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THE ROLE OF
KNOWLEDGE, KNOWLEDGE-SEEKING STRATEGIES,
AND DISPOSITIONS IN THE LESSON PLANNING
OF STUDENT ART TEACHERS

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

By

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1996

Dissertation Committee:

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Professor Arthur Efland
Professor Sydney Walker

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Advisor
Department of Art Education
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1996
To my parents,

Dean and Arlene Coy

who taught me that with a learning disposition
you can teach yourself anything you desire to know
ACKNOWLEDGMENTS

For years I raised a family, attended graduate and professional design schools, and taught students of all ages. I worked briefly in the field of commercial design. I have always advocated the arts in every arena in which I found myself. My return eight years ago to the field of art education was like “coming home.” Not only was I reclaiming parts of me that had been dormant or given away in my varied endeavors, I was returning to a profession where I could live out my dispositions to teach and be a life-long learner.

At the same time I returned to art teaching, I entered graduate school in the Department of Art Education at The Ohio State University. I discovered that much had changed in the profession of art education since my undergraduate teacher training. Art teaching and learning had come to be viewed by many as having cognitive as well as affective dimensions. This dual notion affirmed the ways in which I have taught myself through the arts for most of my life.

My doctoral work has been a path of revelation and academic investigations for I did not understand the meaning of scholarship when I first committed to doctoral study. My advisor, Judith Koroscik, surely recognized the novice understandings beneath my earnestness. Her belief in my ability to undertake and contribute to scholarly pursuits gave me confidence in my own ability to do so. For you, Judith I have the utmost respect and
gratitude! I also thank my distinguished committee members Arthur Efland, Michael Parsons, and Sydney Walker for the knowledge I have gained from them and for their willingness to accompany me through this long process.

Words cannot express my appreciation for my soul sister, fellow art teacher and mentor, Joanna Swisher. Joanna’s eagerness to continue learning about teaching and learning has been a gift to me. After thirty years of teaching art, her willingness and generosity to share her professional knowledge is boundless. The melding of our different forms of knowledge (i.e., her teaching experiences and my growing theoretical knowledge) was extremely beneficial. At times there seemed to me no distinction between her actual experiences and my vicarious understanding and learning from those experiences. It pleases me, Joanna, that you say you are “getting your Ph.D by osmosis,” because that’s what collaboration is about. Your constant support sustained me in my struggle to obtain this goal.

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As they grew and matured, my sons Alex, Andy, and Anthony have watched their mother pursue ideas in order to develop her professional and personal understanding. I hope their memories of my scholarly endeavors are mostly positive and that seeds were planted in their own quests to explore and learn about their worlds. My husband, John, has been a source of encouragement and support these past years and maintained the home front on more occasions than either of us had anticipated. I think he is as happy as I am that at least this is one thing I can check off my list of things to do!
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**FIELDS OF STUDY**

Major Field: Art Education
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CHAPTER I
INTRODUCTION

I returned to art teaching art several years ago. At that same time, I also entered
the doctoral program in art education at The Ohio State University. A discipline-centered
approach toward art instruction, (i.e., aesthetics, art criticism, art history, and art-making),
caused me to think about lesson planning and teaching and learning in considerably
different ways than I had in my early years at teaching. I became familiar with studies on
teacher knowledge and its impact on teaching. In addition, my teaching practices changed
as a result of new knowledge gained from graduate coursework and personal research on
cognitive learning theory. Research on how students learn and remember was particularly
useful in my efforts to design meaningful art instruction.

Putting cognitive learning theory into practice during lesson planning caused me to
increasingly consider the prior knowledge of my students. The selection of lesson topics
and key ideas which were central to the field of art became of paramount importance to
me. Gradually my knowledge of grade level curricula grew as did my knowledge of
educational resources. Noting the ways in which I taught myself new information in order
to teach it to other art learners became a useful procedure to me, and reminded me that as
a teacher, I need always be a learner.
For two years, I taught a methods course to art education majors at The Ohio State University. As part of their coursework, these preservice teachers designed a unit of art instruction, extensively developed one lesson within that unit, and subsequently created an accompanying studio activity which reinforced the lesson content and engaged learners in reaching the objectives of the developed lesson. I also supervised preservice art teachers in their first lab teaching experience in the university setting. These novice teachers were required to use discipline-based art content in their lesson plans. I evaluated their lesson plans according to several components: key concepts, objectives, key art exemplars, questioning strategies, art criticism and historical focuses, and the studio activity. After critiquing written lesson plans, I offered recommendations on lesson content and organization in order to strengthen lesson implementation.

After several months of reviewing preservice teachers’ lesson plans, I noted several shared characteristics. Art history content was usually of a biographical, factual nature related to a particular artist, style, movement, or time in history. Comparisons or relationships were seldom made between a particular artist’s works and the works of earlier and/or later artists or between artists and objects from different cultures and times in history. The beliefs and values of a time and place in history were rarely discussed as influential in the context of art-making.

Furthermore, I noted that art criticism activities were constrained by beginning teachers’ superficial understanding of an artwork’s multiple meanings. Narrow selections
of artworks were often used for comparative inquiry. The choice of comparative art exemplars by the same artist with similar subject matter, medium, artistic styles and level of abstraction generated little student inquiry when learners were challenged to compare and contrast the meaning(s) of artworks. I wondered if this might be due to the obvious "sameness" of the artworks learners were being asked to compare, or due to a perception by teacher and learner that artworks have only one meaning. There seemed to be few activities in preservice teachers' lesson plans that explored the multiple meanings of artworks. The teachers referred to formal or structural features of artworks, but often overlooked the semantic (i.e., interpretive) features of artworks. In addition, teacher misunderstandings or incomplete understandings about an art object's meanings sometimes resulted in key lesson concepts which were misleading and/or superficial.

Occasionally, during the university lab teaching experience, a student teacher would plan an art lesson without artworks to represent the key concepts of the lesson. During these lessons, the function of class discussion was to (a) show a student or teacher-made art example, (b) relate information about the medium to be used, (c) demonstrate a skill or technique, and (d) list the steps and rules regarding completion of the "project." When observing these lessons, I questioned how learners would acquire the unique content that art has to offer with art instruction that made no reference to art examples, artists, or the context of art-making.
I often observed student teachers presenting new art information, demonstrating techniques for working in a particular medium, then proceeding to art-making without making connections between the new information and the studio activity. In those scenarios, art-making was introduced as if it was the main lesson activity. The studio activity was not verbally related to the lesson’s key concepts or to students’ prior knowledge. Although the studio activity might have been planned as a reinforcement of lesson concepts, learners’ prior knowledge, and new information, these relationships were not explicitly discussed with the young learners. My assessment was confirmed when after observing such a lesson, I asked the young art students, “What was that lesson about?” They indicated that the art-making activity was the main idea of the lesson.

It was evident that these beginning teachers were constrained by their limited art and pedagogical knowledge. Those limitations in turn affected their search for information and the ways they designed instruction. I became curious to know what beginning teachers select as worthwhile art ideas for teaching and what guides their choices of lesson content. I wanted to explore how they transferred teaching and learning theories to the concrete process of lesson planning. I wondered how they considered students’ prior knowledge and the role of studio activities in their lesson planning. What coursework or learning events in their teacher preparation most impacted their art and pedagogical knowledge? I decided to investigate the role of teacher knowledge on art instruction.
The Problem of Limited Teacher Knowledge

Teaching how to teach and learning how to teach is difficult. Aristotle believed that ultimate understanding rested on the ability to transfer one’s knowledge and make it teachable to others (cited in Schulman, 1986). Recent studies on teaching and learning focus on teachers’ actions, planning, thinking, decision making, and understanding of pedagogical principles and theories (Leinhardt, 1993; Porter & Brophy, 1988). These studies explain how teachers learn to teach and how they teach as a result of what they have learned. Strong evidence exists that many beginning teachers have limited knowledge about their own discipline (Anderson, 1988; Kowalchuk, 1992; Shulman, 1986, 1987). These findings are cause for concern, since a teacher’s professional knowledge affects all phases of instruction (i.e., lesson content and organization, implementation, assessment and reflection).

Investigating teacher knowledge and its impact on teaching is essential if higher education is to reshape teacher preparation as a means of improving the overall quality of education in this country (Bellon, Bellon & Blank, 1992; Carnegie, 1986; Holmes Group, 1986; Leinhardt, 1993; Shulman, 1986, 1987). Toward Civilization, a report on arts education calls for knowledgeable teachers trained in the disciplines and philosophy of the arts, a well developed “teaching methodology,” and knowledge of learners (NEA, 1988, p. 105). The field of art education needs continuing research on art teacher knowledge and its transformation into lesson content and learning activities. “If the promise of the
teaching profession is to be achieved, we must attend to the processes by which its knowledge base is developed and transmitted” (Howsan, Corrigan, Denemark, & Nash, 1976, p. 11).

**Research Questions**

This study was designed to explore teacher knowledge and its effect on practice. The main variables under investigation were student art teachers’ choices for lesson key concepts and their utilization of learners’ prior knowledge in lesson planning. Also explored were (a) student art teachers’ choices of art exemplars to represent key lesson concepts, (b) the function of studio activities in their lesson planning and (c) the relationships structure and between lesson key concepts in a unit of instruction.

Similar variables have been examined in other domains of student teacher preparation (Carlsen, 1988; Lampert, 1986; Wilson, 1988). Until recently, however, preservice teachers’ knowledge has not been investigated in art teacher education research (Kowalchuk, 1992; Short, 1995). Therefore, in order to further understand the content and pedagogical knowledge of student art teachers, this study was designed to investigate the following questions:

1. **What key concepts do student art teachers choose for art instruction?**

2. **How do student art teachers utilize learners’ prior knowledge in lesson planning?**

3. **What are the effects of teacher education interventions on student art teachers’ content and pedagogical knowledge?**
4. What are the effects of student art teachers' knowledge base, knowledge-seeking strategies, and dispositions on their lesson planning?

Significance of the Study

An investigation of these research questions is important to the field of art education for several reasons. This study explores the transfer between art teachers' knowledge base and the practice of teaching. By drawing upon research questions generated from well-regarded programs such as the Knowledge Growth in Teaching project at Stanford and the Learning and Teaching of Elementary Subjects at Michigan State University, a common language is established between art teacher education and other subject areas in teacher education. In addition, this study applies cognitive learning theory to the practice of art teaching and learning.

Key concepts are just now being identified in domains such as mathematics (Lampert, 1986) and science (Chi, Feltovich, & Glaser, 1981; Larkin, 1982). Although it is not likely or desirable that an ill-structured field such as art education will come to a consensus about the “big” ideas for instruction, some ideas in a discipline are simply more important than others (Koroscik, 1992; Prawat, 1989). Therefore, this study seeks to identify what key concepts beginning art teachers deem worthy for instruction and how they search for knowledge to teach those concepts. In addition, this study investigates the utilization of learners’ prior knowledge in art teaching and explores the unique component of the studio activity in art instruction.
This study was conducted to demonstrate that the quality of art teaching is affected by teacher knowledge. Furthermore, student art teachers' responses to teacher education interventions have relevance to teacher preparation and instruction. An exploration of preservice art teachers' knowledge base, search strategies, and dispositions gives us a preview of the art teaching of tomorrow. Regardless of technological advancements in knowledge acquisition and instruction, teachers (including teacher educators) are still at the heart of instruction. Thus, a study such as this on teaching and learning will always be timely.
CHAPTER II
REVIEW OF RELATED LITERATURE

Three conditions define the act of learning: (a) a change in an individual's behavior or ability to do something, (b) a change which is the result of practice or experience, and (c) a change which is enduring (Schuell, 1986, p. 412).

Cognitive Views on Learning

The theoretical foundations of this study are based on cognitive learning research. The cognitive perspective toward learning focuses on the acquisition and structure of knowledge. Learning is regarded as an active, constructive process. Thirty years ago, critics of existing behavioristic learning models viewed such models as accumulations of simple associations acquired through drill and practice rather than as models that promoted students' reasoning and thinking skills. Cognitive theorists, however, believed that knowledge was what was learned and behavior was the result of that learning (Glaser, 1984). Therefore, new learning models were developed to investigate complex forms of learning with outcomes which involved the understanding of relationships among many separate pieces of information (Shuell, 1986). Unlike previous behavioristic learning models, cognitive models focus on higher-order thinking processes such as reasoning, problem solving, problem finding, decision making, critical thinking, creative thinking, interpretation and reflection (Parsons, 1992; Resnick, 1987). These higher-order thinking
processes, are often referred to as *metacognition* -- "knowledge about thinking" (Woolfolk, 1990, p. 64).

Studying learning phenomena within specific domains is a characteristic of cognitive learning research, for it is reasoned that learning and thinking skills need to be "embedded" within subject matter content and not isolated or taught as general skills (Prawat, 1989). In fact, Resnick (1987) states that "dropping the quest for general thinking skills might, in the end, be the most powerful means of cultivating higher levels of cognitive functioning" (p. 36).

Education in the arts, categorized in the past as affective, was reconsidered in the mid-1970s as having cognitive dimensions. This re-definition of arts education implies a change in the way cognition is now understood. All mental activities, including emotional, intuitive, and creative ones are now considered to have cognitive attributes (Koroscik, 1984; Parsons, 1992). Recognizing cognitive aspects in arts education necessitates a change in self-description by many art educators and practitioners and presents those in the field of art education with the opportunity to participate in research on cognitive learning theory.

