. It became more difficult to agree on convenient times that fit both classroom teachers' and the researcher's schedules. Given these conditions, it was impossible to completely avoid the likelihood of missing scores.

The group factor. This factor focuses on the make up of the nine small groups, i.e., the influence peers had on one another. One type of influence on drawing performance was exerted by better drawers on their less able peers. For example, in a minimal feedback group, a very talented girl greatly influenced the other two girls in her group, thereby affecting their drawing scores. They often watched her draw and incorporated structural qualities seen in her work into their pictures. Videotape analysis and examination of the finished drawings confirmed this behavior. These talented influencers were confident about their drawing ability; the talented subjects who were more self-critical had less effect on their peers. Other less talented subjects also influenced their peers' drawings in similar ways.

Another group factor is related to self-criticism. If a group contained one or more highly self-critical subjects,
their behavior tended to negatively influence others. These groups tended to accomplish less on their drawings, and, if a directive group, responded less readily to the researcher's suggestions. More self-assured groups worked methodically and tended to receive higher drawing scores regardless of the teaching feedback method received.

General behavior also affected subjects' performance. If one member of a group was particularly talkative or silly, other members were distracted from their work. The influence of both self-critical remarks and misbehavior on others was enhanced by the small size of the groups. These two factors were especially evident in one directive feedback group.

The school factor. The school context also affected performance during testing sessions. For example, the week of city-wide testing, several groups were more talkative than usual and were less productive. Subjects explained to the researcher they were highly verbal with her because of the hours they had been required to be silent during the tests.

If subjects' regular schedules were changing that week, they tended to participate in greater amounts of social talk which may have adversely affected thoughtful reflection about their work and their ability to finish drawings on time. Such talk included conversations about field trips, concerts, talent shows, assemblies, and city-wide testing. General
group behavior was also more animated on the days of these events.

Classroom teachers may have also influenced group behavior. Three of the nine teachers whose classes were sampled spent far more time on art activities with their students—at least once a week compared to once a month or less often. One teacher had an undergraduate minor in art and another teacher had a large number of art credits. All three teachers valued art in the curriculum and were highly supportive of their students' efforts in studio activities. The highest performing questioning feedback group and the higher minimal feedback group were from two of these classrooms.

Subjects' regular teachers may have also affected peer interaction which in turn influenced levels of performance. The more talkative groups who produced more incomplete drawings may have come from classrooms where peer interaction during independent work was discouraged. If their classroom teacher accepted little peer talk, subjects may have taken advantage of the less restricted atmosphere in the drawing sessions. Alexander (1984) noted that the art class was one of the few times during the day when children had opportunities for social interaction. Questioning teachers about levels of peer interaction in their classrooms did not yield fruitful responses to clarify this issue, so this remains speculative.

An additional school factor is that the scheduled time
for a session may have affected subjects' drawing performance. For example, one directive feedback group met the last period of the day. In order to comply with the principal's preference for afternoon sessions, subjects agreed to miss their afternoon recess and come directly to the art room. These subjects were involved in the tasks, yet they seemed less motivated to work energetically on their drawings. They were more easily distracted and were less likely to complete their drawings. It was speculated that the time of day and perhaps lack of recess activity affected their energy levels and enthusiasm throughout the study.

The task factor. A major problem in all drawing tasks was the large number of unfinished drawings. After the independent judges rated the drawings, when the researcher scored them, she made a tally of drawings subjects considered unfinished—137 out of a total of 292 pictures. Among these drawings, 35 were by minimal feedback subjects, 47 were by questioning feedback subjects, and 56 came from directive feedback subjects. The researcher had instructed the judges to score them according to the stage in which they viewed them, but the researcher's scoring may have taken this factor into account. Therefore, a portion of the disparity between the independent judges' scores and the researcher's scores may be due to this factor. It is speculated that the scores of many drawings by questioning and directive feedback subjects would have been higher if they had sufficient time to complete
their drawings as they had intended them.

Sessions longer than 60 minutes were impossible to arrange because of subjects' other academic commitments. It was decided not to carry over one drawing task into the next session before giving the next assignment to avoid confounding peer interaction if some members of a group were finishing one task and other members were starting another drawing task. The only way to have provided subjects additional drawing time would have been to shorten the motivational segments of each testing session. This might have been easily accomplished in the fantasy drawing tasks by showing and discussing fewer illustrations. However, because it was important to carefully explain each objective to the group, shortening the other introductory segments to any great extent would have been problematic.

An additional drawing task factor concerns the performance objectives. It is speculated that teachers who typically use minimal feedback methods do not offer such concrete assignments nor state clear objectives to their students. They have a more laissez-faire approach to curriculum design. Therefore, the fact that performance objectives for each drawing task were clearly delineated to minimal feedback subjects may have contributed to better drawing scores than expected.

The judge factor. Disparity between the independent judges and the researcher led to the question of which
evaluations were more accurate. Inadequate training and/or misleading sample drawings in the evaluation instrument may have contributed to the differences. These issues are discussed in The Judge Variable section.

**Summary.** It was apparent that the type of feedback method subjects received was not the sole determinant of their drawing performance. Other contextual elements affected both the researcher's administration of the feedback methods and subjects' drawing behaviors.

**The Judge Variable**

Analysis of mean scores awarded by the independent judges, the researcher, and subjects showed that self-evaluations by subjects significantly exceeded ratings by the other two Judge levels. In addition, the researcher tended to score subjects higher than the independent judges' ratings. Several factors may have contributed to these significant differences.

**Subjects' self-evaluations.** The large difference between subjects' ratings and those completed by the other judges may partly be attributed to their not viewing sample drawings with each criterion as they judged themselves. For example, their conception of a well-filled composition could differ markedly from the researcher's opinion if they did not see examples of compositions she considered well-filled. This factor could be applied to all criteria scored by
subjects. A major contrast between subjects' ratings and independent judges' and the researcher's scores occurred on the Fantasy Flying Creatures criterion statement, "Exhibits an obvious mood (e.g., mean, angry, sad, happy)." In many cases subjects awarded themselves high marks for this criterion, and when asked to explain their creatures' expressions, they gave descriptions far different from the researcher's interpretations. The researcher viewed the expressions as subtle and bland in contrast to subjects' claims of highly expressive moods.

Students were more accurate when they related an overall assessment of their pictures. They were perceptive about which were their most and least successful drawings, but this was not reflected in their point ratings. When subjects viewed particular drawings as their poorest, the numerical ratings they gave the drawings did not reflect their low evaluations, but remained similar to higher scored pictures.

Independent judges and researcher differences in scoring. Several issues arose concerning the disparity between the researcher scores and the independent judges' ratings as well as the differences among the latter's assessments. In spite of the high correlation among the judges--.91, .94, and .97--the adequacy of the evaluation instrument was questioned. It was believed that inclusion of sample drawings would increase consistency among the independent judges (Golomb, 1973; Grossman, 1979). Although the sample
drawings did enhance the judges' consistency with each other, the significant differences between their scores and the researcher's prompted speculation that at times the sample drawings were misleading or inappropriate for a specific performance criterion. For example, the sample drawing which illustrated a 5 rating on the size criterion in The Great Horned Owl drawing task displayed an extremely large owl. This extreme example for a 5 rating caused independent judges to award 4 ratings to drawings which the researcher considered worthy of 5's. Therefore, the sample did not correctly illustrate the researcher's view of a 5-level size.

In addition, the independent judges may have been misled by criteria whose sample drawings did not illustrate the extreme ratings, 1 and 5. For a number of criteria, sample drawings were not available to provide examples of the lowest and highest ratings. In these instances, samples illustrated a 2 and a 4 rating or a 3 and a 5 score for a criterion.

Another instrument issue was the use of a 5-level rating system. While this system was recommended by other art educators (Rouse, 1965; Salome, 1965), when the researcher scored drawings, she found the 5-level restrictive and from time to time used .5's as well, thereby changing her ratings to a 9-level system: 1, 1.5, 2, 2.5, 3 3.5, 4, 4.5, and 5. The researcher used this system during her scoring to determine how often the expanded scale contributed to more accurate scoring of a criterion. Although she used .5 ratings
minimally (124 times), the researcher found that when comparing her ratings with the three independent judges', in many cases where they scored a criterion with 2, 2, and 3 ratings, the researcher's score was 2.5. It appeared the availability of .5 on the evaluation instrument would have increased agreement among the independent judges' scores and between them and the researcher.

The independent judges may have also had difficulty agreeing on the definition of certain criterion statements. One judge expressed problems when rating the fantasy drawings for originality. Although this criterion has been frequently used in other scoring systems (Lewis & Mussen, 1969; Rouse, 1965) and was discussed during their training sessions, its open-ended nature created a higher level of variance among the judges and with the researcher. Further statistical analysis of the judges' scores on all criteria in the drawing tasks could yield further clarification of this issue.

An additional concern is the issue of adequate training. Before each judge scored test pictures from one drawing task, the researcher provided several sample drawings for practice scoring of criterion statements. After the researcher defined each statement, the judge rated the sample drawing. When the judge's score disagreed with the researcher's rating, the researcher explained the rationale for her score. After several samples were discussed in this manner, the judge began to score the test drawings.
Evidently, greater clarification was needed on the criteria where independent judges' ratings varied significantly from the researcher's appraisals. Analysis of The Great Horned Owl drawing criteria indicated significant differences between the researcher and the independent judges on five of the six drawing criteria. Analysis of the other drawing tasks' criteria may have yielded similar findings. Perhaps if the independent judges had been trained simultaneously, scoring disagreements with the researcher would have been resolved. In addition, agreement between the independent judges and the researcher on interpretation of each criterion level would have been enhanced if the evaluation instrument had provided written explanations for each level of the criterion (Rouse, 1965).