This study was designed to examine teaching and learning in the visual arts from a cognitive perspective. Three facets of (teacher) cognition were ultimately examined: (a) knowledge base, (b) knowledge-seeking strategies, and (c) dispositions (Efland, 1993; Koroscik, 1993 in press; Prawat, 1989). Also examined was the phenomenon of *transfer*—
"the ability to draw on or access one's intellectual resources in situations where those resources may be relevant" (Prawat, 1989, p. 1). Transfer occurs with the interaction of the learner's knowledge base, knowledge-seeking strategies, and learning dispositions (Koroscik, 1993, in press).

**Learners' Knowledge Base**

Prawat (1989) describes several overlapping but distinguishable types of knowledge within a learner's knowledge base.

- **formal knowledge**—knowledge acquired in the classroom, (e.g., the technical procedure of representing depth through one-point perspective drawing)

- **informal knowledge**—idiosyncratic, intuitive, often imaginative efforts to construct understanding, (e.g., the methods untrained artists use to show depth such as overlapping objects, and placing largest, most detailed, and most colorful objects in the foreground of the composition)

- **representational knowledge**—embodiments or interpretations of ideas, (e.g. Picasso's painting *Guernica* symbolizes peoples' inhumanity to people during the ongoing civil war in Spain in the late 1930s)

- **conceptual knowledge**—knowledge of things, facts, concepts in a discipline (Koroscik, 1989), (e.g., understanding that earlier artists influence later artists)

- **procedural knowledge**—knowledge of how-to organize knowledge. . .strategies with which a learner uses what he or she already knows (Koroscik, 1989, p. 4), (e.g., using a knowledge of one-point perspective drawing on a two-dimensional clay tile in order to show depth by the use of diagonal lines receding to a vanishing point, and depiction of a background, middle ground, and foreground).
The Role of Prior Knowledge in Learning

Prior knowledge consists of the accumulated understandings, misunderstandings, skills, and experiences a learner possesses—including what the learner already knows about the material being studied (Koroscik 1982, 1989; Prawat, 1989). Although learning is cumulative in nature, it is also formative in that a learner’s existing knowledge base is continuously restructured in order for new learning and discovery to occur. The readiness of students to learn depends on their prior knowledge (Efland, 1993; Shuell, 1986). Current learning research theorizes that learners are more able to form connections between their existing knowledge and new information if they can relate the new information in some way to what they already know. “The amount of knowledge students already possess has a major impact on learning. Information that learners have acquired, and the way it is organized, determines how students interpret tasks, and what they will learn from studying tasks” (Bellon, Bellon, & Blank, 1991, p. 397). Advanced learning requires that learners be capable of reasoning with new information, connecting it with prior knowledge, and applying it to subsequent learning (Perkins & Simmons, 1988).

The role of misconceptions in learning. Research has shown that some forms of prior knowledge actually constrain new learning (Efland, 1993; Perkins & Simmons, 1988). Naive conceptions caused by lack of depth and breadth in existing knowledge can impede the acquisition of advanced forms of knowledge (Koroscik, 1990, in press; Kowalchuk, 1992; Perkins & Simmons, 1988). One example of naive art understanding
might be the conception that if an artwork is accomplished in a highly realistic style, it is a “good” artwork and the artist is a “good” artist. This naive perception might inhibit some learners from seriously studying artworks that are highly abstract or non-objective, as they would not consider such works to be “good” works by “good” artists, and therefore not worthy of effortful study.

Underdifferentiated concepts are the result of the learner's inability to “distinguish important details from unimportant ones” (Koroscik, 1990, p. 11). The frequent reference to the mental instability of the artist Vincent Van Gogh serves as illustration. More important to art learning than Van Gogh's mental problems is the way he used unexpected color combinations and his expressive and textural brushwork innovations. His stretching of conventional painting boundaries influenced many artists who came after him. However, the sensationalism of his mental instability is too often not differentiated from his lasting contributions to modern forms of painting.

Garbled knowledge occurs when newly acquired knowledge gets confused in ways which then lead to incomplete understandings or oversimplification of facts (Perkins & Simmons, 1988). Take for example an art learner's newly acquired understanding of the impressionistic style of painting. It is not uncommon to confuse the historical context, development, and characteristics of the impressionistic style with similar painting styles of that time period. It is a fact that many impressionist painters were fascinated with the effects of sun and shadows on outdoor objects, and painted everyday events and objects
with an informal spontaneity. However, pointillistic painter Georges Seurat, working in Paris at about the same time as the impressionists, also painted the effects of sunlight and everyday events in peoples’ lives. His art works, however, were calculated, not spontaneous, and often contained social commentary. To confuse impressionism with Seurat’s post-impressionistic pointillism would be garbling art information and misunderstanding both impressionism and pointillism (Koroscik, 1990; Nochlin, 1989).

*Compartmentalized knowledge* (i.e., knowledge which has not been related to other concepts within the learner’s knowledge base) is passive, often isolated, and organized around literal meanings. There is little likelihood that knowledge which has been compartmentalized will be linked with the learner’s overall cognitive structure (Perkins & Simmons, 1988). As illustration of this form of misunderstanding, consider the way some art learners seek solely to identify the subject matter of artworks. Once they figure out “what the artwork is about,” they store this knowledge of subject matter believing they have experienced all the artwork has to offer. No connections are made to previous or subsequent learning because of the compartmentalized knowledge-search and knowledge storage. Consider Edvard Munch’s painting, *The Scream* (1893). Many people think this painting is about a person screaming with terror in a surreal atmosphere. It has even been used as an art exemplar for Halloween lessons. However, this painting is understood by many art critics to be an external reflection of the artist’s internal struggle with effects from a tragic childhood and troubled adult life. It is also an early example of
the expressionistic style of painting (Loshak, 1990; Taschen, 1992). If an art teacher or
art learner compartmentalized the meaning of this painting solely as that of a frightened
person, there would be no further search for other meaning(s) regarding the work’s
subject matter, its historical or expressive qualities, or the artistic style in which it was
created. Such multiple meanings provide links which could be connected with knowledge
of similar or dissimilar artworks.

**Learner's Knowledge-Seeking Strategies**

How do learners search for understanding and integrate new information with
what they already know? Research tells us that knowledge is “flexible and constantly
changing as the learner revises, reorganizes, and deepens understandings over
time.”...knowledge is not “locked into one tightly organized structure that simply gets
larger as a learner adds new knowledge into it.”...knowledge is in a constant state of
restructure (Roth, 1989, p. 7). Constant restructuring activities are learners’ attempts to
apply new information to existing knowledge in order to: (a) gain further understanding,
and (b) explore relationships between concepts.

**Different Strategies for Different Levels of Learning**

Specific learning and general learning require different knowledge-seeking
strategies (Prawat, 1989). Specific strategies are prescriptive, involving the application of
simple routines to specific tasks. They are easily taught but so specific that they do not
readily transfer to new, relevant situations (Prawat, 1989, p. 33). Some studio routines
such as wet or dry brush painting techniques, or the wax application process in batik print-making are examples of such routines.

In contrast, general, higher-order strategies are applicable to almost any situation. However, they are very hard to teach or operationalize as they are abstract processes (Prawat, 1989, p. 33). For example, producing stereotypical, colorful, patterned images of desert and wilderness animals inspired by contemporary aboriginal painters is an easily taught art-making activity. However, looking beyond the medium and subject matter to the art-making context and the documented meaning(s) of these distinctive artworks is a teaching and learning strategy of a higher-order. In that scenario, not only would art learners come to recognize contemporary aboriginal animal images, they would also come to understand that such paintings have political meaning(s) similar to some contemporary native American paintings. These works represent indigenous peoples’ claims to their homeland (Isaacs, 1989). Such meanings are abstract, non-observable concepts. It takes effort to search for such meanings.

Research has shown that learning strategies often used at introductory stages of learning such as rote memorization, do not appear to promote advanced knowledge acquisition (Feltovich et al., 1991). When learners are motivated to acquire large amounts of curricular content for performance reasons and are not encouraged to seek relationships or build connections between facts and ideas, there is little use of strategies for higher-order thinking and understanding. Research findings indicate that use of these learning
strategies risks the formation of misconceptions and superficial understandings. In order for learners to advance from introductory, possibly oversimplified information to advanced levels of understanding, learning strategies that promote higher-order thinking and learning must be implemented (Efland, 1993, p. 113; Perkins & Simmons, 1988).

**Novice Expert Strategies for Seeking Knowledge**

Cognitive research on expert/novice differences indicates that experts in different fields solve problems in strikingly similar ways, and that experts and novices solve the same problems differently (Glaser & Chi, 1988). Search strategies of novices and experts differ in the following ways:

- Experts are successful in determining what they don’t know and what to search for (Koroscik, 1990); novices understand problems to be of equal difficulty (Chi, 1987).

- Experts remember information for short and long periods of time not because they have larger memories, but because they are able to make connections and relationships; their knowledge is organized and coherent (Glaser & Chi, 1988).

- Experts take more time initially to consider problems than do novices; however, they eventually solve the problems with greater accuracy and speed (Glaser & Chi, 1988).

- Experts’ abilities to abstract and represent problems cause them to make connections more readily than novices who tend to tie knowledge to specific contexts (Glaser, 1984).

- Expertise in one domain does not suggest expertise in another domain; there is little evidence that expertise transfers across domains (Glaser & Chi, 1988).

- Experts are superior in perceiving large meaningful patterns in their domain due to the organization of their knowledge base (Chi, Glaser, & Farr, 1988, p. xvii).
• Experts see and represent a problem in their domain at a deeper (more principled) level than novices; novices tend to represent a problem at a superficial level (Chi, Glaser, & Farr, 1988, p. xvii).

• Experts spend more time trying to understand a problem than do novices who typically attempt to solve the problem immediately (Chi, Glaser, & Farr, 1988, p. xvii).

• Experts seem to be more aware than novices of when they make errors, why they fail to comprehend, and when they need to check their solutions (Chi, Glaser, & Farr, 1988, p. xvii).

Novice/expert research has been useful to the field of art education for it illustrates a range of possible learning outcomes and helps distinguish fully developed understandings from naive understandings (Koroscik, 1990, p. 7).

**Learners' Dispositions**

Issues of motivation and *disposition* or "habits of mind," have particular relevancy to learning situations (Efland, 1993; Prawat, 1989). Most students approach learning with either a performance or a mastery orientation toward learning (Prawat, 1989). A learner with a performance disposition intends to do well in order to gain positive judgment from others--learning is a means to an end. A learner with a *mastery disposition* seeks to increase competence--learning is an end in itself (Koroscik, in press; Prawat, 1989). Prawat (1989) explains that learners' thinking about an act changes as they gain mastery over the act. They lose sight of details and a higher-order, more abstract way of representing the act comes forth as they gain proficiency in that act.
If learners desire to develop a mastery orientation toward learning, they must learn to utilize knowledge-seeking and knowledge-application strategies that promote higher-order thinking. Prawat (1989) theorizes that learners with developed awareness of knowledge-seeking skills could eventually choose either a mastery or performance learning orientation toward a task depending on the material to be learned. Learners could choose beginning strategies for introductory (performance) learning and higher-order strategies for advanced (mastery) learning. Learners would then be truly empowered to acquire, process and apply information (p. 27-34).

**The Role of Transfer in Cognitive Learning Theory**

Any learning involves *transfer* in at least a trivial sense. Transfer takes place when "something learned in one context has helped learning in another context" (Perkins & Salomon, 1988, p. 22). Transfer is central to learning and intellectual development (Bransford et al., 1986). Transfer is the interaction of the learner's knowledge base, search strategies, and willingness to learn (Koroscik, in press). Forms of transfer considered in this study are discussed below.

**Low-road or Near Transfer**

Described as "the spontaneous, automatic transfer of highly practiced skills, with little need for reflective thinking" this form of transfer is often based on superficial similarities among different forms of information (Salomon and Perkins, 1989, p. 118). Many "successes" in conventional education fit the description of *low-road transfer*. For
example, learning to merely recognize Picasso’s painting *Demoiselles d' Avignon* (190) is low-road transfer of prior learning.

A great deal of the knowledge students acquire in traditional education remains inactive (Bereiter & Scardamalia, 1985). “Relevant knowledge often remains inert even though it is potentially useful” (Bransford et al., 1986, p. 1081). Recall of relevant knowledge and information could be reflected in simple tests, but students are all-to-often unable to transfer this knowledge to new contexts.

**High-Road or Far Transfer**

“The deliberate, mindful abstraction of skill or knowledge from one context for application to another” has been described as *high road or far transfer* (Perkins & Salomon, 1988, p. 25). Far transfer bridges contexts remote from each other. It takes effort to discover connections and make deliberate abstractions between such distant contexts (Bellon, Bellon & Blank 1992; Salomon and Perkins, 1989). Research indicates that students can learn something in one context and abstract the knowledge for future use in another context (i.e., *forward-reaching high road transfer*). Learners can experience a problem situation in the present and search backward into their experience for solutions (i.e., *backward-reaching high road transfer*). High-road transfer, whether forward-reaching or backward-reaching, involves reflective thought to facilitate abstractions from one context to another. Consider again Picasso’s painting *Demoiselles d'Avignon*. Art historical research bridges the cubistic nude images in this painting to Picasso’s fascination
with African tribal masks. In fact, if viewers look closely, three of the nudes’ faces are overpainted with masklike features (Brommer, 1988). This transfer of learning from one context to another demonstrates Picasso’s ability to transfer far (i.e., bridge African images to the faces of French women). His depiction of far-reaching historical examples provides the opportunity for art learners to look at artworks from the past to understand the meanings of artworks in the present.

By understanding the mechanisms of transfer, learners and teachers can utilize such mechanisms to foster their own transfer of learning. Two known strategies which promote transfer are: (a) hugging, and (b) bridging. Hugging is a teaching strategy for low-road transfer. Perkins and Salomon (1988) suggest that teachers use hugging by introducing knowledge they want students to transfer to a problem in the context of such a problem. For example, the teacher should carefully choose an activity that resembles or “hugs” the transfer target (p. 28). Bridging is a learning and teaching strategy that fosters high road transfer. Rather than expecting transfer to occur spontaneously, learners and teachers need to deliberately attempt generalizations and abstractions in order to bridge from one learning context to another. Teaching students how to utilize and achieve far transfer means that teachers need to understand the mechanics of transfer and the strategies of hugging and bridging (p. 28-29).
Implications of Cognitive Learning Theory for Art Education

Cognitive learning theory is relevant to art education because learning processes are similar across subject matter domains. Learning about and understanding art utilizes formal, informal, representational, conceptual, and procedural knowledge as well as an ability to work with media. Deep art understanding requires prior knowledge of art history, formal elements of art, an understanding of artworks' interpretive meanings, studio skills and strategic knowledge of how to transfer this knowledge from one artwork to other artworks or art-making situations. The study of art fosters many styles of cognition (e.g., visual processing, analytical thinking, verbal reasoning). Art encourages rich connection-making (Perkins, 1994, p. 5). Furthermore, domain-specific studies of expertise (or lack of it) hold rich implications for art teaching and learning. Such studies identify problems in novice art teachers' understandings that constrain meaningful learning and knowledge-seeking. They also provide definitions of novice/expert art understandings and art teaching.

Current Research on Teaching

In order to understand how people learn to teach and how they teach as a result of what they know, research findings about learning can be applied to studies about teaching. Just as learners' knowledge base, search strategies, and dispositions have been examined to explain the impact on learning, teachers (as learners) have been studied to determine how their knowledge base, search strategies, and dispositions affect learning and teaching.
Art Teachers' Knowledge Base

In their textbook, *Teaching from a Research Knowledge Base*, Bellon, Bellon and Blank (1992) state the importance of understanding teacher knowledge and its impact on teaching:

A clearer understanding of teacher knowledge and the structure of that knowledge can aid teacher education program designers. Teaching practice can be improved by focusing on what teachers need to know and finding the best method for them to acquire that knowledge (p.6).

The Role of Teacher Knowledge in Art Teaching

Current research identifies a knowledge base for teachers and discusses how such knowledge affects lesson planning and instruction. Several models of teacher knowledge have been developed (e.g., Elbas, 1983; Leinhardt & Smith, 1985; Shulman, 1986, 1987; Wilson, Shulman & Richert, 1987). Although differences exist between these theoretical models, most of them contain four main categories of professional teaching knowledge: (a) subject matter knowledge, (b) general pedagogical knowledge, (c) pedagogical content knowledge, and (d) knowledge of context. Figure 1 illustrates the theoretical model of teacher knowledge used in this study (Grossman, 1990, p. 5).

Since teaching is the interweaving of many strands of knowledge, the intent of this study is not to partition the domain of teaching into arbitrary, possibly misleading facets. According to Leinhardt (1993), the acquisition of knowledge needed for teaching is necessarily partitioned, so teaching strands can be studied somewhat separately (p. 12).
By design, this study is not an exhaustive investigation of all critical aspects of teaching. The investigation is limited to three categories of teacher knowledge (see Figure 1). The roles of these three categories are briefly described below.

**The Role of Subject Matter Knowledge in Art Teaching**

A teacher should have a deep understanding of the specific subject she/he teaches. *Subject matter knowledge* refers to knowledge of concepts, topics, principles, laws, and higher-order schemata in a discipline (Grossman, 1990; Hashweh, 1985). The depth and organization of subject matter knowledge, at times referred to as “content knowledge,” influences how teachers structure and teach lessons (Wilson & Winberg, 1988). *Syntactic knowledge* of ideas, principles, and strategies that guide inquiry in a field, and *substantive knowledge* of concepts, facts, ideas, and relationships (Schwab, 1978) have been useful categories in the recent study of art teachers’ content knowledge (Kowalchuk, 1992).
### Subject Matter Knowledge

| Syntactic Structures | Content | Substantive Structures |

### General Pedagogical Knowledge

| Learners and Learning | Classroom Management | Curriculum and Instruction | Other |

### Pedagogical Content Knowledge

Conceptions of Purposes for Teaching Subject Matter

| Knowledge of Students' Understanding | Curricular Knowledge | Knowledge of Instructional Strategies |

### Knowledge of Context

| Students | Community | District | School |

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 Portions of Teacher Knowledge Designated as Variables in this Study.

**Figure 1.** Model of Teacher Knowledge (Grossman, 1990).
Just as learners’ understandings are constrained by misconceptions in their knowledge base, likewise teachers have problems with naive understandings, underdifferentiated concepts, garbled knowledge, and compartmentalized knowledge. Recent studies in art education illustrate the misunderstandings of art learners and art teachers (Koroscik, 1990; Kowalchuk 1992).

**Key concepts in art teaching.** Key concepts are facets of content knowledge and the basic ideas that lie at the heart of a discipline and enable rich connections with other ideas and information (Efland, 1977; Eisner 1972; Koroscik, 1988; Prawat 1989). Prawat (1989) reminds teachers to be extremely selective in their key concept choices because the connectedness of a concept determines its meaningfulness to learners and its centrality in the learner’s cognitive structure. Relationships between concepts are the basis for understanding the visual arts (Efland 1977, p. 118). The ability to abstract the essence of a key concept is necessary in order to select appropriate representations (i.e., art exemplars) of that concept.

As illustration, let us look at the concept of perspective and depth in artworks. The essence of this concept is that objects in artworks exist on the same plane or on different planes and those placements somehow affect the meaning of the artwork. A knowledge of artworks throughout history and from different cultures provides art teachers with examples of 3-dimensional illusions on 2-dimensional surfaces. The choice of art exemplars by Renaissance masters such as Michelangelo and Lorenzo Ghiberti to
illustrate perspective illusion demonstrates a high degree of subject matter/content knowledge. These artists were among the first to employ and experiment with perspective and its effect on the meaning of an artwork. Teachers' subject matter/content knowledge as demonstrated by their lesson key concepts will be a variable in this study.

**The Role of General Pedagogical Knowledge in Art Teaching**

This category of teacher knowledge pertains to the teacher's understanding of teaching and learning principles and processes, and their skill in the use of such principles and processes (Grossman, 1990; Gudmundsdottir, 1987). Teachers' understanding of learners' curricular knowledge and life experiences, physical, emotional, and social development are further examples of general pedagogical knowledge.

**Art learners' prior knowledge in art teaching.** Subsumed within a teacher's general pedagogical knowledge is the understanding of learners' prior knowledge: (a) the learner's accumulated skills, experiences, understandings, and misunderstandings; and (b) the learner's knowledge about the material being studied (Koroscik, 1993; Prawat, 1989).

Teachers' pedagogical knowledge as demonstrated by their consideration of learners' prior knowledge in lesson planning will be a second variable in this study. For instance, an art teacher would approach teaching the concept of perspective and depth differently with third graders than with fifth graders. Third graders differ from fifth graders in their prior art knowledge and cognitive development. Teachers' curriculum
choices regarding lesson content, objectives, and learning activities indicate their understanding of their students’ prior knowledge (Baker, 1990).

The Role of Pedagogical Content Knowledge in Art Teaching

General pedagogical knowledge and subject matter knowledge are transformed through the process of teaching into a topic-specific knowledge referred to as pedagogical content knowledge (Grossman, 1990; Hashweh, 1985). The components of this knowledge are the abilities (a) to understand central topics, skills, and attitudes in a field, (b) to know what aspects of these topics will be interesting or difficult for students to understand, (c) to select examples that best represent such topics, and (d) to be able to question students effectively about these topics (Shulman & Sykes, 1986). Teachers need the ability to link learners’ prior skills, experiences, and understandings to new materials and concepts in order for meaningful learning to occur (Bruer, 1994; Koroscik, 1992, 1993; Prawat, 1989; Vosniadou & Brewer, 1987).

Once again, we might refer to the on-going illustration of perspective in artworks in order to understand how teachers use pedagogical content knowledge. An art teacher knows that her fifth grade students have been introduced to geometric concepts in fifth grade math and that they are able to think in abstract terms at a beginning level. She knows that their prior art learning includes knowledge of the design elements of shape and form. A recent art lesson noted the “flatness” of Medieval European paintings and prepared students to understand the abstract concept of 3-D on a 2-D surface. After
consideration of the fifth graders' accumulated knowledge, the teacher decided that they were capable of constructing one-point linear perspective drawings. The drawings would be part of an art history unit on the Italian Renaissance. After sequential instruction to complete such drawings, the teacher and students compared their perspective compositions to the perspective composition in Renaissance paintings and the bas sculptural relief of Lorenzo Ghiberti's doors.

Third graders, on the other hand, are able to observe the "far away" and "close up" features in Renaissance paintings but would have difficulty constructing one-point linear perspective drawings. Their unit on depth in Renaissance paintings could begin with the concepts of background, middle ground, and foreground. They could understand and apply the techniques of creating depth by (a) overlapping objects, (b) decreasing the size of far away objects, (c) using bright colors in the foreground and dull colors in the background, and (d) using more or less detail to create the illusions of "near" and "far away" in their artworks. Third graders could use their knowledge of these concepts and techniques to construct collages of everyday or special events. People and objects in the foreground are largest, most detailed, and most colorful. People, animals, and objects in the background are smallest, least detailed, and least colorful. The effect of these placement, size, and color choices on the meaning(s) of the artworks could then discussed and compared to master Renaissance paintings.
The Role of Research Knowledge in Art Teaching

Many teachers cite student teaching as the most beneficial experience in their teacher preparation. However, much of the knowledge gained during student art teaching is of a procedural nature such as learning daily school routines, learning to use equipment and materials, and acquiring a knowledge of studio procedures, skills, and materials. It has been found that student teachers are preoccupied with self-survival and class control (Kagan, 1992, p. 163). Teaching from a research knowledge base is not prevalent in the beginning stages of teaching. Bellon, Bellon, and Blank (1992) theorize that teaching practice based on research knowledge in addition to procedural and other forms of knowledge would result in higher levels of instruction.

In their teacher education textbook, Bellon, Bellon, and Blank (1992) identify six outcomes of teaching from a research knowledge base:

- developing a sound, current, pedagogical knowledge base
- understanding a common research on teaching vocabulary
- identifying important research on teaching themes
- understanding how teachers have integrated their research knowledge base with their practical knowledge
- developing insights from the research that can be applied to improve current practice
- engaging in collegial problem-solving and improvement activities (p. 19).
Art Teachers' Knowledge-Seeking Strategies

Art teachers can broaden their knowledge base by developing effective knowledge-seeking strategies to promote the on-going construction of understandings. Search strategies enable teachers to seek connections between their prior knowledge and new information. The use of effective and ineffective search strategies has been described by Perkins and Simmons (1988) and Koroscik (1993; in press).

The Role of Reflection in Art Teachers' Knowledge-Seeking Strategies

Self-reflection on one's teaching is not a new idea. The process of self-reflective teaching was first conceptualized by Dewey (1933). He broadly defined reflection as “active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends” (p.9). During the 1970s, a small number of international scholars and teacher educators revitalized Dewey's notion of reflection (Richardson, 1989, p. 7). In the 1980s, Schon (1983, 1987) wrote about reflective practice in teaching and in other professions.

Operational definitions of reflection are quite varied. “Most who use the term would probably agree that the opposite of reflective action is the mindless following of unexamined practices or principles. But within that agreement, there is a wide rage of opinions regarding what reflection is and what it looks like in action” (Sparks-Langer & Colton, 1991).
Zimpher and Howey (1987) have identified an operational model for reflective search strategies which is useful to this study. Their model has four levels of teacher competence ranging from low to high levels of reflectivity. The levels are as follows:

- **Technical competence**—teachers learn and apply specific reflective techniques and skills in the process of teaching. This knowledge demonstrates a low level of reflectivity.

- **Clinical competence**—teachers examine what they are doing in the classroom, and then to make changes based on that inquiry and reflection.

- **Personal competence**—teachers move away from self-awareness and survival concerns. They use their knowledge of adult moral and cognitive development to inform their practice and to foster an understanding of self in the context of teaching.

- **Critical competence**—teachers move from consciousness-raising about school practices to reconstruct and transform school and society through collaboration and/or critical inquiry (p. 101-127).

### Knowledge-Seeking Strategies of Art Novices and Experts

Research on the knowledge-seeking strategies of less experienced and more experienced art learners is particularly informative to this study of novice art teachers. As stated before, a directional movement in professional knowledge is indicated by such paradigms. It seems likely that novice art teachers' understanding and search strategies are comparable to the understanding of less experienced art viewers in that both are underdeveloped. Art viewing strategies demonstrate the following novice expert characteristics according to Koroscik (1989):

- More experienced art viewers possess a higher degree of prior art knowledge; less experienced art viewers possess minimal prior knowledge of art. Less experienced viewers' inability to understand artwork is often attributed to the
artist's failure—not their own lack of prior knowledge.