Discussion of Observational Data

Knowledge of research on spontaneous peer learning in the classroom (Cooper et al., 1982a, 1982b) led to observation of subjects in this study to investigate how their communication affected their art learning as manifested by their drawing performance. As analysis of audio and videotapes of the testing sessions progressed, it became apparent that, in addition to the peer learning component, both the nature of peer interaction and of their communication with the researcher varied significantly among the three feedback groups studied. And it became increasingly evident that
relationships existed among the feedback method subjects received, the drawing task being completed, the nature of interactions between subjects, and their communication with the researcher. This was determined by coding the frequency of kinds of talk as identified by the Communication Typology which evolved through the course of the analysis.

Similarities and differences were noted between the final form of this typology and those from other peer studies. Several of the "instructional episodes" categories used by Cooper et al. (1982a, 1982b) became part of the current category system, but further expansion of the categories was necessary to fit the range of behaviors observed during the testing sessions. Alexander's (1984) art education typology also seemed limited when compared to the final list of categories in the present study. Similarities were also evident with a portion of Swann's (1985) typology derived from preschoolers' interaction during art time. Yet the structure of her categories seemed restrictive for this study. And while not a peer study, Taunton's (1985) typology of teacher/student dialogues was related to categories this study found for conversations by subjects directed toward the researcher. But, again, her categories were less extensive--four in contrast to nine types used in this investigation. It is evident that a communication typology developed in one study can not be transplanted into another investigation when analyzing conversations in the classroom. The final form of a
typology is dependent on research questions being asked by the researcher and on the context of the specific situation being studied.

Peer Interaction and Conversations With the Researcher

Peer interaction. Significant differences in peer interaction included the following:

1. Minimal feedback subjects generated more supportive comments, but they also evaluated each other more often. They also gave the largest number of learner bids and showed their pictures more often to each other. Minimal feedback subjects questioned others about their pictures more often.

2. Teaching bids were more prevalent in both the minimal feedback and questioning feedback groups. These two groups also exceeded the directive feedback group in talk about materials.

3. Subject matter was discussed most often in the question feedback group.

4. General comments about their pictures took place more often in the minimal and directive feedback groups, and comments about others' pictures were also more frequent in these two groups. They also made the largest number of self-evaluative statements.

5. Directive feedback subjects looked at others' pictures far more frequently. They also generated the greatest number of management statements.
Conversations with the researcher. Significant differences in subjects' communication with the researcher included the following:

1. Questioning feedback subjects showed their pictures most often to the researcher.

2. In several categories both questioning feedback and directive feedback groups exceeded the minimal feedback group: (a) commented about their pictures, (b) asked the researcher's opinion, (c) talked about the subject matter, and (d) made self-evaluative statements to the researcher.

3. In other categories the directive feedback group surpassed both the minimal feedback and questioning feedback groups: (a) discussed procedures, (b) commented about materials, (c) asked the researcher for assistance, and (d) watched the researcher talk with another subject.

Conclusions. These findings indicated that the major portion of minimal feedback subjects' communication was with their peers rather than with the researcher. Interaction with the researcher comprised only 11% of their conversations. Therefore, they looked to each other for feedback and assistance more often than the other groups. This meant that a greater percentage of minimal feedback subjects' interactions had teaching/learning connotations.

Thirty-three percent of questioning feedback subjects' communication was directed toward the researcher. They primarily showed their pictures and commented about them as well
as asked for her opinion and discussed procedures with her. It appeared that less peer teaching was taking place in this group. Instead, a large portion of their peer talk consisted of comments about subject matter, talk related to materials, and non-evaluative remarks about their drawings. They turned far more often to the researcher for feedback rather than to their peers.

The directive feedback group was highly verbal, both with their peers and with the researcher. Their peer interaction was dominated with talk about their pictures, looking at others' drawings, commenting on the subject matter, and management statements. In general, their interaction with the researcher indicated greater reliance on her to listen and respond to their questions or comments.

Factors Affecting Group Differences

Teacher Feedback. Variations among the three groups provided evidence that the feedback method each group received had affected a portion of their peer interaction as well as the amount of talk directed toward the researcher. The categories which appeared to be influenced by teacher feedback included teacher and learner bids, inquiries to the researcher for her opinion or advice, or talk with her about materials or subject matter. Evaluative statements also seemed to be affected by the form of teacher feedback.

Because minimal feedback subjects received few responses from the researcher, they talked with each other more often
about their work, offering advice or asking for assistance. If evaluative comments were not received from the researcher, they provided them for their peers. Likewise, among questioning feedback subjects, the lack of concrete suggestions or advice from the researcher, may have contributed to their peer teacher bids. The differences between the questioning feedback group and the others were less readily explained, for in some categories of talk they were similar to the minimal feedback group and in other areas they mirrored the directive feedback group. Because the directive feedback group received large amounts of advice, directives, and suggestions from the researcher, they relied less on their peers for assistance. So their peer interaction focused on non-teaching talk about their pictures, procedures, and materials.

The drawing task. Differences in communication within the three groups was also affected by the types of drawing tasks: observation, fantasy, or observation/fantasy. Chi square analyses on frequencies of types of talk generated across drawing task types indicated several significant differences. These differences occurred more often in peer interaction than in communication with the researcher.

First, subjects talked about subject matter most often during the observation/fantasy drawings. This was due to their responses to the large number of illustrations they
used while drawing sea creatures and animals.

Second, frustration gestures by subjects were more apparent during both the observation and observation/fantasy drawing tasks. Significantly higher anxiety levels occurred during these testing sessions.

And third, subjects talked about their pictures more often during the fantasy and observation/fantasy drawing tasks, with the latter dominating the talk. This may have been due to the fact that during the observation drawing tasks, subjects were absorbed with responses to the three-dimensional subject matter (the horned owl and the outerspace toys) and evaluative comments about their drawings. Therefore, they spent less time offering descriptive comments about their pictures. Moreover, the greater complexity in the observation/fantasy drawings may have stimulated conversations about their content.

Finally, far greater self-evaluation took place when subjects were completing the observation and observation/fantasy drawing tasks. When comparing their drawings to real objects, either three-dimensional forms or two-dimensional illustrations, their concern for verisimilitude increased. Subjects were less judgmental of their fantasy drawings which were not intended to be naturalistic.

The one significant difference in communication with the researcher related to drawing task showed that subjects directed self-evaluative statements more often to her when
completing the observation and observation/fantasy drawings. Again, this reflected subjects' concerns for accuracy when they drew from observation.

Composition of the group. Differences in communication throughout the testing sessions were also influenced by the structure of each group. Several illustrations of this factor are described below.

One insecure member of the minimal feedback group tended to show his picture more often, both to his peers and to the researcher, to seek approval. Another subject in the group exhibited high levels of anxiety about her drawing ability and frequently looked at others' pictures as she pondered what to do with her drawing. Her behavior dominated the frustration gestures category. A third subject, though not the best drawer in the group, offered teacher bids to others more often than anyone else. Her assertive nature seemed to influence other group members.

In the questioning feedback group, one subject asked for the researcher's opinion numerous times, again reflecting a degree of insecurity. If he had not been a member of this group, this category's frequency would have been very low. One group member also exhibited strong management behavior; therefore, frequency of management comments would have been lower if she had not been in the group. Another group member was highly critical of his efforts. This resulted in acting out his anxieties through disruptive
behavior, which then elicited management statements from the manager as well as many supportive remarks from the researcher.

A number of subjects in the directive feedback group were highly self-critical to both their peers and to the researcher. One of the self-critical subjects asked for a great deal of assistance from the researcher, and he also sought his peers' attention through humorous antics. His attention-getting behavior triggered other joking remarks by others toward their pictures or directed to each other. These behaviors then elicited numerous management statements by a more serious member of the group. Therefore, it is assumed that if "the entertainer" had not been a member of the directive feedback group, their interaction would have greatly altered.

The classroom teacher. The attitudes of subjects' regular teachers regarding peer interaction may have also influenced their behavior. For example, the lower amount of teacher and learner bids than had been expected may have indicated that their classroom teachers did not encourage this type of interaction during their seatwork. And if subjects were unaccustomed to offering teacher bids, that may explain why all learner bids did not receive assistance from their peers. Cooper et al. (1982b) had difficulty finding a public school second grade classroom in which spontaneous peer learning was encouraged. If students do not tend to
help each other in their regular classroom, it is unlikely they will greatly alter their behavior during a short time with a researcher "teacher."

The extremely quiet groups may have been influenced by teachers who admonished them to "behave" with the researcher. And the most verbal groups during testing sessions may have come from classrooms with highly repressive restrictions on peer talk. They took advantage of the opportunity to interact with each other with excessive talking.

**Summary.** The form, content, and amounts of peer interaction and communication with the researcher were affected by four factors: the feedback method administered to a group, the nature of the task, the composition of the six-member group, and their classroom teacher.

**Findings Compared With Other Art Education Peer Studies**

Alexander (1984) found among her first grade students that the content of conversations varied with the type of art lesson being conducted. This was also indicated in the present study. She learned that concern about verisimilitude was dominant during an observation assignment. This was also apparent in the present study. Other comparisons with Alexander's study are difficult to make because of the broad categories in her typology and the lack of concrete data in her report.