• More experienced art viewers organize the search for information and the construction of art meanings on conceptual frameworks drawn from their knowledge of the discipline. Less experienced art viewers have difficulty using acquired knowledge to interpret artworks; thus constructed meanings are often limited to "psychological reports" or personal meanings.

• More experienced art viewers understand the public or shared meanings of art in terms of discipline concepts because meanings and concepts have been established as personally relevant.

• More experienced art viewers are more successful [than less experienced art viewers] in interpreting literal and nonliteral meanings—even for highly abstract works of art. Less experienced art viewers are usually more successful comprehending literal art meanings than nonliteral (expressive) meanings—but comprehension of both drops markedly in response to art with high levels of abstraction.

• More experienced art viewers assume comprehension failure is due to their own lack of sufficient art knowledge and/or the unavailability of adequate contextual information. Less experienced art viewers often assume understanding art does not require any specified knowledge.

• More experienced art viewers approach art searching for multiple explanations, seeking to challenge and extend theories and conceptual frameworks beyond their usual scope. Less experienced art viewers approach art searching for singular answers, seeking to find what an artwork is about.

Art Teachers' Dispositions Toward Learning

Examining teaching within a cognitive research framework places the teacher in the role of learner. Hawkins (1973) recorded the following exchange between a veteran teacher of thirty-five years and a student teacher:

The veteran commented that what held her to teaching after all these years was the fact that there was still so much to be learned. The student teacher responded in amazement that she thought it could all be learned in two or three years. Hawkins observes: "It may be possible to learn in two or three years the kind of practice
which then leads to another twenty years of learning.” (p. 7)

**Teachers with a Disposition to Learn**

Hawkin’s (1973) story illustrates the contrasting views of teaching and learning to teach. The student teacher believed that learning to teach is the exclusive role of the beginning teacher and that once a teacher reached a level of mastery, the necessity for further learning was basically over. The student teacher assumes that after the first two or three years teaching will be rather routine and predictable. In contrast, the veteran teacher knows that the work of teaching must be informed by knowledge received from the classroom context and the particular students—not entirely from experience and past knowledge. According to Feinman-Nemser (1983), “the classroom is not only a place to teach children, but a place to learn more about teaching and learning. Learning is part of the job of teaching” (p. 150).

Research suggests teachers who desire to continue learning do so for several reasons: (a) they perceive benefits toward student learning, achievement, and attitude (Richardson-Koehler, 1988); (b) they desire to make the work of teaching more manageable (Bellon, Bellon, & Blank, 1990, p. 451); and (c) they believe they are in a better position to understand their students’ efforts to learn if they themselves are making efforts to learn (Featherstone, 1986). Research studies have found that a strong self-concept is evidenced by teachers who are willing to learn (Bellon, Bellon, & Blank, 1990,
Teachers who are learners understand that learning is a process, not a product (Wildman & Niles, 1987).

**A Cognitive Model of the Art Teacher as Art Learner**

Koroscik's (1993; in press) theoretical model visually represents developmental continua of a teacher's professional knowledge base, knowledge-seeking strategies, and dispositions toward learning. As shown in Figure 2, the degree of novice expert cognitive development is conceptualized along each continuum from least relevant, effective, and motivated to most relevant, effective and motivated. The process of transfer engages all three facets of cognition. Koroscik's illustrative profile serves in the analyses of interactions between different forms of teacher knowledge (see Figure 2).

**Implications of Teaching Research for Art Education**

Cognitive learning and teaching research is relevant to art instruction because learning and teaching processes have similarities across educational domains. Investigating teacher knowledge and the ways teachers search for information in order to
THE LEARNER'S KNOWLEDGE BASE

All of the accumulated knowledge, skill, and experience a student currently possesses, including what the learner already knows about the material being studied.

THE LEARNER'S CHOICE OF KNOWLEDGE-SEEKING STRATEGIES

The cognitive steps a student takes to construct new understandings, to seek new knowledge, and to apply previously acquired knowledge, skill, and experience.

THE LEARNER'S DISPOSITIONS

The motivational factors or "habits of mind" that influence the learner's willingness to learn and seek understandings.

teach it to others is particularly informative to the field of teacher education. Such investigations describe novice teachers’ understandings and misunderstandings. Both forms of understanding impact subsequent learning and teaching. If art teachers make methodological and curricular decisions based on their own misunderstandings of art and pedagogy, it is likely that their students, in turn, might attempt to construct art understandings based on those misconceptions.

Because the practice of teaching is informed by teacher knowledge, it is necessary to understand which knowledge-seeking strategies are considered the least and most effective in informing higher-order art teaching and thinking. Motivation to learn and seek understanding of content and pedagogy is also crucial to the educational process, and it has much implication for the preparation of art teachers.
CHAPTER III

METHODOLOGY

Design of the Study

Preservice art teachers' pedagogical content knowledge was examined in this study within a three-phase experimental design. Pedagogical content knowledge was inferred through the teachers' understanding of their students' prior knowledge and the teachers' choices and organization of lesson key concepts.

Educational interventions used in this investigation are standard practices in teacher education. The interventions were: (a) a lesson plan self-critique, (b) a critique of actual teaching, (c) a critique of a teacher interview, (d) a response to direct instruction on cognitive learning research, and (e) a re-critique of the original lesson plan.

Phase one of the study examined the way novice art teachers comprehend and transform content knowledge into lesson plans. Student art teachers were asked to critique what they thought was their most successful lesson plan from student teaching. They described (a) what lesson key concepts they selected to teach and why, (b) how these lesson key concepts connected to other key concepts within the overall unit, (c) how they considered learners' prior knowledge in the planning of their lesson, and (d) how the studio activity in the lesson reinforced key concepts and prior knowledge. These lesson plan critiques were designed as pre-test data. It was collected before the phase two
workshop interventions. Data collected during the workshop and data from the phase three re-critiques were analyzed as post-test data.

Phase two of this investigation occurred in the form of a workshop on learning research and the lesson planning process. Participants first observed a 34 minute videotape of actual elementary art instruction by a veteran art teacher. In order to simultaneously collect data on two variables (i.e., teacher understanding of key concepts and teacher understanding of learners' prior knowledge) within the limited time allotted for the workshop, two focus groups were randomly formed. Data from the two groups were subsequently compared during cross analysis to determine additional effects of teacher education interventions on the student art teachers' content and pedagogical knowledge.

For Task 1, ten of the teachers were randomly cued to list the key concepts they observed being taught in the three videotaped art lessons. Nine of the teachers were cued to describe the prior knowledge of the young learners in the videotape, and to list lesson content that seemed new to the youngsters. For Task 2, teachers were instructed to indicate relationships between the key concepts in the unit of instruction or between the young learners' prior knowledge and newly presented information.

The teacher participants then observed an 18 minute videotaped interview with the veteran art teacher from the videotaped teaching episodes. This teacher discussed: (a) what she considered to be the key concepts in her overall unit, (b) her students' prior
knowledge, and (c) planning art lessons based on key concepts. While viewing this interview, the participants were prompted to make notes about the experienced teacher's comments (i.e., Task 3). As a result of listening to the experienced teacher describe what she chose as lesson key concepts and what she understood as learners' prior knowledge, the teachers then recorded any new understandings they had about key concepts, learners' prior knowledge, and lesson planning (i.e., Task 4).

An illustrated lecture on cognitive learning research followed Task 4. Segments from the videotaped art unit were used as examples of how an experienced teacher puts her knowledge of cognitive learning theory into practice. It was reasoned that when teachers use both practical and research knowledge as the basis for instructional decisions, teaching strategies would be more effective (Bellon, Bellon, & Blank, 1992, p. 4). At the completion of the lecture, the student teachers were asked to complete a background questionnaire (i.e., Task 5).

The third phase of the study was planned to investigate the student art teachers' new comprehensions and reflections on key concepts and learners' prior knowledge after the educational interventions of the workshop. Teachers re-critiqued the lesson plan they submitted in phase one of this investigation. These re-critiques were designed as post-test data and subsequently cross-analyzed with pre-test data from the original lesson plan critiques.
Participants

Nineteen participants voluntarily took part in this study. All were art education majors at Buffalo State College, Buffalo, New York. Fourteen of the participants were female, five were male. All were at the same stage of prerequisite coursework. Fifteen participants had completed the required coursework for an undergraduate baccalaureate degree and were seeking K-12 art teaching certification. Four participants had already received an undergraduate fine arts degree and were also seeking K-12 art teaching certification. Sixteen weeks of student teaching and enrollment in a weekly student teacher seminar were the final requirements for teaching certification by the College's Department of Art Education.

One three-hour student teaching seminar and 30 minute periods during two additional seminars were needed to accomplish this study. A teacher education program with a semester schedule was preferred because a semester system has more weeks available for the workshop and additional data collection.

None of the participants had previous formal teaching experience, though a few had worked with learners in informal art education settings. By the third phase of the study, 12 of the 19 participants had volunteered to participate in a one-on-one follow-up interview. For the remainder of this study, these participants will be referred to as student art teachers, and beginning or novice art teachers.
Materials

Unit of Art Instruction Videotape

In order to provide teaching scenarios for observation and data collection in this study, it was necessary to videotape actual art teaching. The lesson planning and implementation of several experienced art teachers were initially videotaped. It was determined that the teaching of a veteran elementary art teacher of 26 years best exemplified the variables under consideration in this study. This experienced teacher demonstrated sequential teaching of key concepts and considered her students' prior knowledge in lesson planning. She also planned studio activities which reinforced key concepts and which reflected her students' prior knowledge. She searched for new information which would engage her students' past experiences in the process of understanding art. A two-week summer art program, designed by this teacher for fourth and fifth graders, became the teaching episodes for this study.

The theme of the art program was "Stories and Storytellers in Art." There were three connected lessons within the overall unit. Each lesson focused on a different narrative artist. The first artist, Elijah Pierce, was an African-American living in Columbus, Ohio during the 20th century. Pierce was a self-trained woodcarver, often illustrating stories from his African-American heritage. He was a barber by trade, and worked in a "folk" style. His compositions are told in vignettes, all on one plane, with no illusion of depth (Constable, 1993; Gilson, 1993). He is a known artist in the region
where the videotaped young students lived and some of these students had prior
knowledge of Pierce’s works. The second 20th century narrative artist, Shalom of Safed,
had many trades before training himself to become a painter. He was an Hassidic Jew who
lived in Israel. His illustrated stories were from the Old Testament in the Bible, not stories
from personal recollections or from his imagination. His style is very decorative. His
compositions differ from Pierce’s in that his painted stories unfold chronologically from
the top of the work to the bottom, and from right to left—a reference to his native Hebrew
language (Doron, 1989; Pantelic, 1988). The third artist, Aminah Brenda Lynn Robinson
is also African-American. She differs from the first two artists in that she is living, is
formally trained, and her stories are both personal and from books, songs, poetry, etc.
She works in all media. She lives in Columbus, Ohio and was mentored by Elijah Pierce
(Mallett, 1992; Roberts, 1990; Ware, 1987). The veteran art teacher selected Robinson
because of her narrative style and her relationship to Elijah Pierce. Robinson’s work
demonstrates one of the teacher’s lesson key concepts—that artists today are influenced by
artists and artworks from the past.

The purpose of videotaping an entire unit of instruction was to demonstrate how
key concepts from one lesson can relate to key concepts in other lessons in order to help
build connections within the learner’s cognitive structure. Students were given the
opportunity to connect their prior knowledge with these key concepts and new
information in all three lessons. By filming sequential and linked lessons within an overall
unit, it was possible for the student teachers to observe concept introductions, exploratory and criticism activities, demonstration of studio procedures, and forms of assessment.

All eight art sessions, including the studio activities, were videotaped. Because there were 18 hours of videotaped instruction, it was necessary to summarize each of the three lessons to adhere to the 35 minute viewing time planned for the workshop.

In order to establish face and content validity of these summarized lessons, a rough edition of the summarized unit was sent to three art education experts. These judges have research interests in art teacher education and higher-order art teaching and learning. The judges were asked to independently view the rough version of the videotape and to describe the key ideas and prior knowledge of students in each of the three lessons.

General suggestions were solicited about the flow of the summarized lessons' and about the wording of instructions in the participant response booklet. There was agreement among the three judges regarding the unit's overall key concepts and the learners' prior knowledge. A few minor changes were made to the video and to the participant response booklet as a result of these judges' suggestions. A 34 minute videotaped unit of instruction and a 7 page participant response booklet were the result of these consultations.

The videotape was edited at a professional facility. It was then field tested with art education graduate students and pilot tested once with intermediate art education majors, and once with student art teachers. Additional minor revisions were made to the
participant response booklet after the field and pilot tests. All parents of the children in the videotaped art class signed a consent form for participation in research involving human subjects (Appendix A) though the children were not the actual participants studied in this investigation.

A transcript of this unit of instruction videotape is included for reference (see Appendix B).

**Teacher Interview Videotape**

To provide an opportunity for the student art teachers to hear an experienced art teacher talk about decision-making and lesson planning, a semi-structured, one-on-one teacher interview was videotaped. The interview was conducted with the veteran teacher from the videotaped unit of instruction. Much of the content of this 60 minute tape falls into three main categories: (a) learners’ prior knowledge, (b) selection and organization of key ideas in an art unit, and (c) teaching art lessons based on key concepts. Omitting content that did not fit into these three categories resulted in an 18 minute interview which was then edited in the same professional facility as the first video. A transcript of this teacher interview videotape is included for reference (see Appendix C).

**Illustrative Videotaped Segments**

During the workshop lecture on learning research, short segments from the unit of instruction were re-shown as examples of cognitive learning theories put into practice. The segments exemplified: (a) the assessment of learner’s prior knowledge through use of
questioning strategies, (b) the bridging of learners' prior knowledge and new information, (c) confrontations with potential misconceptions in learners' prior knowledge, (d) the re-use of the same key concept in different lessons within an art unit, and (e) the use of a familiar analogy from the learners' prior knowledge to illustrate new information. A transcript of these videotaped segments are included for clarification (see Appendix D).

Lesson-Plan Critique Form

A three-page instrument with six questions was designed to reflect the student teachers' choices of lesson content, their understanding of their learners' prior knowledge, the ways in which the teachers organized lessons within a unit of instruction, and the ways in which they reinforced lesson content with planned studio activities (see Appendix E). This form was developed to solicit pre-test data.

Participant Response Booklets

A seven-page booklet was developed for each participant to use during the phase two workshop. There were two editions of the booklet. One edition (a) referred to key concepts in lesson planning, the other edition (b) referred to learners' prior knowledge in lesson planning. The booklets were color coded—violet for key concepts, gold for learners' prior knowledge. Before the workshop began, these booklets were randomly placed at the tables where the student teachers sat. This random placement determined the student teachers' focus group assignment and which variable the teachers would respond to during workshop Tasks 1 and 2. The booklets contained the following: a title
page, two contextual information pages, and four pages with directions and space for writing Tasks 1-4 (see Appendix F).

**Overhead Transparencies**

During the workshop lecture, overhead transparencies were used in tandem with the videotaped illustrative segments. These transparencies consisted of three categories: (a) definitions of terms from current research on higher-order thinking and teaching, (b) illustrations of concepts from cognitive learning theory, and (c) summaries of illustrative videotaped segments of art teaching (see Appendix G).

**Participant Questionnaire**

At the end of the workshop, student teachers completed a background questionnaire used in previous teacher education research (Kowalchuk, 1992). Many of the questions dealt with teacher education information. One section, however, solicited the teachers' understanding about key ideas and learners' prior knowledge in their own teaching (see Appendix H).

**Lesson Plan Re-critique Form**

The self-critique form from phase one of the study was used again in the re-critique. The re-critique forms were color-coded according to the focus group to which the participants had been randomly assigned in phase one. Xeroxed copies of the critique and lesson plan from phase one were returned for review. The sixth question was re-worded to ask: "What would you change about this lesson plan?" (see Appendix I).
Procedures

Phase One: Lesson Plan Critique

The student teachers were in their fourth week of their sixteen-week student teaching experience when they were given this writing task as part of their weekly student teaching seminar coursework. From a prepared protocol (see Appendix J), the regular course instructor introduced the activity, gave instructions, and answered questions. The student teachers were seated at eight tables facing one another across a large room. They were instructed to spend no more than 15 minutes on this writing task and not to discuss their comments with one another during the activity.

The student teachers were instructed to critique what they considered to be their most successful lesson plan thus far during their student teaching. The knowledge and understanding reflected in these critiques and lesson plans was subsequently analyzed as pre-test data. A copy of each corresponding lesson plan was stapled to the critique.

The student teachers were required by the regular course instructor to use a particular lesson plan format (see Appendix K). This plan is consistent with formats conventionally used in art teacher education. Headings listed on the form were: descriptive lesson title, relation to large unit, major goal, objectives, materials, motivation and presentation, discussion and evaluation, relation to life, supplementary activity, preparation, and vocabulary words. Completion of the lesson plan critique lasted approximately 25 minutes.
Phase Two: Direct Instruction Workshop

Three weeks after the lesson plan critiques were completed, a direct instruction workshop on cognitive learning research took place during the weekly student teaching seminar. After thanking the student teachers for their participation in phase one of the study, the researcher, adhering to a pre-designed protocol (see Appendix L), used advance organizers to describe the activities of the three hour workshop. In addition to viewing two videotapes and listening to an illustrated lecture, there were five writing tasks. The activities, tasks, and the rationales for their design are described below.

Enabling preservice teachers to observe and evaluate experienced instruction is standard practice in teacher education (Bellon, Bellon & Blank, 1992). Preservice art teachers routinely go to different field sites to observe teaching, then bring observations back to the teacher education classroom to share. Often the observations and subsequent discussions are of a general nature. Preservice students are not typically instructed to observe specific variables or to relate their observations to research theories or teaching strategies. Most field observation assignments place preservice teachers at different sites to observe different teachers. Many preservice teachers seldom have the opportunity to observe the teaching of sequential art lessons within an overall unit of instruction. It is typical for them to see the implementation of a lesson without knowing the content of the previous lesson or of subsequent lessons within that same unit. By watching the videotaped art unit in this study, all nineteen teachers observed the same teacher and same
lessons (i.e., viewing the sequential teaching of three related lessons within a unit of instruction). They were asked to critique content or learner characteristics in each lesson.

**Workshop Task 1**

Student teachers were seated at eight large tables facing two portable TV monitors at one end of their regular large classroom. Before observing the videotaped unit of instruction, the student teachers were randomly assigned to one of two focus groups: (a) Key Concepts Focus Group, or (b) Learners' Prior Knowledge Focus Group. This assignment was accomplished by the random placement of color-coded (A) and (B) participant booklets. The booklets contained contextual statements from learning research explaining the importance of key concepts or learners' prior knowledge in higher-order art instruction (see Appendix F). These written statements preceded the writing tasks and were the only information given to participants about the variables they were asked to describe.

Participants were instructed to spend one minute silently reading their contextual statement (e.g., "When units and lessons focus on a few key ideas, learners are more likely to form connections between their existing knowledge and new information"). Next, ten of the participants were prompted to describe the key concepts of the lessons being observed and nine participants were asked to describe the prior knowledge of the young learners in the videotaped unit (see Appendix F). The videotaped lessons were shown one at a time. After viewing and responding to each lesson, the student teachers were given
one additional minute to complete their response before moving on to the next lesson.

Some teachers could view the videotape and simultaneously write their responses. Others
needed time to "catch up" on their responses before moving on to Task 2.

**Workshop Task 2**

Teachers were asked to indicate relationships they observed among the three
lessons. For example, teachers who had described the key concepts in the lessons drew
lines to indicate a relationship between key concepts in one lesson and key concepts in
another lesson. The teachers who noted learners' prior knowledge and new information
drew lines to indicate a relationship between prior knowledge and new information in the
three lessons (see Appendix F).

**Break Time**

Watching the videotaped unit of instruction and responding to Tasks 1 and 2 took
approximately 50 minutes, after which time there was a 10-minute break. Since the
student teachers could not leave the room, refreshments were provided during this time.

**Workshop Task 3**

Reassembling after the short break, teachers again seated themselves at the eight
large tables facing the TV monitors. They continued with the same participant response
booklets. As in Tasks 1 and 2, they were instructed not to discuss their comments with
one another during the remaining workshop tasks. Before observing a videotaped teacher
interview, the student teachers read contextual statements from learning research
explaining the importance of key ideas and learners' prior knowledge in higher-order art instruction. All teachers received the same contextual information for Task 3 (see Appendix F).

The participants then watched a videotaped interview of the veteran art teacher in the unit of instruction they had just observed. Research has found teachers' narratives (i.e., teachers' own interpretations of the events that occur within their particular teaching contexts) to be particularly meaningful to other teachers (Sparks-Langer & Colton, 1991). This activity was designed to present a portrait of an experienced art teacher using research, content, and pedagogical knowledge in lesson planning. This veteran teacher discussed her understandings of: (a) the students' existing knowledge, (b) the selection and organization of key ideas in lesson planning, and (c) teaching art lessons based on key concepts. Task 3 instructions prompted the student teachers to list the interviewed teacher's ideas as she responded to interview questions. This task lasted approximately 22 minutes.

**Workshop Task 4**

Participants were next given the opportunity to describe the new knowledge they gained as a result of listening to the experienced teacher talk about lesson planning, key concepts, and learners' prior knowledge (see Appendix F). The completion of Task 4 lasted approximately 5 minutes.
Illustrated Lecture on Learning Research

The next workshop activity provided direct instruction on cognitive learning research. Continuing with the workshop’s prepared protocol, terms such as cognitive learning theory, higher-order thinking, learners’ prior knowledge and key concepts were defined with the visual aid of overhead transparencies (see Appendix G). The purpose of waiting to define these terms until the last activity of the workshop was to determine the student teachers’ prior understanding of such terms before and after the workshop.

Short segments were shown from the videotaped unit of instruction to illustrate cognitive learning theories as they are practiced in actual art instruction (see Appendix D). The lecture lasted approximately 30 minutes.

Workshop Task 5

The final workshop activity was the completion of a participant questionnaire. Used in previous art teacher education research (Kowalchuk, 1992), one section of the questionnaire was designed to solicit information regarding the student teachers’ educational and professional background. Another section asked for the teachers’ current understanding of the importance of key ideas and learners’ prior knowledge in teaching (see Appendix H). This activity lasted approximately 10 minutes.

Phase Three: Lesson Plan Recritique

The third phase of the study continued to focus on how teachers’ pedagogical and content knowledge affects their lesson content and planning. In addition, it was designed
to investigate the effects of the workshop's teacher education intervention on student art teachers' pedagogical content knowledge.

Two weeks after the workshop, during the weekly student teaching seminar, re-critiques of the teachers' original lesson plans were completed (see Appendix I). Procedures used to collect the phase one critiques were used also to collect the recritiques. An additional five minutes was needed for teachers to review photocopies of their original lesson plan and critique. As before, student teachers were instructed not to discuss their comments with one another during the writing activity (see Appendix M). This activity took 20 minutes.

**One-On-One Interview**

Twelve of the 19 teachers volunteered to participate in a one-on-one interview. Interview sessions were scheduled within two days after the workshop or within two days after completion of the lesson plan re-critique. These semi-structured interviews were designed to clarify, if necessary, information about the lesson plan critique, background questionnaire, or workshop tasks. Teachers were asked to explain their selection of key ideas and artworks in the critiqued lesson. They were also given the opportunity to explain the ways they connected key ideas and new information with learners' prior knowledge, the existing curriculum, and the studio activity. Student teachers met with the interviewer on their own time for this activity. All interviews were audio-taped with the participant's verbal permission, and took place in an office in the Art Education Department at Buffalo State College. The interview data were analyzed as additional
evidence of the student teacher's art and pedagogical knowledge. Each interview session lasted approximately 30 minutes.
CHAPTER IV
ANALYSIS OF DATA

Cognitive learning theory in art teaching was the basis for interpreting the results of this study. Findings were related to recent research on teaching and learning in order to investigate the impact of student art teachers' knowledge of theory and practice. The study was inferential in nature with the purpose of generalizing to a theoretical framework about the acquisition, development, and use of pedagogical content knowledge by student art teachers. The study does not propose to generalize to populations or universes, but to expand and generalize theories (Yin, 1984, p. 25). Quantitative and qualitative analyses of data were conducted within a framework of categories taken from current research on art teaching and learning (Kowalchuk, 1992). Variables from general education research (Prawat, 1989a) and from theoretical models of teacher and learner knowledge (Grossman, 1990; Koroscik, in press; Shulman, 1986), were investigated. In addition, general descriptions of differences between novices and experts (Chi, 1987; Chi, Glaser & Farr, 1988; Glaser, 1984; Glaser & Chi, 1988) and less experienced and more experienced art learners (Koroscik, 1990) provided frames of reference for comparison.

Data from each phase of the study were organized by tasks, then analyzed within the context of the four research questions. Written lesson plans, lesson plan self-critiques, critiques of actual art instruction, critiques of a videotaped teacher interview, responses to
direct instruction, lesson plan re-critiques, participant questionnaires, and one-on-one teacher interviews served as evidence of student art teachers' content and pedagogical knowledge.

Teachers' key concept choices and utilization of learners' prior knowledge in lesson planning were the two focus variables in this study. The function of the studio activity in art lesson planning was also noted as was evidenced of teachers' understandings, misunderstandings, knowledge-seeking strategies, and dispositions.

Analysis Procedures for Specific Research Questions

Descriptions of the organization and analyses of data are described within each of the four research questions.

Research Question 1: What Key Concepts do Student Art Teachers Choose for Art Instruction?

During phase one of the study, student art teachers were asked to complete a self-critique of what they considered to be their "most successful" lesson plan from the first few weeks of student teaching (see Appendix I). The teachers were to list the key concepts in this lesson, then explain why they chose those particular concepts. The student teachers were asked to relate this lesson's key concepts to other concepts within the overall unit, and to explain how these concepts were reinforced by the studio activity. Additional comments about lesson planning were encouraged.
After preliminary readings of the data, six categories of teachers’ key concept choices were determined for data analysis. Four categories were derived from research in art education: (a) formal concepts, (b) descriptive concepts, (c) interpretive concepts, and (d) historical concepts (Koroscik, 1982, 1984; Kowalchuk, 1992). Two additional categories emerged from the student teachers’ self-critiques: (a) studio concepts, and (b) ideas related to learner attributes. The operational definitions of these six categories are as follows.