The results from the present study conflicted with
Swann's (1985) study of peer influence among preschoolers. She found that peer teaching was done by children with lesser status as an attempt to raise their status with other children. This was not indicated among the 5th graders in this study. In addition, her results showed that children's social status was recognized when their art was copied by others. Among the older subjects it was noted that they copied from peers they considered better drawers than themselves. Swann also found that when preschoolers sought approval from others on their pictures, they did not often receive it. However, the present study indicated that subjects were generally supportive of each other and offered positive evaluations or praise of peers' drawings. The age differences between Swann's subjects and participants in this study may account for the distinctions reported above.

**Conclusion**

The primary purpose of this study was to determine the effects of various forms of teacher feedback on students' drawing performance. Results indicated that differences in drawing behavior can not be attributed to teacher feedback alone. Students' drawing performance is affected not only by their responses to teaching behaviors, but also by previous knowledge and expertise, attitudes about their abilities and about the drawing task, and influence of peers and other teachers.
The lack of significant differences among subjects' drawing scores and analysis of observational data also revealed that teaching behavior can not be consistently maintained with all students, but is influenced by many factors in the classroom. This conclusion mirrors Brophy and Evertson's (Green & Harker, 1982) statement:

Effective teaching is not simply a matter of implementing a small number of "basic" teaching skills. Instead . . . effective teaching involves orchestration of a large number of factors, continually shifting behaviors to respond to continually shifting needs. (p. 197)

Brophy and Good (in press) also stress the relationship between context and effective teaching:

What appears to be just the amount of demandingness (or structuring of content, or praise, etc.) for one class might be too much for a second class but not enough for a third class. Even within the same class, what constitutes effective instruction will vary according to the subject matter, group size, and the specific instructional objectives being pursued. (p. 133)

Therefore, because of the various elements affecting both student and teacher behaviors, it is difficult to obtain complete understanding of feedback method effects through experimental studies.

However, understanding was enhanced in this study by using multiple research methods. This supports Sevigny's (1981) argument that such procedures can shed more light on complex educational issues. More recently, Marshall and Weinstein (in press) agree with this view, for they found that using both quantitative and qualitative analyses gave
them a more complete picture of factors influencing teacher expectations among students.

The present study provided additional data to confirm the complexity of the teaching-learning process. This process is not a simple, linear structure--teacher influences student, who, in turn, influences the performance (or product or learning). But rather, teacher and student behaviors occur within multi-dimensional layers of circular influences amidst various contextual factors.

**Recommendations For Further Research**

Recommendations for further research are suggested for the following areas: drawing tasks, teacher feedback, task order, peer interaction, judging of art products in experimental research, and evaluation procedures.

**Drawing Tasks**

Additional research is needed on drawing from observation, i.e., copying from both two- and three-dimensional models. Some research has indicated the value of using two-dimensional models (instead of three-dimensional) with young children (Yakel, 1979) which contradicts recommendations of other art educators (McFee & Degge, 1977; Wachowiak, 1985). Subjects in the present study exhibited mixed responses to such tasks. Therefore, it would be useful to determine what types of two-dimensional copying contributes to children's graphic development--either as exercises or as a means
toward individual solution to a drawing problem. In addition, further exploration is needed of the time element for such tasks, i.e., at what age or stage of development certain types of copying tasks are more appropriate. And finally, art educators need to learn how the use of two- and three-dimensional models can complement each other in the elementary art curriculum.

Teacher Feedback

In the few studies on teacher feedback with elementary school age children, teachers or art education students were trained to use specific feedback strategies. In the present study it was difficult to experimentally control teacher behavior—in this case, the researcher's behavior—to use three different feedback methods consistently with all subjects. It is speculated that mixed results from other feedback studies were partially due to inconsistent behaviors by teachers designated to administer specific feedback to experimental groups. The present study's inconsistencies has led to a cautious attitude about designing experimental studies which train teachers to use behaviors which are not their natural styles, and, moreover, to use these behaviors consistently with all subjects. Joyce (1984), though not discussing this specific issue, describes the difficulties teachers have when they attempt to change or add to their repertoire of teaching methods. Based on this evidence, it
seems likely that teachers trained to use specific feedback methods in various studies may not have effectively internalized these behaviors to the extent that they used them consistently. In addition, reactions to individual student needs may also have brought about alterations in a feedback method. Therefore, several naturalistic approaches to the study of teacher feedback are recommended.

The behavior of master teachers. One naturalistic approach is to locate children who excell in art performance, e.g., those who have received State honors or Scholastic art awards. Several of their art teachers might be selected to become the subjects of indepth studies which observe them in their classrooms. Researchers could investigate whether these teachers exhibit similar feedback behaviors as well as describe and interpret the kinds of feedback strategies they use. Researchers might also seek to determine if their feedback was a strong influence on student performance or how other factors affected student behavior as well, e.g., how objectives were structured for a studio lesson, if the teacher provided clear expectations, or if demonstrations were timely and well done. Both quantitative and qualitative methods could be used to study these teachers. For example, frequency counts could be made of their rate of concrete suggestions, the kinds of questions asked, or the amount of time spent talking with each student about work-in-progress. Ethnographic methods could be used to record teacher
behaviors, interview teachers and students, note the classroom environment—in other words, to look at the context of the instructional event.

A second approach, which might be even more informative, is to again locate master teachers, but rather than observe teachers in different lessons, assign these teachers identical lessons to teach to compare their performance and their students' products. This method has been recommended by Brophy and Good (in press) who maintain that the best way to look at teaching methods is to hold the curriculum constant. They claim that results from looking at two teachers teaching two different lessons are confounded by differences in lesson objectives, materials, and other factors that differentiate the two assignments.

A third approach is to study one master teacher and observe his or her behavior with various grade levels. For instance, a researcher could observe an elementary art teacher working with 1st, 3rd, and 5th graders and compare feedback strategies used among the three age groups. Here, too, it would be beneficial to compare how similar lessons are taught.

An in-depth look at one feedback method. Researchers need to more closely study one feedback method, e.g., questioning strategies or directive feedback. For example, a researcher might locate a teacher who emphasized
questioning feedback and study the types of questions asked and the effects of those questions. They could also look closely at how students respond to different kinds of questions. Or directive teachers might be studied to investigate the effects of this type of feedback. Or teachers might be studied to learn how they use several forms of feedback, depending on the needs of students, demands of the task, and lesson objectives.

**Task Order**

Little attention has been given to task order in art education studies. Perhaps it is more feasible to consider task order a curriculum issue, i.e., what is the appropriate sequence for tasks in a unit or over a longer period of time? When planning a semester course of numerous curricular intentions, art educators have little knowledge on which to base decisions about the order of their lessons. Therefore, further study of larger units of instruction is needed, research Brophy and Good (in press) consider essential to increased understanding of the teaching/learning process.

**Peer Interaction**

Further research on peer interaction is needed at various grade levels with additional types of art lessons. The findings in this study may be related only to upper elementary school age children's behavior. Further study is necessary to gain additional knowledge of effects of peer
interaction on students' art performance. It will also be useful to learn more about the effects of student communication with teachers on the latter's subsequent feedback.

The Independent Judge Issue

Studies which examine subjects' art products have traditionally used independent judges to evaluate these products. This has been done primarily as a means to control biases which might occur if the researcher judged them. This procedure is intended to enhance the scientific objectivity of the study. However, a case might be made for researcher scoring. If the researcher presents and teaches the tasks during a study, only he or she has complete understanding of the meaning of performance objectives, how they were introduced, and the events which took place during the art making phase of these lessons. Asking other educators to judge the products of these sessions is not dissimilar to a high school art teacher asking another art teacher in the district to grade the former's student art projects to obtain more objective evaluations. Further study is recommended to clarify the advantages of using independent judges versus researcher judging in experimental studies of art products.

The Evaluation Issue

Research on evaluation continues to be a neglected issue. Shulman (1979) provides thoughtful commentary on the reluctance of arts educators to establish solid criteria for
assessing student performance. Based on his observations at a CEMREL conference on teaching in the arts, Shulman (1979) critically responded:

By what standards is the classroom teacher to judge the quality of artistic performance by pupils or the aesthetic qualities inherent in particular episodes of instruction? . . . . Arts specialists . . . were extremely reluctant to state the specific standards or criteria they employed to render their judgments. It was asserted that these judgments were subtle and complex, not capable of propositional formulation. Nevertheless, they maintained the expectation that teachers are obligated to judge their own teaching on the basis of these undefinable standards. How are teachers to employ standards they do not understand, have not been taught, and have not had an opportunity to learn? (p. 257-58)

If the recent Getty Foundation's discipline-based art education philosophy continues to influence the field, their recommendations for improved evaluation procedures must be addressed by those art educators who practice laissez-faire evaluation methods (Day, 1985). For little art education literature exists which addresses the use of evaluation procedures related to learning objectives.

Implications of This Study for Art Education

In recent years, fewer education researchers adhere to the philosophy that research must be highly generalizable or prescriptive. Instead, increasing numbers of researchers favor research that is meant to inform rather than to prescribe (Brophy & Good, in press; Fenstermacher, 1981; Koehler, 1979). They believe that research may more likely change
practice when the former's purpose is to increase the knowledge base on an educational issue instead of admonishing educators about what ought to be (Koehler, 1979). They also maintain that research findings must be examined within the context they occurred, for effective instruction varies with changes in context, e.g., differences among groups, individuals within a group, subject matter, segments within a lesson, and instructional objectives. After gaining additional knowledge through reviewing research findings, teachers may then analyze and appraise their own behaviors, compare the context of the research situation with their own, and make decisions on whether to make changes in their teaching practices. With this increased knowledge and understanding, educators can choose to accept or reject research findings (Fenstermacher, 1981).