- **Formal concepts** focused on the structural features that physically reside in an art object and can be seen—such as colors, shapes, values, and lines (Koroscik, 1982, 1984; Kowalchuk, 1992).

- **Descriptive concepts** also focus on structural features (e.g., subject matter, literal or non-literal representation in an art object) (Koroscik, 1982; 1984; Kowalchuk, 1992).

- **Interpretive concepts** focused on semantic features (e.g., mood, expressive qualities, underlying religious, social, or philosophical features, the visual information in an artwork that stands for what is not immediately visible) (Bartlett, 1932; Koroscik, 1982; Parsons, 1992).

- **Historical concepts** focused on semantic features (e.g. historical or stylistic information about an art object, artist, or art movement) (Koroscik, 1982, 1984). Also included in this category was socio-cultural information about art objects.

- **Studio concepts** focused on media, art skills, or techniques.

- **Concepts regarding learners’** focused on grade level, art experience, attitude, or the quality of studio work.

All key concept statements in each lesson plan critique were identified, then color-coded according to category. These color-coded statements were considered **concept** or
idea units (Kowalchuk, 1992), defined by Lincoln & Guba (1985) as “the smallest piece of information about something that can stand by itself” (p. 345). The number of concept units in each category were tabulated for comparison across the phases. Content knowledge was inferred from teachers’ choices of key concepts and the relationships they established between the lesson key concepts and the overall unit of instruction.

Frequency distributions were also constructed to analyze the least and most often chosen categories for student teachers’ lesson content before and after educational interventions.

The student teachers were given no operational definition of the term “key concept” as they completed their lesson plan critique. One of the purposes of the study was to investigate teachers’ existing knowledge of key concepts in art teaching before they participated in teacher education interventions. Therefore, phase one lesson plan critiques were considered pre-test data and subsequently cross-analyzed with the lesson plan re-critique from phase three.

**Research Question 2: How do Student Art Teachers Utilize Learners’ Prior Knowledge During Lesson Planning?**

In their lesson plan self-critique, student teachers were asked to describe their students’ prior knowledge (see Appendix I). The teachers’ general pedagogical knowledge of learners was inferred from these descriptions. After prefactory readings of this data, it was determined that the six categories used in the analyses of research
question one regarding key concepts were also applicable to the examination of this question. The operational definitions of the formal, interpretive, historical, descriptive, studio and learner categories remained the same as in the question one analysis. Each description of learner knowledge, interest, or ability was color-coded one of six colors according to content. Descriptions were then sorted into the six categories. The total descriptions in each category were compiled in order to construct frequency distributions—one before and one after the workshop. Data were subsequently analyzed across the phases.

As with research question one, the purpose of this research question was to document student teachers’ prior understanding of the term “learners’ prior knowledge” before the teachers participated in any of the planned educational interventions.

**Research Question 3: What are the Effects of Teacher Education Interventions on Student Art Teachers’ Pedagogical Content Knowledge?**

Five forms of data were compared in a cross-phase analysis to determine the effects of teacher education interventions on student art teachers’ pedagogical content knowledge. Those five forms of data were: (a) lesson plan self-critiques, (b) critiques of actual teaching episodes, (c) critiques of a videotaped interview of an experienced teacher, (d) responses to direct instruction on teaching and learning research, and (e) lesson plan
re-critiques. Phase one pre-test data were compared to post-test data from phases two and three for indications of changes in student teachers’ understanding.

All student teachers participated in the five interventions. All were randomly assigned to one of two focus groups (the Key Concept Focus Group or Learners’ Prior Knowledge Focus Group) when responding to the videotaped art lessons and teacher interview. Group A (teachers 1-10) was given contextual information which defined the term “key concepts.” Group B (teachers 9-10) were given contextual information which defined the term “learners’ prior knowledge.”

Data collected from the lesson plan self-critiques were used as baseline data to compare teachers’ understanding, knowledge-seeking strategies, and dispositions before and after educational interventions. Did critiquing actual art instruction, listening to an experienced art teacher talk about lesson planning, listening to direct instruction on research, or re-critiquing one’s own teaching bring about deeper art and pedagogical understandings? Were there differences in teacher understanding as a result of contextual information supplied for one or the other focus groups? Was one form of teacher educational interventions more effective than others in promoting teacher understandings?

Equivalency of the two focus groups was to be determined through comparisons of teacher training, grade level teaching assignment, studio and teaching experience, and responses to the lesson plan critique. Such a determination would make possible a between-group comparison of teacher understandings after each educational intervention.
The Key Concept Focus Group responses could be compared to the Learners' Prior Knowledge Focus Group responses to see if contextual information facilitated subsequent understanding.

Research Question 4: What are the Effects of Student Art Teachers' Knowledge Base, Knowledge-Seeking Strategies, and Dispositions on Their Lesson Planning?

In addition to data from the five interventional tasks, teachers' written lesson plan forms and one-on-one interviews, the ways in which teachers teach themselves new information in order to teach it to others is particularly informative to the field of teacher education. Such investigations describe novice teachers' understandings and misunderstandings. Both were closely scrutinized to assess the effects of the student teacher's pedagogical content knowledge on their lesson planning. Lesson headings were examined to determine their: relation to an overall unit, relation to learners' art and life experiences, goals and objectives, choices for art exemplars, and description of the studio activity. Evidence of teachers' misunderstandings or oversimplified knowledge, their knowledge-seeking strategies, and examples of expert or novice understandings were noted as well.

Pre-test data were compared with post-test data for evidence of changes in teachers' art and pedagogical understanding. Reflective thinking was also noted.
Examples of teachers' art or pedagogical understandings or misunderstandings were investigated across the phases; any changes in understanding were noted.
CHAPTER V
FINDINGS AND DISCUSSION

The findings in this study serve as references for understanding the knowledge base, search strategies, and dispositions of beginning art teachers. Data were analyzed within the context of five educational interventions. These data were subsequently compared across the study's three phases as they applied to each research question. Findings are presented as they inform the research questions which generated this study.

Research Question 1: What Key Concepts do Student Art Teachers Choose for Art Instruction?

Teachers' knowledge of concepts, facts, theories, and relationships in a discipline impact their teaching in significant ways. It affects their choice of lesson key concepts and the relationships they establish between such concepts in order to effectively teach the lesson to others. Representation of lesson facts and concepts in the form of examples, analogies, and metaphors is the amalgamation of several strands of teacher knowledge. Research refers to this blended knowledge as content knowledge (Shulman, 1986, 1987). Shulman summarizes content knowledge in this way:

Teachers must not only be capable of defining for students the accepted truth in a domain, they must be able to explain why a particular proposition is deemed warranted, why it is worth knowing and how it relates to other propositions, both within the discipline and without, both in theory and in practice. . . . Moreover, we
expect the teacher to understand why a given topic is particularly central to a discipline whereas another may be peripheral. (p. 9)

During this study, facets of beginning art teachers' content knowledge were inferred from their choices of lesson key concepts as described in their lesson plan self-critiques.

**Lesson Plan Critique**

In order to examine the way student art teachers comprehend and transform their knowledge into lesson content, the teachers in this study were asked to critique their “most successful” lesson plan. This phase one activity occurred after the first few weeks of student teaching. Teachers' content understandings were inferred through: (a) their choices of lesson key concepts, (b) their reasons for choosing particular key concepts, (c) the relationships they established between the lesson key concepts and the overall unit, and (d) how or if their lesson studio activity reinforced the stated key concepts. Key concept choices and learners' prior knowledge descriptions were examined in order to inform Research Question 1. The relationships between key concepts and the studio activity were subsequently considered in the cross-analyses of Research Questions 3 and 4.

**Range of Key Concept Choices**

In order to study the selection of key concepts made by student art teachers, a categorical framework was implemented, following procedures used in related research (Kowalchuk, 1992). Key concepts or ideas units (Lincoln & Guba, 1985) were identified, then categorized in order to understand the range and frequency of categorical concept
choices. A total of 97 key concept units were identified in the nineteen lesson plan self-critiques. The number of key concepts in a single lesson varied from 2 to 12. Although each concept was determined as falling within one of the six concept categories, many concepts were expressed in conjunctive statements along with another concept. Thus, a conjunctive key concept statement might have two or more concepts, each were independently categorized.

As shown in Figure 3, more key concepts were listed in the formal category than in any other category. Twenty-seven of the 97 concepts (28%) were of a formal nature, based on the elements and principles of design. Twenty-six of the 97 concepts (27%) described studio processes, techniques, or skills. Twenty out of 97 concepts (21%) referred to interpretative meanings in artworks. Eleven of the 97 concepts (11%) were of an historical nature, 10 (10%) referred to an artwork's subject matter as a key concept, and 3 (3%) referred to learners' attitudes, grade level, and art experiences. Of the 97 key concepts listed by student art teachers, 76% were from the formal, studio, and interpretive categories. Only 24% of the concepts were categorized as historical, descriptive, and learner categories (see Figure 3).

The following are examples of teachers' key concepts in each category along with some illustrative conjunctive statements which connects two concept categories. Examples are included in the order of greatest to least frequently described concept categories.
Figure 3. Range of Lesson Key Concept Descriptions by Student Art Teachers (Lesson Plan Critiques)
**Formal key concepts.** Twenty-seven of the 97 key concepts (28%) listed in the lesson plan critiques were formal concepts (see Figure 3). Teachers described design elements and principles (i.e., color, shape, line, pattern, repetition, value, form, and balance). The following are teachers' descriptions of lesson concepts that are formal:

Main ideas were: (a) looking at the reproduction and placing the lines on their larger paper in appropriate places [grid drawing]; (b) filling in the areas with colored dots [Roy Lichtenstein]; (c) value--the further away or closer together you place the dots gives a different range of values. (Teacher 4, grade level 4).

Line, repetition, pattern - complementary colors - visual vibration, asymmetry (Teacher 19, high school grade level).

One example of a conjunctive statement which relates formal and interpretive concepts is stated as:

Warm and cool colors and the impacts [sic] each has. We learned not only how a piece looked all warm or all cool but also about how it looked 75% warm and 25% (estimate) cool. Organic and inorganic shapes and lines were discussed. We learned dynamics of each and what impacts each [sic] projected (Teacher 13, grade level 8).

**Studio key concepts.** Student teachers mentioned studio processes, techniques, and skills almost as often (27%) as they mentioned formal concepts (28%) in their lesson plan critiques (see Figure 3). Six teachers listed studio concepts in their lesson plan. Studio concepts were described in these ways:

- How to draw what you see--proportions + angles
- Shading in the direction of the form to bring out volume
- Shading techniques
- Ability to create 3-D illusion on a 2-D surface (the paper)
- Composition
- Cropping
Importance of diagonals + contrast (Teacher 14, grade level 7)

The key ideas or concepts in this lesson was [sic]...to use a motor hands-on activity with a three-dimensional project--also the students were introduced to a project that dealt with a step-by-step procedure. (Teacher 12, grade level 7)

Several teachers submitted conjunctive statements which described a relationship between a studio key concept and a key concept in another category. The conjunctive statements below combine a studio concept with a descriptive concept, then a studio concept with an historical concept.

The students were all to create a CD type drawing that they would be proud of once they knew what the pinhead was (the pinhead was a promotion for a rock band called the pinheads). (Teacher 10, high school level)

The key concepts I wanted to get across were: His [Van Gogh's] use of "impasto" + complementary colors (Teacher 1, grade level 5)

**Interpretive key concepts.** Twenty of the 97 key concepts (21%) were of an interpretive nature (see Figure 3). Most descriptions of an interpretive concept relate the idea to a concept in another category. Examples of conjunctive interpretive key concept descriptions are as follows:

I wanted children to understand the communicative properties of the body--gestures, and how quick sketches can capture gesture better that detailed studies. I also wanted the students to understand how expressive gesture drawings can be in terms of spirit and mood. In creating their final pieces I hoped the children would discover that types of line and form communicate moods or feelings and in order to create a readable coherent piece, the types of line & forms they use should be consistent with the general mood of the piece. (Teacher 2, grade level 5)
I wanted to get across the important role Van Gogh played in the history of art, and his lifestyles, the years he lived, and the turbulent aspects of his life. (Teacher 1, grade level 5)

**Historical key concepts.** Eleven of the 97 key concepts (11%) were historical, socio-cultural, biographical, or related to an artist's style of making art (see Figure 3). As in preceding categories, historical ideas were often connected to an idea in another category. The following are examples of historical concepts combined with other concept categories:

Cave artists did art work maybe to record their hunting to the others [cave dwellers], or for the purpose of making those animals come to them--magical" (Teacher 6, grade level 4).

The key ideas or concepts in this lesson was [sic] to teach art history of African masks, to learn the different reasons that these masks were made (Teacher 12, grade level 7).

The key concept of the lesson was to have the students gain familiarity with the works of Matisse with emphasis on his paper cut-out series. (Teacher 8, grade level 3)

**Descriptive key concepts.** Only 10 of the 97 key concepts (10%) relate to the subject matter of an artwork (see Figure 3). In all instances where subject matter was chosen as a key concept, such concepts were connected to a concept in another category. For example, the following statements join descriptive and interpretive key concepts:

We also learned that each piece does not have to be realistic to be artistic we explored abstract and non-objective art. (Teacher 13, grade level 8)

Abstraction—finding the essence of an animal
How the animal [image] has been abstracted in art throughout history and its purpose (Teacher 16, high school ceramic lesson)
**Key concepts related to learners.** Three teachers (3%) described students' special needs, poor attitudes, or low quality studio works as a lesson key concept (see Figure 3). These teachers designed lesson content which would, in their opinion, fill the students' special needs or improve their attitudes and/or studio work.

For example, one student teacher taught a primary special education class. Her lesson content was motivated by the special needs of her learners. She described the following lesson key concepts for an integrated unit on animals in the environment:

Key concepts will have the students participate actively on what you want them to recognize, for example: The students observed the goldfish in the fish bowl. The students pretended they were fish and swam like a fish (movement). They also identified the color of the fish and we related that to other objects that same color: ex. sun, an orange, a pumpkin, etc., They also identified with space by forming a circle with their hands to identify with the amount of space the fish has to swim in the bowl. (Teacher 9, special education, elementary level)

One teacher assessed the figure drawing of his fifth graders as being "simplistic, geometric and angular... straight, hard pressed and rigid...with no clue on what proportion meant." Another teacher described the following as his key ideas for an art lesson on figure drawing:

The main ideas I wanted to convey is to loosely sketch the human form by using the chart of proportion. I gave them several guidelines on the size of human parts and a proportion scale. They were to keep the human form simple (only sketching circles and ovals). Sketching was another important part. The looseness and overlapping of sketching was to be used to show shape and also to learn from mistakes. (Teacher 5, grade level 5)
Categorical Key Concept Choices

Because all teachers listed more than one key concept in their lesson plan critique, and because many listed more than one concept in a category, it became necessary to investigate which concept categories were most often considered worthy of study by these teachers. (The first analysis determined the total number of concepts in each category). Figure 4 displays the frequency of categorical choices for lesson content by these student teachers. When analyzed according to categorical choices, teachers’ key concept priorities became more clear than they had been when simply tabulating the total number of concept descriptions in each concept category (see Figure 4).

Although they described more formal concepts in their lesson plan critiques, more teachers selected lesson concepts of a studio nature than of a formal nature. Teachers described more formal concepts than interpretive concepts, yet they actually chose more often from the interpretive concept category than from the formal category (see Figure 4). The descriptive category assumed a higher importance when considered as a teacher categorical choice than it did when tabulated with the total number of all lesson concept descriptions.

Reasons for Student Art Teachers’ Key Concept Choices

Seven of the student teachers (37%) indicated that the focus for their lesson was suggested by their cooperating teacher. No recommendations seemed to have been made by cooperating teachers at the high school level; but half of the middle and elementary school teachers wrote of such recommendations by their cooperating teacher. Five
Figure 4. Categorical Choices of Lesson Key Concepts by Student Art Teachers (Lesson Plan Critiques)
cooperating teachers suggested a formal focus, and two suggested an historical focus.

Although seven cooperating teachers suggested a unit focus, those seven student teachers had the freedom to select particular concepts, art exemplars, and teaching and learning activities for their focus.

The 12 student teachers (63%) whose cooperating teachers had recommended a particular lesson or unit focus gave a variety of reasons for their key concept choices.

Nine of the 12 teachers gave reasons related to the learners or to the learners' prior knowledge:

I selected these concepts because they are important to me and important for the kids to realize. (Teacher 12, grade level 7)

Key ideas/concepts were selected because the first lesson in unit dealt w/symmetry and analogous colors. [I] wanted students to understand contrast which created optical illusions (vibration) Teacher 19, high school level)

Seven of the 12 teachers listed studio reasons for their key concept choices; some studio reasons are:

These students had not had a great deal of experience with step by step procedures, or a 3-dimensional project. (Teacher 12, grade level 7)

When a small child draws a figure they are very primitive and simplistic which is great. But as they get older it's time to get a little bit more observant and realistic with rendering. Proportion is important. Your head is not as big as your body ex. Also if kids continue to draw by pressing very hard and straight they loose [sic] something. I'm not sure if they're less creative, but they're so afraid to make a mistake and I feel it's very important to make mistakes in a sketch. You learn from every line you put down and then change by overlapping lines right on top of the original. (Teacher 5, grade level 5)
Four of the 12 teachers expressed formal reasons for their key concept choices:

Key ideas/concepts were selected because the first lesson in unit dealt w/symmetry and analogous colors. [I] Wanted students to understand [color] contrast which created optical illusions (vibration). Since class has minimal art experience, I thought elements and principles of design were most important as a starting point. (Teacher 19, high school level).

[I chose these concepts] to build on what they already knew about shapes and color. (Teacher 15, grade levels 1 and 2)

Subject matter was a reason given by 4 of the 12 teachers for choosing particular key concepts:

I wanted to focus on a handbuilding [clay] technique that included favorable subject matter . . . animals have been around as long as man has, and people have always chosen to portray them differently, but with understanding of how and what makes that animal so (its characteristics). (Teacher 16, high school ceramics class)

Only three of the 12 teachers listed concepts related to a particular artist's style, or a time in history as reasons for their key concept choices:

For the dot concept, I wanted to expose them to a different means of filling in colors. Also, Roy Lichtenstein dotted his work. (Teacher 4, grade level 4)

Only three of the 12 teachers gave interpretive reasons for their key concept choices:

I wanted the students to begin to develop a concept of what art is, or could be. Many of them were enrolled in a course titled "Art" without ever having given any thought to what that might mean. I also wanted them to begin to look at art as a discipline that requires thought and as a medium for the development and expression of ideas that doesn't necessarily require talent at drawing + painting. (Teacher 7, high school level)

When dealing with the figure I believe gesture drawings are a great way to start. They break children's' traditional notions about artwork and the excitement generated is a great motivator. Communication is an important part of creating
art, oftentimes more relevant than technical skill. Gesture drawing emphasizes the spirit of communication and freedom of expression. (Teacher 2, grade level 5)

**Summary and Discussion**

When given the opportunity to describe their lesson key concepts, student art teachers referred to lesson concepts in several ways (i.e., studio, interpretive, formal, historical, descriptive, and learner concepts). Teachers talked more about formal concepts in their lesson plan critiques than about other concepts (28%). However, when looking at the categorical concept choices teachers made, it was found that teachers selected their lesson concepts most often from the studio category (74%). Teachers described studio concepts (27%) almost as frequently as they described formal concepts. The second most often picked concepts from the interpretive category (63%). The same number of teachers (53%) selected concepts from the formal and descriptive categories; but they described more formal lesson concepts than they described descriptive concepts (10%). Concepts about learners were mentioned least often (3%) in the lesson plan critiques by teachers.

It is evident that the ways these student teachers understood and described their lessons often differed from the actual content as written in their lesson plan. It seems that when teachers' descriptions of lesson content were not consistent with the actual lesson content, it was because the teachers talked about some content categories more than other categories. For instance, teachers listed more formal and studio concepts because they
could communicate a formal or studio key idea with one word. As example, one teacher included a laundry list of formal key concepts:

Shapes--geometric (circle, square, oval, rectangle, triangle) secondary colors, color mixing (what colors make purple, orange, green?), overlapping, repeating, balanced composition (Teacher 15, grade levels 1 and 2).

Six formal key concepts were tabulated from this response, each only one or two words:

shapes--geometric
secondary colors
color mixing
overlapping
repeating
balance

According to Efland (1977), a good unit title is rarely one word. An effective theme or concept needs to connect meaningfully with other themes and concepts in order to build relationships--because these relationships are the basis for understanding the visual arts (p.118). Concepts such as "shapes," "secondary colors," and "balance" do not engage learners in exploring issues or concerns or in building relationships between an artwork's formal elements and the meaning(s) or semantic features of the artwork (Koroscik, 1982).

Just as formal features are one way to approach the study of an artwork's meaning(s), studio concepts are another way to learn about art. Student teachers included laundry lists of studio key ideas which were unrelated to other art ideas. The following is one such laundry list:

How to draw what you see--proportions + angles
Shading in the direction of the form to bring out volume
Shading techniques
Ability to create a 3-D illusion on a 2-D surface (the paper)
Composition
Cropping
Importance of diagonals + contrast (Teacher 14, grade level 7).

Seven studio key concepts were inferred from this lesson plan description:

- How to draw what you see—proportions + angles
- Form and volume
- Shading techniques
- 3-D illusion
- Composition
- Cropping
- Diagonals + contrast

Teacher 14 indicated that drawing techniques were the main ideas of her lesson.

However, her one or two word descriptions did not relate meaning(s) to the art-making activity. She described no connections to other organizing concepts, themes, time frames or issues. In a description of lower-order science curricula, Roth (1989) states that activities in isolation do not help learners understand how these ideas are useful in understanding the world, but are "doing for doing's sake" (Roth, 1989, p. 62-72).

Working with media is one way to experience art. Teachers need, however, to structure studio activities around problems, socio-cultural issues, themes, or events in order to promote higher-order understanding of the studio experience (Clark, Day, & Greer, 1987). When creating artworks, students need the opportunity to define, invent, select, represent, create, and reflect their knowledge of contexts (i.e., personal, social, cultural, historical), aesthetics, structure, and processes (NAEP Arts Education Framework, 1994).
Art programs frequently deal with only a portion of the reality encompassed by their respective disciplines. Mired in modest routines of studio production... narrow programs rarely enable students to experience the vitality of the real world of the arts in terms of appropriately guided perception, analysis, and appreciation (DiBlasio, 1985, p. 28).

Because formal and studio concepts were listed in one or two-word phrases, some teachers' lesson plan critiques described several key concepts within a single lesson. Fourteen of the 19 teachers (74%) listed four or more of what they considered as key concepts in their lesson. Four of the 14 listed more than seven lesson key concepts.

Educational research findings caution that the number of key ideas in a lesson needs to be limited so as not to overwhelm the learner (Prawat 1989). Curricula should focus on developing deep understandings of a few concepts rather than superficial coverage of many concepts (Glaser, 1984; Resnick, 1987). Laundry lists of more than four key concepts in a category occurred once in the studio and once in the interpretive categories, and three times in the formal category. The high usage of formal and studio concepts in the lesson plan critiques demonstrates the importance these student teachers placed on including formal and studio concepts in their lessons.

In addition to describing lessons in ways that differed from the actual content as presented in the lesson plan, the student teachers' responses indicate confusion over the meaning of the term "key concepts." Teachers seemed to understand key concepts as elements or as principles of design, steps or skills in the lesson studio activity, a lesson
objective, or a prescriptive remedy for students' poor attitudes and/or studio work. The following teachers described lesson key concepts as if concepts were lesson objectives:

The key concept of the lesson was to have the students gain familiarity with the works of Matisse with emphasis on his paper cut out series and to create their own cut out collages (Teacher 8, grade level 3).

The key ideas or concepts in this lesson [was] to teach art history of African masks, to learn the different reasons that these masks were made, and also to use motor hands-on [activity] with a three-dimensional project (Teacher 12, grade level 7).

According to Hurwitz and Day's (1991) methodology textbook for elementary art instruction, the heart of planning instruction is to transform specific art concepts into performance objectives which leads to the design of activities that engage students in learning the particular art concept. Their textbook shows two systems for curriculum planning to clearly demonstrate that concepts and objectives are not the same thing. Lesson planning is a process of relating wholes to parts. Key concepts are part of that whole and objectives are part of that whole. They are not the same part. Concepts have to do with lesson content. Objectives have to do with learning outcomes.

One teacher's understanding of the term "key concept" is particularly noteworthy as she described the learners' attitudes:

Students should have more confidence and use more dramatic strokes, not throw away their work, etc. (Teacher 3, high school level).

Her reason for this choice (which she considered to be a key concept) was described in her lesson plan critique as follows:
I hope to improve their self-esteem, thereby improving their drawings. Too many students refused to make a dramatic remark, and turned in drawings that had been erased over and over. Some even threw away their drawings because they had tried so hard to "get it right."

(Teacher 3, high school level)

These statements do not describe activities which create or respond to art; nor do they relate to specific art content in the form of knowledge or skills. They are not ideas that are central to the field of art, nor can they be a focus for subsequent art learning (Eisner, 1972). This beginning teacher expressed a common frustration of art teachers regarding students' poor attitudes toward art learning. What she described was her learners' dispositions, not lesson key concepts.

When asked why they chose their lesson key concepts, 5 of the 19 student teachers (27%) indicated that they were assigned a unit focus on formal concepts by their cooperating teacher. Two student teachers (11%) stated that they were assigned an historical focus. This factor might have created a limitation to some Research Question 1 findings as student teachers' choices for lesson content and their reasons for their choices might be confounded data. For instance, the formal concept category was the third most frequently chosen category for lesson content after the studio and interpretive categories. Ten out of the 19 teachers (53%) selected the elements and principles of design as one of their lesson key concepts. However, 5 of these 10 teachers described having the formal focus recommended to them by their cooperating teacher. Knowing that five student teachers were asked to develop a formal focus for their lesson leads to the question of
whether these five student teachers would have chosen as many formal lesson key concepts if they had made their own choice for their lesson focus. Would there have been more lesson content from the other five categories if there had been fewer selections from the formal category? Eleven teachers have claimed the elements and principles of design as the unifying connections between their lesson key concepts and the overall unit or art program. Would as many teachers have made this claim if five of them had not been assigned design elements and principles as a lesson focus by the cooperating teacher?