With this view in mind, the intention of the present study was not to generalize or prescribe, but to add to the knowledge base in art education about the teaching/learning process during drawing lessons with 5th grade students. Art educators may gain additional insight in the following areas:

1. Feedback methods during studio activities.
2. Lesson content of six drawing tasks developed as a thematic unit, Creatures in Art.
4. Sample drawings by 5th grade students which illustrate various performance levels for the drawing tasks.
5. Self-evaluation procedures used with upper elementary school age children after completion of the drawings.

6. The nature of peer interaction and communication with the teacher (researcher) during these drawing lessons.

7. Relationships among several schooling components—the teacher, the task, the group, and the students—which affected both communication and performance during these art lessons.

Using the above information, readers may compare their teaching strategies to those discussed and used in the study, reflect on types of drawing tasks and animal drawing themes they have used with their students, contrast these performance objectives with their own, compare the illustrated drawings with their students' pictures, consider the use of self-evaluation procedures, and ponder the communication taking place in their own classrooms.
This study had a multiple research perspective. The experimental component investigated whether three different forms of teacher feedback administered to 5th graders during the art making phase of six drawing tasks would result in significant differences in their drawing performance. A secondary concern was to look at differences in the order in which subjects received the drawing tasks to learn if their drawing scores would be affected by such alterations. Therefore, the experimental design was a 3 (Feedback Method) x 3 (Task Order) x 6 (Drawing Task).

The intention of the observational portion of the study was to observe and interpret both peer interaction and subjects' communication with the researcher during the art making segment of the drawing lessons. This was completed through analysis of audio and videotape recordings of the testing sessions. Additional contextual data were collected with a questionnaire and post-treatment interviews conducted with each subject and with their classroom teachers.

Subjects

Fifty-four 5th grade students were randomly selected from nine 5th grade classrooms in three Columbus, Ohio, elementary schools. They were randomly assigned to one of the
three feedback method cells, but for the purposes of studying peer interaction, each 18-member feedback cell was further divided into three 6-member groups. Therefore, the study consisted of nine experimental groups, each containing three girls and three boys, with three groups receiving one of the feedback methods and one of the task orders.

**Procedures**

**Feedback method.** Three feedback methods were designed for the study—minimal feedback, questioning feedback, and directive feedback—each developed on the basis of three differing philosophies in art education of how children best learn to make pictures. Subjects in the minimal feedback groups received the least amount of feedback which was primarily in the form of concrete and nonspecific praise statements. This strategy was to encourage individual decision-making. Questioning feedback subjects received mainly questions from the researcher as a means of encouraging reflection about their drawing and reinforcing the performance objectives for each drawing task. The majority of statements given to directive feedback subjects were explanations, suggestions, and directives. This concrete feedback was to further emphasize performance objectives and provide additional information to enhance subjects' drawing performance. Both the questioning feedback and directive feedback groups received concrete praise.
**Drawing tasks.** Three types of drawing tasks structured thematically as Creatures in Art were administered to subjects—observation, fantasy, and observation/fantasy. During the observation tasks they drew from three-dimensional models (The Great Horned Owl and Outerspace Toys). The fantasy drawing tasks focused on imaginary conceptions (Fantasy Flying Creatures and Outerspace Creatures). Procedures in the observation/fantasy drawing tasks consisted of copying two-dimensional illustrations as well as inventing the compositions and a portion of the content in the pictures (Underwater World of Sea Creatures and The Peaceable Kingdom).

**Task order.** Three levels of task order were devised for the nine groups. One task order began with an observation drawing, The Great Horned Owl; the second task order began with a fantasy subject, Fantasy Flying Creatures; and the third task order also began with a fantasy assignment, Outerspace Creatures. Each of the three small groups within one of the feedback methods received a different order of drawing tasks.

**Testing sessions.** Subjects attended one pre-treatment session during which they were introduced to the researcher and the project, became familiar with the recording equipment, responded to the Student Art Attitude/Information Questionnaire, and completed drawings based on instructions to draw a picture containing at least four animals. This meeting was followed by six 60-minute sessions, one for each
drawing task. The study concluded with interviews with each subject and with their classroom teachers.

**Experimental Results**

Subjects' drawings were assessed with criterion-referenced measures based on performance objectives delineated for each task. The evaluation instrument contained two sample drawings exemplifying high and low ratings (on a scale of 1--low--to 5--high) for each criterion statement. The mean scores of three independent judges' ratings were complemented by subjects' self-evaluations and the researcher's evaluation of the test drawings. These three Judge levels were used in a portion of the data analysis to compare scoring of the pictures.

Analysis of variance procedures were used to compare the differences among means according to drawing task, task type, feedback method, task order, and judge type. Post hoc analyses were completed on means that indicated significant main effects and interactions.

**Feedback Method Effects**

Directive feedback mean scores were expected to significantly exceed the other feedback levels, but analysis of the independent judges' ratings indicated only one significant main effect (The Great Horned Owl Drawing Task). When the three Judge levels were used in the analysis, the Fantasy
Flying Creatures Drawing Task also yielded a significant feedback method main effect. Directive feedback subjects excelled over both questioning feedback and minimal feedback subjects in The Great Horned Owl Drawing Task, and they were also superior to minimal feedback subjects in the Fantasy Flying Creatures Drawing Task. The other drawing tasks showed little variation among the feedback method means.

In several instances Feedback Method interacted significantly with Task Order, Judge, or both variables. Interactions with Task Order indicated differences between the small groups before their scores were collapsed to form three Feedback Method means. Interaction with the Judge variable meant that inter-rater inconsistencies took place among the three Judge levels when compared across feedback methods.

Several factors were believed to have contributed to the lack of significant differences in subjects' drawing performance.

1. The difficulty in maintaining three distinctly different feedback methods when they were practiced and in administering a feedback method consistently with all groups receiving that method.

2. Positive and negative influences of subjects on each other, e.g., the effects of talented, self-critical, or disruptive subjects on their peers.

3. Missing scores of subjects who attended irregularly.
4. The large number of unfinished drawings.

5. The use of performance objectives with all subjects, which positively affected minimal feedback subjects.

6. Positive and negative influences of subjects' classroom teachers, e.g., enthusiasm for and regular teaching of art lessons or repressive attitudes about peer interaction.

7. School events which affected student behavior, e.g., the week of city-wide testing, field trips, and other end-of-the-year activities.

Task Order Effects

Task Order main effects were indicated in three drawing tasks (The Great Horned Owl, Outerspace Toys, and Outerspace Creatures). However, analysis of the significant interactions with Feedback Method showed that superior Task Order means varied with the feedback method subjects received. In essence, Task Order effects were small group effects, for only one group of six subjects received one feedback method and task order combination, e.g., Directive Feedback and Task Order 1. Therefore, the Task Order effects accounted for differences among the small groups.

The Judge Variable

Results of the Judge variable analysis indicated that subjects consistently rated themselves highest among the Judge levels. They were followed by the researcher's mean scores which often exceeded the independent judges'
appraisals. The high evaluations by subjects were attributed to the fact they did not have access to the sample drawings for each criterion statement used by the other two Judge levels. Therefore, they could not relate their opinions to the standards set by the researcher.

Several factors may have contributed to disparity between the researcher and independent judge scores: (a) a number of misleading sample drawings, (b) inadequate understanding by independent judges of the researcher's definitions of each rating level for a criterion, (c) lack of written definitions accompanying each criterion level on the evaluation instrument, and (d) independent judges' lack of contextual information (e.g., which drawings were unfinished and which drawings were partially copied by others).

Observational Results

Analysis was completed on audio and videotaped recordings of three small groups, each having received a different feedback method. Verbal and nonverbal behaviors were coded according to the Communication Typology whose categories evolved throughout the analysis. It was evident that many categories of peer interaction varied significantly among the three groups and that a number of these differences seemed to be related to the form of feedback received or the type of drawing task.

It was found that when subjects received little feedback
from the researcher, a larger percentage of their conversations were with each other about their pictures—asking each other's opinion, seeking advice, and making evaluations. Subjects who received large amounts of feedback from the researcher tended to rely on her for advice and suggestions, and to talk to her more often about their pictures.

The data also showed that subject matter was discussed more often during observation/fantasy drawing tasks when subjects worked with numerous illustrations and photographs. They also made greater numbers of self-evaluation comments and frustration gestures during observation and observation/fantasy drawing tasks when verisimilitude dominated their concerns about their drawings.

It was also speculated that peer interaction—the amount, the form, and the content—was also affected by the composition of a particular group and by subjects' classroom teachers.

Conclusion

This study confirmed the advantages of using more than one lens when looking at instructional issues in art education. Investigating teacher feedback, drawing performance, and communication during the art making process revealed relationships among several factors in the art teaching/learning process which do not surface when studying one variable. It was evident that administration of the
feedback methods was influenced by responses to contextual factors and that other contextual factors affected student behavior as well. Students are influenced not only by the feedback they receive from their art teacher, but also by the task, peers, their classroom teachers, and school events. These elements come together to form the learning context. Art teachers are influenced not only by their feedback strategies, but also by the demands of the task, and by behavior of individual students and of the group. Although educational research shows that teacher feedback contributes to student achievement, this study indicated it is difficult to apprehend the extent it is a determining factor in children's drawing performance.
APPENDIX A

STUDENT ART ATTITUDE/INFORMATION QUESTIONNAIRE
Student Art Attitude/Information Questionnaire

1. Does your teacher do art projects with your class? _____ If you answered "yes," how often do you work on them?

What were your favorite projects? Why were they your favorites?

What were your least favorite art projects? Why were they your least favorites?

2. Did your class have an art teacher last year? _____ If you answered "yes," do you remember a favorite lesson? Describe what you did.

Why was it a favorite?

3. Have you ever attended an art class which met after school or on Saturday? _____ If you answered "yes," what type of class was it?

4. Have you ever been to an art museum? _____ To an art gallery? _____ More than once? _____ Who did you go with? If you have been to an art museum, what did you like best?

5. Do you ever do art at home? _____ If you answered "yes," describe what you do.
6. Do you have a sister or brother who is interested in art? _____ If you answered "yes," what do they like to do?

7. Does one of your parents have art as a hobby? _____ If you answered "yes," what does she or he do?

8. What are your parents' hobbies or interests? How do they like to spend their free time?

9. How do you like to spend your free time? List five things you like to do.

10. How do you rate yourself as an artist?
    terrific ____
    very good ____
    o.k. ____
    not too good ____
    terrible ____

11. Why did you agree to attend these art sessions?
APPENDIX B

THE SIX DRAWING TASKS
Objectives

Students will:

1. Draw one large owl that fills the paper space.

2. Observe the owl characteristics and record them in the drawing.

3. Invent ways to depict the owl's patterns and textures.

4. Use a variety of lines and marks in the drawing.

5. Strive for correct proportion of the owl, i.e., attempt to make the various sizes of owl parts go together.

6. Use a variety of colors in the drawing.

Materials

A taxidermied and mounted great horned owl

12 x 18 inch light brown construction paper

Medium point colored markers: black, dark brown, medium brown, reddish, brown, and yellow ochre

White conte' crayons and white colored pencils

Procedure

1. Ask students to tell about different ways artists get ideas. After they mention several, then focus on "looking at something" to make a picture. Talk about reasons artists choose to work in this manner.
2. Explain that they will be using this method to draw the horned owl brought to the session.

3. Ask the group what important characteristics or features of the owl must be included in their drawing (e.g., the horns, beak, talons, and wings).

4. Explain that each of them will have a slightly different view of the owl and that they will be drawing their interpretations of it.

5. Demonstrate the beginning of an owl drawing, starting with the black marker to draw its basic contours. Throughout the demonstration explain each of the objectives. For example, when drawing a patterned section of the owl, explain the pattern objective; when adding several colors to the drawing, talk about the importance of using a variety of colors. Also tell students they can either draw the wooden perch to which the owl is attached or they can invent a branch for him to sit on. Stress careful looking and that they not draw any part until they look first at the owl. Remind them that the teacher has had a great deal of practice drawing owls and many years of experience in drawing from observation. They are learning to draw in this manner and should not compare their drawings to the teacher's. They will all have a degree of distortion in their drawings. They are merely to do their best.

6. Distribute drawing materials and determine whether each student has adequate space at his or her drawing area.
Drawing Task #2: Fantasy Flying Creatures

Objectives

The student will:

1. Draw a large creature that fills the paper space.
2. Create an original creature, unlike any they have seen before.
3. Create unusual part or shapes for the creature.
4. Decorate the skin or surface of the creature in a pleasing way (e.g., patterns, scales, bumps, or hairs).
5. Use an obvious color plan or scheme for the creature.
6. Give the creature an obvious mood (e.g., mean, angry, sad, or happy).

Materials

12 x 18 inch white drawing paper

One cigar box of approximately 20 colored markers per subject (each box containing various marker tips—medium point, fine point, and brush tip)

9 x 12 manila paper

Visual Resource Materials


Procedure

1. Mention that in the last lesson they drew from observation and that today another means of representing ideas will be used—drawing fantasy or imaginary ideas.

2. Explain that they will be drawing fantasy flying creatures and that they will first look at several books to help them get ideas for their creatures.

3. First show color photographs and illustrations of unusual real birds. Stress unusual appendages on their heads, variety of beak shapes, and color and patterns on the birds.

4. Next show photographs of birds in flight to increase awareness of the structure of wings.
5. Then show illustrations from a book of imaginary birds and discuss what the artist did to make them so unusual.

6. Finally, look at artists' representations of fantasy flying creatures, some of which include winged dragons.

7. Briefly demonstrate an unusual beginning for an imaginary creature and while doing so mention the objectives. For example, when adding color to the drawing, talk about repeating colors to create a color plan for the creature; then demonstrate this procedure in the drawing.

8. Write a list of the objectives on the back of the drawing to review the objectives before they begin.

9. Distribute drawing materials. Students will not refer to the books while they draw. They may use manila paper on which to practice their ideas before starting on the larger paper.

Drawing Task #3: Outerspace Toys

Objectives

The student will:

1. Draw a toy so that it fills most of the paper or add one or more toys to fill most of the paper.

2. Draw all the parts and details of the toy.

3. Have the sizes of the different parts of the toy fit together correctly (proportion).
4. Invent an obvious color plan or scheme for the toy.

Materials

An assortment of plastic and rubber outerspace toys
12 x 18 inch white drawing paper
One cigar box per subject containing approximately 20 assorted colored markers with various tips.

Procedure

1. Explain that this will be an observation lesson, looking at outerspace toys to draw them (If this is their first observation lesson, review why artists choose to do this drawing method).

2. Begin a demonstration drawing of one of the toys and explain the objectives. First, stress drawing a large toy so that there will be room for all the details and in order to make it important in their picture. After drawing a small section, ask the group what should be drawn next. Then draw a portion of that and explain proportion (as review if they have already drawn the owl or as new information if this is their first drawing lesson). Ask them how many heads tall the creature is being drawn. Explain that this information will help them determine how much space their toy will use on the paper after the head is drawn. Ask them to explain the color scheme on the toy and then demonstrate color changes in the drawing to emphasize the objective of inventing a new color scheme for the toy.
3. Review the objectives by writing a list of them on the back of the demonstration drawing.

4. Remind them that they will all have a degree of distortion in their drawings because they are inexperienced in drawing outerspace toys and that this is like a practice session, learning to look very closely at an object to draw what they think they see.

5. Distribute drawing materials while students move to the table displaying toys to pick the one they wish to draw.

**Drawing Task #4: Outerspace Creatures**

**Objectives**

The student will:

1. Draw the creature so that it fills most of the paper.

2. Create an original creature, unlike any they have ever seen.

3. Create unusual parts or shapes for the creature.

4. Decorate the skin or surface in a pleasing way (e.g., patterns, scales, hairs, or bumps).

5. Invent an obvious color plan or scheme on the creature.
Materials

12 x 8 inch white drawing paper
9 x 12 manila paper
One cigar box per student containing approximately 20 assorted colored markers with various tips.

Visual Resource Materials


Procedure

1. Explain that they will again use fantasy ideas to create their picture—an outerspace creature drawing.

2. Ask students to describe outerspace creatures they have seen in movies or cartoons.

3. Show several photographs of outerspace creatures and robots seen in recent science fiction movies, e.g.,
E.T., Return of the Jedi, and The Black Hole; and comment on their characteristics. Show photographs of other science fiction creatures they are not familiar with.

4. Briefly demonstrate the beginning of an outerspace creature on the manila practice paper which may be used for development of ideas. During the demonstration mention each objective. For example, stress the large size of the creature as the drawing is started; create an unusual shaped head and mention the objective about planning unusual parts for the creature. Finish by listing the objectives on the back of the demonstration drawing. This will reinforce to the students what they are to consider and think about as they work on their drawings. Remind students that their drawings will be different from each other's and will be different from the teacher's.

5. Distribute drawing materials and practice paper to those who wish it. Students will not refer to the book illustrations while they draw.

**Drawing Task #5: Underwater World of Sea Creatures**

**Objectives**

The student will:

1. Draw a well-filled composition.

2. Draw a variety of sizes of sea life.

3. Draw a variety of fish shapes (from observation of photographs and illustrations of sea creatures).
4. Draw a variety of patterns on the fish.

5. Invent an obvious color plan or scheme for their sea creature composition.

Materials

Color photographs and illustrations of exotic aquatic fish, other sea creatures, and plant life (cut from a book and mounted individually on small tag board sheets)

12 x 18 white drawing paper

One cigar box per student containing approximately 20 assorted colored markers with various tips.

9 x 12 inch manila paper (if desired)

Fine point black markers

Procedure

1. Explain that they have previously completed drawings based on observation or imagination and that this lesson will combine the two methods. They will begin their drawings of an underwater world of sea creatures by referring to photographs and illustrations of sea creatures. From these sources they will obtain ideas for shapes of their sea creatures, but they will invent patterns on the fish, and they will invent their composition.

2. Hold up several fish photographs and comment on unusual shapes, pattern characteristics, and their colors.
3. Begin a brief demonstration drawing from one of the photographs. Emphasize the need to look carefully to see the shape or contour of the fish. Suggest that they may add a pattern similar to the one seen in the photograph or invent ideas for patterns for their drawings. Explain each objective while drawing. State that because this drawing is to be partly imagined, it is important to invent many of the patterns rather than copy those seen on the fish. Do this in the demonstration drawing. When mentioning the need to invent a color scheme, show this as well in the demonstration drawing. Discuss the importance of a variety of sizes of fish and have this objective apparent in the demonstration drawing.

4. Delineate the other objectives while conducting the demonstration and review them by writing a list on the back of the demonstration drawing.

5. Distribute fine point black markers and drawing paper. Students begin looking through the illustrations to select their first fish subject to draw. All shapes will be drawn with black markers before other colors are added to the drawing.

6. Students will take a box of colored markers when either they or their teacher, depending on the method of teacher feedback, decide they have a well-filled composition.
Drawing Task #6: The Peaceable Kingdom

Objectives

The student will:

1. Create a well-filled composition.

2. Draw many animals in the composition (a minimum of eight creatures).

3. Draw a variety of sizes of animals from large to small.

4. Correctly relate the sizes of animals to each other (proportion).

5. Attempt to depict three-dimensional space in the drawing by including a horizon line, making animals larger in the foreground and smaller in the background, and by overlapping animals.

Materials

12 x 18 inch white drawing paper

Fine point black markers

Visual Resource Materials

Book on Peaceable Kingdom paintings by Edward Hicks


National Geographic World (15 issues)

International WildLife (6 issues)
Assorted photographs and illustrations of animal life: mammals, reptiles, amphibians, and birds.

Procedure

1. Ask if they have heard of the phrase, "peaceable kingdom."

2. Begin to talk about Edward Hick's paintings and the meaning of the theme. Show three paintings to point out the differences in the compositions, e.g., selection of animals, sizes of animals and figures, placement of animals and figures within the painting, and use of color.

3. After discussing the subject matter and compositional differences in the three paintings, ask the group how the artist showed things close and things far away (created the illusion of three-dimensional space).

4. Point out factors they may have missed, e.g., a horizon line and how its placement affects the perceived space. During the discussion, ensure that the following means of achieving three-dimensional space are mentioned: overlapping, varying sizes of objects, placement of objects on the picture plane, and the use of a horizon line.

5. Explain they will be doing a Peaceable Kingdom drawing and that they can refer to various pictures of creatures to get ideas for their drawings. Do a brief drawing demonstration in which a horizon line is drawn, animals of two different sizes are included to stress variety of animal sizes, and overlapping is used. In a
brief review, list on back of demonstration drawing the objectives of the lesson. Since this is to be a kingdom of creatures, not merely two or three, they are to draw a minimum of eight creatures in their pictures. However, if they are drawn in large scale, fewer animals may be sufficient to create a well-filled composition.

6. Emphasize that drawing animals is difficult to do; they lack experience and are therefore practicing to improve their skills in looking at animals to record their structure. Distortion will occur in their pictures, and they ought not to worry about it.

7. As drawing materials are distributed, explain they will not be using color in these drawings. Because they are creating more complex drawings, there will not be sufficient time to add color to the compositions.
APPENDIX C

EVALUATION INSTRUMENT
Below is a listing of criterion statements which accompanied each drawing task in the evaluation instrument. One criterion from each drawing task is illustrated by a photocopy of the sample drawings used when scoring the test drawings.

**The Great Horned Owl**
- Drew the owl so that it filled most of the paper.
- Put all the "owlness" characteristics in the drawing.
- Did a good job of inventing patterns on the owl.
- Tried different kinds of lines and marks with the markers.
- The sizes of the different parts of the owl fit together correctly (proportion) (see Figure 12).
- Used a variety of colors.

**Fantasy Flying Creatures**
- Drew one large creature that filled most of the paper.
- Created an original creature.
- Created unusual parts or shapes for the creature.
- Did a good job of decorating the skin or surface (e.g., patterns, scales, bumps, hairs, etc.) (see Figure 13).
- Had an obvious color plan for the creature.
- Exhibits an obvious mood (e.g., mean, angry, sad, happy).

**Outerspace Toys**
- Drew the toy so that it filled most of the paper or added one or more toys to fill most of the paper (see Figure 14).
- Drew all the parts and details of the toy.
- Invented an obvious color plan for the toy.
- The sizes of the different parts of the toy fit together correctly (proportion).

**Outerspace Creatures**
- Drew the creature so that it filled most of the paper.
- Created an original creature (see Figure 15).
- Created unusual parts or shapes for the creature.
- Did a good job of decorating the skin or surface (e.g., patterns, scales, hairs, bumps, etc.).
Evaluation Instrument (continued)

Had an obvious color plan.

Underwater World of Sea Creatures

Drew a well-filled composition (see Figure 16).
Drew a variety of fish sizes.
Drew a variety of fish shapes.
Drew a variety of patterns on the fish.
Invented an obvious color plan.

The Peaceable Kingdom

Created a well-filled composition.
Drew many animals in the composition.
Drew a variety of sizes of animals from large to small.
The relation of the sizes of animals to each other was correctly done (proportion).
Depicted space in the drawing by including a horizon line, making animals larger in the foreground or smaller in the background, and/or by overlapping animals (see Figure 17).
The sizes of the different parts of the owl fit together correctly (proportion).

Figure 12.

Evaluation Instrument: Sample drawings for a Great Horned Owl criterion.
Did a good job of decorating the skin or surface (e.g., patterns, scales, bumps, hairs, etc.).

Figure 13.
Evaluation Instrument: Sample drawings for a Fantasy Flying Creatures criterion.
Drew the toy so that it filled most of the paper or added one or more toys to fill most of the paper.

Figure 14.

Evaluation Instrument: Sample drawings for an Outerspace Toys criterion.
Created an original creature.

Figure 15.

Evaluation Instrument: Sample drawings for an Outerspace Creatures criterion.
Figure 16.

Evaluation Instrument: Sample drawings for an Underwater World of Sea Creatures criterion.
Depicted space in the drawing by including a horizon line, making animals larger in the foreground or smaller in the background, and/or by overlapping animals.

Figure 17.

Evaluation Instrument: Sample drawings for a Peaceable Kingdom criterion.
APPENDIX D

POST-TREATMENT INTERVIEWS
Interview With Subjects

The interview began with the following questions. Subjects looked through their drawings while they responded.

1. How did you feel about attending the drawing sessions?
2. What was your favorite drawing lesson? Why?
3. What was your least favorite drawing lesson? Why?
4. Which drawing do you think was your most successful? Why?
5. Which drawing do you think was your least successful? Why?
6. What do you think you learned by attending these drawing classes?

Subjects were then asked to look at each of their drawings and rate them from 1 to 5 (1 = lowest rating; 5 = rating) for each performance objective read by the researcher. Following this task, subjects were shown several drawings completed by other 5th grade students (two Great Horned Owl drawings, one Outerspace Creatures drawing, and one Underwater World of Sea Creatures drawing). They were asked several questions about each drawing. Regarding the Great Horned Owl drawings, they were asked:

1. How would you rate the size of the owl in this drawing?
2. Is there anything this student needs to still do on this drawing? What would you suggest?

When viewing the Outerspace Creatures drawing, they were asked:

1. How would you rate the decoration on the creature?
2. How would you rate the color plan on the creature?
3. Are there any suggestions you would give to this student to improve his or her drawing?

When viewing the Underwater World of Sea Creatures drawing,
subjects were asked:

1. How well has this student filled the composition?
2. Are there any suggestions you would give this student? What else might be done to improve the picture?

Before leaving the interview, subjects were asked which drawings they wished to have mailed to them and were asked for their addresses.

Interview With Teachers

1. What do you consider to be the value of art lessons in the elementary curriculum?

2. How often do you teach art lessons in your class? Where do you get your ideas for the lessons?

3. Do you usually correlate art with another subject? Describe a few art activities you have done this year.

4. How much time is spent during each art lesson? What sorts of feedback do you give your students while they work on their art assignments?

5. What do you consider to be the ideal amount of time per week for art lessons?

6. How do you feel about teaching art? Would you prefer that an art specialist teach art to your class?

7. How interested are you personally in the arts? Are there any arts you participate in or attend?

8. Describe the peer interaction which takes place in your classroom.
APPENDIX E

COMMUNICATION TYPOLOGY: SAMPLE STATEMENTS

FROM THREE FEEDBACK METHOD GROUPS
Communication Typology Examples: Minimal Feedback Group

Categories listed in order of most to least frequent occurrence.

<table>
<thead>
<tr>
<th>Peer Interaction</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talk about self's picture</td>
<td>167</td>
</tr>
<tr>
<td>One ear is bigger than the other.</td>
<td></td>
</tr>
<tr>
<td>Looks like a teddy bear.</td>
<td></td>
</tr>
<tr>
<td>I still have room for branches.</td>
<td></td>
</tr>
<tr>
<td>I'll make it brown.</td>
<td></td>
</tr>
<tr>
<td>I don't think I'll make the stars.</td>
<td></td>
</tr>
<tr>
<td>My monster is doing jazzercize.</td>
<td></td>
</tr>
<tr>
<td>This is the man; this is to be the wife.</td>
<td></td>
</tr>
<tr>
<td>Talk about materials</td>
<td>148</td>
</tr>
<tr>
<td>Who has a brown color?</td>
<td></td>
</tr>
<tr>
<td>Do you have a blue like this or darker?</td>
<td></td>
</tr>
<tr>
<td>I think I need another piece of paper.</td>
<td></td>
</tr>
<tr>
<td>I need one of those fat browns.</td>
<td></td>
</tr>
<tr>
<td>This marker stinks.</td>
<td></td>
</tr>
<tr>
<td>Could I borrow a gray?</td>
<td></td>
</tr>
<tr>
<td>Comment on subject</td>
<td>121</td>
</tr>
<tr>
<td>What's this on his back? (toy reference)</td>
<td></td>
</tr>
<tr>
<td>I want a cheetah standing up. (picture reference)</td>
<td></td>
</tr>
<tr>
<td>Let me see that penguin.</td>
<td></td>
</tr>
<tr>
<td>There goes a koala bear in a tree.</td>
<td></td>
</tr>
<tr>
<td>Look at the sea horse.</td>
<td></td>
</tr>
<tr>
<td>Look at another's picture</td>
<td>116</td>
</tr>
<tr>
<td>(nonverbal)</td>
<td></td>
</tr>
<tr>
<td>Evaluation of self</td>
<td>101</td>
</tr>
<tr>
<td>I made his head too big.</td>
<td></td>
</tr>
<tr>
<td>I made his body too skinny.</td>
<td></td>
</tr>
<tr>
<td>I messed up.</td>
<td></td>
</tr>
<tr>
<td>I ruined it.</td>
<td></td>
</tr>
<tr>
<td>I like the way I did that.</td>
<td></td>
</tr>
<tr>
<td>I should have used brighter blue.</td>
<td></td>
</tr>
<tr>
<td>I think I did good on my stripes.</td>
<td></td>
</tr>
</tbody>
</table>
Minimal Feedback Group (continued)

Evaluation of others

Jack's doing good.
Those are the prettiest colors. I like the colors.
I like the seaweed in yours.
Tom's bad (meaning good).
That looks pretty good.
That's too small.

Show picture to others

Look at mine.
Look at my ears.
Look at my claws.

Teacher bid

It goes straight down in the back. (owl reference)
Just make the claws inside of your body.
Big enough so it will fit on your paper.
The bubbles go straight up.
However many you like I guess.

Management

Will you shut up. I'm drawing.
You bumped me. I need some more room.
If you'd be quiet and draw, maybe it wouldn't be so hard.

Comment about peer's picture

Them itty, bitty fish she drew.
It looks like a bald-headed lady.
They're like clouds. (referring to pattern on a peer's owl)
My God, that's a big nose.

Question peer about his or her picture

Is that his whole body?
Where is his nose?
Is this the lake?
How many animals you got? Let me see.
Who made their's going off the edge?
What fish did you draw to make all those lines?
What are you making?
Minimal Feedback Group (continued)

Procedural statement 24

Mine's done.
Can we use the back?
I need more time.

Learner bid 21

I don't know how to make bubbles coming out of their mouths.
What color shall I make it?
How can I make the going up hill?
How can I make some wings?

Supportive comment 15

Ain't nobody's going to look perfect.
Our pictures aren't spozed to be as good.
Everybody's going to be messed up.
Don't worry about it.
You're forever starting over, girl. Goodness, you're worried. Don't be worried.

Frustration gesture (usually nonverbal) 12

Darn!
Oh God!

Ask for peer opinion 6

He is kind of ugly, ain't he?
Like mine?
You think mine looks good?

Comment on difficulty level 6

Animals are hard!

<table>
<thead>
<tr>
<th>Communication With Researcher</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Show picture to researcher</td>
<td>38</td>
</tr>
<tr>
<td>Look at this.</td>
<td></td>
</tr>
<tr>
<td>Ask for researcher's opinion</td>
<td>28</td>
</tr>
<tr>
<td>How does this look?</td>
<td></td>
</tr>
<tr>
<td>Do you think I have to draw any more?</td>
<td></td>
</tr>
</tbody>
</table>
Minimal Feedback Group (continued)

Can I make a face on this?
They overlap each other; is that o.k.?
How do you like my colors?

Ask about or comment on procedure  22

Do we draw both of 'em?
Can I have another piece of paper?
Do we put our names on the back?
Miss Kakas, I'm done.

Ask researcher for advice or guidance  11

I don't know how to do that clock.
I don't know how to make the body.
I can't draw this cause I don't have nowhere to put the tail.

Self-evaluative comment to researcher  6

I messed up my bird.
I messed up the head.

Comment on or question researcher about materials  8

May I have a piece of paper?

Comment or question researcher about the subject  5

What kind of fish is that? (photograph reference)
Miss Kakas, when elephants have their horns, do you know if it's the male or female?

Watch researcher talk with another subject (nonverbal)  5
Communication Typology Examples: Questioning Feedback Group

Categories listed in order from most to least frequent occurrence.

<table>
<thead>
<tr>
<th>Peer Interaction</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment on subject</td>
<td>192</td>
</tr>
<tr>
<td>This one's real unusual.</td>
<td></td>
</tr>
<tr>
<td>That's not his tail.</td>
<td></td>
</tr>
<tr>
<td>It turns into a little spaceship.</td>
<td></td>
</tr>
<tr>
<td>The person that made this guy didn't make him so well.</td>
<td></td>
</tr>
<tr>
<td>One eye's bigger than the other.</td>
<td></td>
</tr>
<tr>
<td>Do they have eyelashes?</td>
<td></td>
</tr>
<tr>
<td>Ooh, neato!</td>
<td></td>
</tr>
<tr>
<td>This fish has a lot of dots.</td>
<td></td>
</tr>
<tr>
<td>Awesome!</td>
<td></td>
</tr>
<tr>
<td>Big old hippo.</td>
<td></td>
</tr>
<tr>
<td>What's the matter with these whales?</td>
<td></td>
</tr>
<tr>
<td>Let me see the tree frog.</td>
<td></td>
</tr>
<tr>
<td>Talk about materials</td>
<td>157</td>
</tr>
<tr>
<td>Anyone got a light purple?</td>
<td></td>
</tr>
<tr>
<td>Does anyone need a red? I got two reds.</td>
<td></td>
</tr>
<tr>
<td>I like markers better.</td>
<td></td>
</tr>
<tr>
<td>I like pencils.</td>
<td></td>
</tr>
<tr>
<td>I've got another bad marker.</td>
<td></td>
</tr>
<tr>
<td>Who doesn't have one of these greens?</td>
<td></td>
</tr>
<tr>
<td>These books are nice.</td>
<td></td>
</tr>
<tr>
<td>This is the color that glows in the dark.</td>
<td></td>
</tr>
<tr>
<td>Look at another's picture</td>
<td>115</td>
</tr>
<tr>
<td>(nonverbal)</td>
<td></td>
</tr>
<tr>
<td>Talk about self's picture</td>
<td>84</td>
</tr>
<tr>
<td>I'll make the body first.</td>
<td></td>
</tr>
<tr>
<td>This one's going to have measles or poison ivy.</td>
<td></td>
</tr>
<tr>
<td>I'm making warts. These little bumps are warts.</td>
<td></td>
</tr>
<tr>
<td>He's pigeon-toed.</td>
<td></td>
</tr>
<tr>
<td>I'm not going to get his whole body in here.</td>
<td></td>
</tr>
<tr>
<td>He ate too much. This is going to be a big one. See his pot belly.</td>
<td></td>
</tr>
<tr>
<td>I've got some big claws.</td>
<td></td>
</tr>
</tbody>
</table>
Questioning Feedback Group (continued)

Management

Miss Jones said we had to behave.
Hey, you took my yellow.
Sam, this is not the play hour.
Sam, stop making so much noise. You're acting stupid is what it is.
Shut up, Sam.
I know some boys who are going to be in big trouble.
Sam, just work on your picture.

Teacher bid

Here Sam, this one doesn't have hard lips.
You're not going to be a very good artist if you want to get through fast.
Make him standing up--like this.
Goes something like this (demonstrates how to draw snake scales).
Your horizon line is like this--like the mountains back here, the sky, hill back there.

Evaluation of self

My picture looks stupid.
It don't look too good.
I can't draw.
Aw crap, I put it in the wrong place.
I say that looks better.
This is the farthest I've ever gotten in art.
I messed up bad.
Because I'm not creative.

Show picture to others

Mine looks like slime (holds up picture for others to see)
Bill, look at these.
Look at how many colors I got.

Evaluation of others

His is creative.
I like Mark's the best.
Carla has a wonderful start.
That's nice. That's really nice.
It's awesome.
That's pretty, Carla.
Now he just messed up his picture.
Questioning Feedback Group (continued)

Comment about peer's picture 18

Yours is weird.
He has all sorts of things on his nose.
Ugly.
It looks like a peacock feather.
God, has she got bright colors!

Procedural statement 13

I'm finished.
Look how fast I'm coloring.
I got my work done.

Question peer about his or her picture 11

What are you drawing?
Where's his mouth?
Is that the head?
Sam, how come you just scribbled all over him?

Comment on difficulty level 10

This is hard!

Ask for peer opinion 10

How's mine look?
You like my tail?
Does that look like whiskers?

Learner bid 6

What color is slime? Green?
The only thing I'm having trouble with is where do I put his nose?
Show me here how it looks (snake scales).

Frustration gesture (verbal and nonverbal) 6

Dang!

Supportive comments 0
Communication with Researcher | Frequency
---|---
Show picture to researcher | 78
   | Look at this.  
   | How's this look?
Comment about picture to researcher | 77
   | I got to make his legs. 
   | This is his tail sticking up. 
   | I'll make his beak light yellow. 
   | This is fluorescent right here. 
   | He has veins all over him. 
   | As soon as I get my tree made, I'm going to make a bat hanging upsidedown.
Ask for researcher's opinion | 64
   | How's that, Miss Kakas? 
   | How do you like my bird? 
   | Like my snake skin? 
   | Is that a colorful fish? 
   | That look better? 
   | What would that look like if I stopped right here? 
   | Does this look like a humanoid? 
   | Do you think he's decorated enough?
Ask about or comment on procedure | 46
   | Can I start over? 
   | I'm finished. 
   | How many fish do I have to draw? 
   | Are we allowed to do fish? (in Peaceable Kingdom) 
   | Are we going to just be using black markers?
Self-evaluative comment to researcher | 37
   | I messed up his nose. 
   | I can't do this whatever you call it. 
   | This doesn't look like a bit like this. (comparing drawing to fish photograph) 
   | Oh, darn it, Miss Kakas, my eyes are crooked. 
   | I think he looks fine. 
   | I messed up--this is too ugly. 
   | Miss Kakas, I got this all figured out right and put the lines in the wrong place.
Questioning Feedback Group (continued)

I made that one too skinny and that one too fat.

Ask researcher for assistance or guidance

Show me how to make slime.
Should I make him the same shape as him or a different shape?
How do I make his feet? I can't make them sticking out.
I don't know what color to make his tail.
I can't make lips.
Does the land go clear into the water?

Watch researcher talk with another subject (nonverbal)
Communication Typology Examples: Directive Feedback Group

Categories listed from most to least frequent occurrence.

<table>
<thead>
<tr>
<th>Peer Interaction</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talk about self's picture</td>
<td>176</td>
</tr>
<tr>
<td>Now he's looking like a cat.</td>
<td></td>
</tr>
<tr>
<td>I'm on the move now; you can't stop me.</td>
<td></td>
</tr>
<tr>
<td>I'm on his ear now.</td>
<td></td>
</tr>
<tr>
<td>Mine looks like a weirdo trying to dance.</td>
<td></td>
</tr>
<tr>
<td>I'm going to make this dude wearing a dress.</td>
<td></td>
</tr>
<tr>
<td>This is a dog—a doggie creature from outerspace.</td>
<td></td>
</tr>
<tr>
<td>This ain't an American creature.</td>
<td></td>
</tr>
<tr>
<td>This fish got a lot of dots on it.</td>
<td></td>
</tr>
<tr>
<td>I'm going to make a hook coming in that mouth.</td>
<td></td>
</tr>
<tr>
<td>I'm going to make a little place for school kids--in the middle of the forest.</td>
<td></td>
</tr>
<tr>
<td>Look at another's picture</td>
<td>159</td>
</tr>
<tr>
<td>(nonverbal)</td>
<td></td>
</tr>
<tr>
<td>Comment on subject</td>
<td>143</td>
</tr>
<tr>
<td>Tina, ain't that cute?</td>
<td></td>
</tr>
<tr>
<td>Looks like my cat--only he has green eyes.</td>
<td></td>
</tr>
<tr>
<td>Hatchet fish.</td>
<td></td>
</tr>
<tr>
<td>Is this a beta?</td>
<td></td>
</tr>
<tr>
<td>This is one of them star people, too.</td>
<td></td>
</tr>
<tr>
<td>That's not his nose--it's his beak.</td>
<td></td>
</tr>
<tr>
<td>He has some funny looking ears.</td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>106</td>
</tr>
<tr>
<td>Shut up you all; you're talking too much.</td>
<td></td>
</tr>
<tr>
<td>Get serious.</td>
<td></td>
</tr>
<tr>
<td>You're acting silly, Roddy.</td>
<td></td>
</tr>
<tr>
<td>She didn't say play with them (toy reference).</td>
<td></td>
</tr>
<tr>
<td>Those are my markers.</td>
<td></td>
</tr>
<tr>
<td>Act like you're visiting your grandmother.</td>
<td></td>
</tr>
<tr>
<td>I know you did that on purpose. Now quit!</td>
<td></td>
</tr>
<tr>
<td>Be quiet.</td>
<td></td>
</tr>
<tr>
<td>Aw, you guys are in trouble.</td>
<td></td>
</tr>
</tbody>
</table>
Directive Feedback Group (continued)

Evaluation of self 90

I messed up.
I can't draw no animals.
It still looks ridiculous
Hey, I did it!
I hate this.
Aw, these are ugly.
I can't draw that. You know I can't draw.
It looks sorta dumb.
Got it!
Worst body I ever done.
Aw man, now look at this mess.

Talk about materials 84

Can I use somebody's black?
Anybody got an unusual green?
I need a pencil to get down now.
O.k., I'm done with this book.
Let's see if there's any more in this book.
Can you give me another piece of paper?

Show picture to others (verbal and nonverbal) 56

Look at this bird.
Look at this--he's bleeding.
Look, Chuck, I'm going to draw a fishing hook.
Look, Lisa.

Comment about peer's picture 44

She got her man all colored.
That looks like the one from last week.
You're drawing things already alive.
Lipstick on it.
That looks like a pig.

Evaluation of others 35

That's not bad, Lisa.
Aw, you messed yours up, Chuck.
Look at his--totally weird.
That looks neat.
That's too small.
Look at Chuck. He's ten years old and he can draw perfection.
It's nice.
Directive Feedback Group (continued)

Procedural statement

It's easier to trace them. I'm not tracing. I can't finish this.

Teacher bid

Here, draw this. 
Too small. 
Make him smiling. 
They have stripes. 
The details is what matters.

Question peer about his or her picture

Karla, what the heck is that? 
How did you make that? 
Do space creatures have sun glasses? 
Which is the head? 
How many fish do you got?

Frustration gesture (nonverbal)

Learner bid

I don't know what color to make it. 
Find me a nice one to draw.

Ask for peer opinion

Does this look funny looking enough? 
Lisa, like my head?

Comment on difficulty level

These are hard to draw.

Supportive comments

That's o.k.

Communication with researcher  Frequency

Comment on picture to researcher  115

I'm on his other ear. 
I'm adding a weapon to him.
Directive Feedback Group (continued)

I repeated mine (colors).
Do you see that? That's fire.
You don't know what I'm drawing, do you?
These shoes look a little weird.
Dottie fish, ain't it?
I'm doing the details on it.
I'm making one more fish and that's it.
I made this one up.

Self-evaluative comment to researcher 64

I can't get the legs.
This is terrible, Miss Kakas.
Body's too big for his head.
See, I can't draw.
Look at this. This is dumb stuff.
I'm going to have a fit. I can't draw.
I can't draw fish.
This looks pitiful, looks stupid.
I think he's kinda short.
Look, I messed up the whole side because I used a marker.

Ask about or comment on procedure 55

I can copy over fast if you let me start over.
May I start over?
Can we color them the way we like them?
I'm done now.
Can I use my imagination to put in another one?
Is it o.k. if I change patterns on the fish?
Miss Kakas, can I color now?

Ask researcher for assistance or guidance 54

Help me make this thing, please.
I'm stuck on this side.
I don't know how to make the bump on his head.
Coach me on this head now.
Help me draw.
I need help on drawing these guns in his mouth.
Do tigers have polka dots?
I'm having trouble with the lion's face.
Directive Feedback Group (continued)

Ask for researcher’s opinion 50

Is this good, Miss Kakas?
Does this tree look O.K.?
You like it?
How's that, Miss Kakas?
Can we make it this way?
Is that big enough?
Miss Kakas, does this look right?

Show picture to researcher 48

See my horse.
Dottie fish, ain't it?
I got five fish.

Comment on or question researcher about materials 40

This marker's running out.
What box do I got?
I still can't get this head unless I use my pencil.
    Please, pretty please.
Won't let me draw with a pencil.
I wish you had see through paper. Maybe I could draw.
    On this I can't.
Did you get these from a fish book?
I tell you--I can't draw with a pen.
Can I have another piece of paper?

Watch researcher talk with a subject (nonverbal) 29

Comment on or question researcher about the subject 27

Can we draw pussy cats?
Do you have lions?
I don't know how big this bird is supposed to be.
This sea horse is pregnant.
Do you have any pictures of eels?
APPENDIX F

SAMPLE DRAWINGS BY SUBJECTS RECEIVING EACH FEEDBACK METHOD
Mean Score: 16 (possible 30 points)

Figure 18.

Mean Score: 26 (possible 30 points)

Figure 19.

Questioning Feedback Subject: Sample drawing, The Great Horned Owl.
Mean Score: 11.67 (possible 30 points)

Figure 20.

Questioning Feedback Subject: Sample drawing, Fantasy Flying Creatures.
Mean Score: 23.33 (possible 30 points)

Figure 21.

Directive Feedback Subject: Sample drawing, Fantasy Flying Creatures.
Mean Score: 23.33 (possible 30 points)

Figure 22.

Minimal Feedback Subject: Sample drawing, Fantasy Flying Creatures.
Mean Score: 11.33 (possible 20 points)

Figure 23.

Directive Feedback Subject: Sample drawing, Outerspace Toys.
Mean Score: 17 (possible 20 points)

Figure 24.

Questioning Feedback Subject: Sample drawing, Outerspace Toys.
Mean Score: 8 (possible 25 points)

Figure 25.

Minimal Feedback Subject: Sample drawing, Outerspace Creatures.
Mean Score: 17.67 (possible 25 points)

Figure 26.

Questioning Feedback Subject: Sample drawing, Outerspace Creatures.
Mean Score: 21.33 (possible 25 points)

Figure 27.

Minimal Feedback Subject: Sample drawing, Outerspace Creatures.
Mean Score: 13 (possible 25 points)

Figure 28.

Minimal Feedback Subject: Sample drawing, Underwater World of Sea Creatures.
Figure 29.

Directive Feedback Subject: Sample drawing, Underwater World of Sea Creatures.

Mean Score: 19 (possible 25 points)
Mean Score: 11.33 (possible 25 points)

Figure 30.

Minimal Feedback Subject: Sample drawing, The Peaceable Kingdom.
Mean Score: 13 (possible 25 points)

Figure 31.

Directive Feedback Subject: Sample drawing, The Peaceable Kingdom
Mean Score: 22.33 (possible 25 points)

Figure 32.

Questioning Feedback Subject: Sample drawing, The Peaceable Kingdom.
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