Regardless of recommendations from cooperating teachers to focus lessons on the elements and principles of design, these student teachers had the opportunity to link interpretive, historical, and descriptive meanings to their formal key concepts. They could have linked artworks' structural and semantic features regardless of the lesson focus from which they started.

Before ending the discussion of student art teachers' content knowledge as inferred through their lesson key concepts, it should be noted that the term "key concepts" did not appear on the standard lesson plan form assigned to these student teachers (see Appendix K). Instead, the teachers were asked to organize their lesson plans with these topic headings:

- Descriptive Title
- Preparation Needed
- Relation to Larger Unit
- Long Range Goal (teacher aims)
- Short Range Goal
- Criteria
- Objectives (student aims)
Materials
Motivation and Presentation
Art Exemplars
Timing of Lesson
Discussion and Evaluation
Relation to Life
Supplementary Activity
Recall and Reformation.

It is interesting that 6 of the 19 teachers (32%) on their own did include a "concept" or "concept to be learned" topic heading which might indicate that at some time during their teacher education, they were exposed to the term. It should be noted that the six teachers who listed a "concept" topic heading in their lesson plan listed it in singular form--as if a lesson could have only one key concept.

Research Question 2: How do Student Art Teachers Utilize Learners' Prior Knowledge in Lesson Planning?

The ability of students to learn is affected by their prior knowledge because students interpret new information in terms of what they already know (Koroschik, 1982; Prawat, 1989; Shuell, 1986; Simpson, 1996). Furthermore, the way prior knowledge is organized determines how learners will interpret tasks, and what they will learn from such tasks (Bellon, Bellon, & Blank, 1991). In order to enable retention and move toward advanced learning, students need to: (a) reason with new information, (b) connect new information with existing knowledge, and (c) apply new information to subsequent learning (Brooks & Brooks, 1993; Perkins & Simmons, 1988). The way teachers utilize their students' prior knowledge is a function of their own understanding of cognitive
learning theory. This utilization also reflects their understanding of how learners continuously restructure knowledge as they acquire new information.

**Lesson Plan Critique**

After their first few weeks of student teaching, teachers were asked to describe their learners' prior knowledge as they self-critiqued their most successful lesson plan. Understanding the role of prior knowledge in teaching and learning is one aspect of a teacher's general pedagogical knowledge (Goldman, 1990; Shulman, 1986, 1987). Facets of beginning art teachers' general pedagogical knowledge were inferred from their written lesson plans.

**Range of Learners' Prior Knowledge Considerations**

After preliminary readings of the data, it was determined that the six categories used in the analyses of Research Question 1 (What key concepts do student art teachers choose for art instruction?) were applicable in the examination of Research Question 2. The operational definitions of the six conceptual categories (i.e., interpretive, learner, studio, formal, historical, and descriptive) remained the same as in the question one analyses.

Each prior knowledge description was recorded as a separate idea unit in one of the six conceptual categories. A total of 52 considerations of learners' prior knowledge were described by the nineteen student art teachers. Thirteen of the 19 student teachers (68%) described more than one way of considering learners' prior knowledge. The
number of prior knowledge references in a single lesson ranged from 1 to 5. Several prior knowledge descriptions were used in conjunctive statements, referring to the same or a different category. Depending on which categories were described, conjunctive idea units were recorded in more than one category or in the same category.

Figure 5 displays the frequency of prior knowledge statements made by the nineteen student art teachers in this study. Seventeen of the 52 prior knowledge statements (33%) refer to learner attributes such as: attitude, quality of studio work, or grade level. Fourteen of the 52 considerations (27%) refer to the learners' experience with studio processes, techniques, or skills. Nine of the 52 considerations (17%) refer to the learners' knowledge of elements and principles of design (i.e., formal category). Eight of the 52 considerations (15%) refer to the learners' historical knowledge, and 4 of the 52 considerations (8%) relate to the learners' knowledge of specific subject matter (i.e., descriptive category). No references were made to the learners' understanding of interpretive meanings in artworks (see Figure 5).

The following are examples of teachers' prior knowledge references by category along with some illustrative conjunctive statements.
Figure 5. Range of Learner Prior Knowledge Considerations by Student Art Teachers

(Lesson Plan Critiques)
Learners' attributes. Seventeen of 52 prior knowledge considerations (33%) made by student art teachers refer to learner attributes (see Figure 5). The teachers considered learners in one or more of the following ways: (a) grade or developmental level, (b) attitude, and (c) quality of previous studio work. Descriptions of learners' grade or developmental level include the following:

My students were at Kindergarten level, their existing knowledge was appropriate for this age. (Teacher 18, Kindergarten)

I was not sure of what they knew, so I just expected them to like cutting colorful paper and gluing. (Teacher 8, grade level 3)

One teacher considered learners' attitudes this way:

Students have learned the formal elements of art and have attempted to draw the still lifes using them. The drawings, after prompting and critique improve, yet the students attitude has not. They did not believe they should try [drawing] because they 'cannot draw'. Morale needs improvement, so that drawings will improve. (Teacher 3, high school level)

The following teachers considered the quality of their students' previous studio work:

Students were working too realistic, and getting disappointed in not being able to reproduce things into great artworks. So changed gears to designing so all students could be successful w/effort. (Teacher 13, grade level 8)

All the students that I taught this lesson to had drawn figures before but in a different manner. The kids did not have any clue on what proportion ment[sic] and their actual drawings before took on a more simplistic geometric or angular type of stick figure [appearance]. Also their lines for drawing were very straight, hard pressed, and rigid. (Teacher 5, grade level 5)
Learners' studio knowledge and experience. Fourteen of the 52 considerations (27%) refer to the studio experience learners possess (see Figure 5). Some references to studio experience are of a general nature:

Having fairly recently started working with these groups of primarily 9th graders, I suspected although I wasn't sure that they had had minimal experience with art content and mediocre (at best) production experience. (Teacher 7, high school level)

Other studio considerations are specific (i.e., techniques, media or artforms). One teacher planned a studio activity in which the students would draw Matisse-like figures in motion. She considered the students' knowledge of gesture drawing this way:

I knew that the students had gone through a few observation and 'draw what you see' exercises with objects. This series of drawings ended in a full period, still life drawing project. I was unaware of students' prior knowledge of figure drawing. (Teacher 2, Grade level 5)

Learners' knowledge of formal elements. Nine of the 52 considerations (17%) refer to the learners' knowledge of design elements and principles (see Figure 5). Most of these references mention the learners' knowledge of specific formal elements:

Most students have had prior art classes (studio or intro to art) that dealt with the design principles and elements. A few freshmen showed confusion because they were not introduced to them and had no idea. (Teacher 16, high school level)

Many of the students were familiar with the primary & secondary colors, as well as shape identification. With the first graders many did not know what repeating and overlapping [sic] was. Whereas, the second graders could identify & give examples of these concepts. (Teacher 15 grades levels 1 and 2)

Learners' knowledge of art history. Eight of the 52 considerations (15%) refer to students' prior knowledge of history (see Figure 5). Responses indicate that teachers
thought about historical knowledge in more than one manner. They described it from three perspectives: (a) knowledge of a particular artist, (b) knowledge of a particular time in art history, and (c) general historical knowledge. Prior knowledge of a particular artist was described this way:

The students had been working on the Great Masters--they had no idea who Van Gogh was--a few knew about the 'ear incident'--I showed Van Gogh prints and no one knew who they were by--basically, they were all clean slates on the Van Gogh issue. (Teacher 1, grade level 5)

Learners' art historical knowledge was described by another teacher with these words:

My students' existing knowledge was not exceptional. The students had some idea of the art history contained in my lesson - but it was somewhat vague. (Teacher 12, grade level 7)

Learners' general historical knowledge was considered as follows:

Students thought that all 'cave' people were surrounded by dinosaurs--this is not true (Jurassic Park). (Teacher 6, grade level 4)

**Learners' subject matter knowledge.** Four of the 52 considerations (18%) refer to learners' prior knowledge of the subject matter in the studio activity (see Figure 5). The following descriptions are representative of such references:

Students have learned the formal elements of art and have attempted to draw the still lifes using them (Teacher 3, high school level).

All the students that I taught this lesson to had drawn figures before but in a different manner (Teacher 5, grade level 5).
One teacher thought his lesson plan was strengthened by the students' lack of familiarity with the unique image he planned to use in the studio activity. He described his students' existing knowledge of the subject matter as follows:

The students had no prior knowledge of the concept of this lesson plan that was the strength of it. They knew it was to promote something but what was it just one person or what? (Teacher 17, high school).

He planned for students to look at the mysterious image, speculate about its meaning, then create an environment for the image which they thought expressed the identity of the creature. If no students determined the identity or purpose of the image, the teacher planned to reveal both to the students. Uncertainty about the subject matter was part of his teaching strategy to motivate students.

**Interpretive meanings in artworks.** None of the 52 considerations of these student teachers are of an interpretive nature. The teachers did not consider their students' knowledge of interpretive meanings in artworks (see Figure 5). This is an extremely curious scenario since 12 of the 19 teachers (63%) indicated that their lesson contained at least one interpretive key concept. Did the teachers intend to build upon the learners' prior knowledge of interpretive meanings in art? If so, how could they go about building and relating new information to such knowledge when they had yet to consider the learners' experience with interpretive art meanings?
**Teachers' Categorical Choices of Learners' Prior Knowledge Considerations**

Since many teachers listed several prior knowledge considerations in their lesson plan critique, the total number of references in a category (see Figure 5) does not indicate which knowledge categories were most considered by the student teachers. The total number of references instead indicates which categories the teachers talk about most often when they describe learners' prior knowledge. It was necessary to determine how teachers' actually utilize learners' prior knowledge in lesson planning by analyzing their categorical choices.

Figure 6 displays the frequency of categorical choices made by teachers when they acknowledged their students' prior knowledge in lesson planning. When prior knowledge considerations were analyzed according to teachers' categorical choices (see Figure 6), not according to which categories they most often talked about (see Figure 5), teachers' understanding of prior knowledge became more clear. Although teachers described students' grade level, attitude, and studio works most often in their critiques, they actually considered the learners' studio experience most often when planning lessons (63%). They considered the learners' grade level, attitude, and studio works less often (58%) than they considered the learners' studio experience. Teachers talked about and used learners' prior knowledge of three categories with the same frequency: formal (32%), historical (26%), and descriptive (21%). As previously reported, teachers did not consider their students'
Figure 6. Categorical Choices of Student Art Teachers' Considerations of Learners' Prior Knowledge (Lesson Plan Critiques)
existing knowledge of artworks' interpretive meanings regardless of the fact that their lessons contained many interpretive concepts.

**Synthesis of Findings and Discussion**

Stein, Baxter, and Leinhardt (1990) in a study of math teaching, first used the phrase "missed opportunity" to describe an effect of teachers' limited knowledge on their teaching. Examples of missed opportunities were prevalent in the student teachers' considerations of their learners' prior knowledge. For instance, if teachers described an historical concept in their lesson plan critique, they did not always consider their students' prior knowledge of that historical concept as an opportunity on which to build and strengthen knowledge of that particular concept.

Figure 7 shows the number of references to key concepts in the prior knowledge descriptions of these student teachers. Eight of the 14 teachers who described studio key concepts thought about their students' prior knowledge in studio ways (i.e., experience with media, techniques, or skills).

Five of the 10 teachers who stated key concepts of formal qualities thought about their students' prior knowledge in terms of design elements and principles (see Figure 7).

Four of the 8 teachers who selected historical key concepts thought about their students' prior knowledge in terms of specific artist styles, art history, or general historical knowledge (see Figure 7).
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- □ Number of teachers who selected this category for lesson content
- □ Number of above teachers who used learners' prior knowledge of this conceptual category while planning lesson

**Figure 7.** References to Lesson Key Concepts in Student Art Teachers' Prior Knowledge Descriptions (Lesson Plan Critique)
All three teachers who described key concepts related to learners' attitude, quality of studio work, or special needs considered the prior knowledge of their students' in those same ways (i.e., attitude, quality of studio products, or special needs) (see Figure 7).

Only one of the 10 teachers who stated a descriptive key concept considered her students' prior knowledge of that subject matter when asked to describe existing knowledge (see Figure 7).

The analyses of Research Question 1 indicates that the second most frequently selected key concept category by these student teachers was the interpretive category. Twelve of the 19 teachers (63%) listed at least one interpretive key concept in their lesson plan. However, in their lesson plan critique, none of the 12 teachers described how they took account of students' prior knowledge of interpretive meanings (see Figure 7).

On their lesson plan forms, teachers made indirect references to interpretive meanings in art. These references were described under lesson plan headings such as: "major goals," "objectives," "evaluation," and "relation to life." Some examples of those references are as follows:

The students will discover how paint application and expressive line can enhance the 'mood' of a painting. The students will also discover how color can have an impact on setting the atmosphere of a painting. (Teacher 1, grade level 5)

Students will develop an understanding of the creative process as a means for expressing and communicating ideas. (Teacher 7, high school level)

Repetitive activities and commonplace objects often go unnoticed and overlooked. These everyday events and objects can be transformed by artists to create exciting works of art. (Teacher 11, grade level 1)
The importance of this finding is that these preservice teachers clearly chose interpretive art meanings as lesson content. They also stated learning outcomes related to the interpretation of artworks in their lesson plan. None of the 19 teachers, however, described thinking about students' prior knowledge of artworks' interpretive meanings as they planned how to teach those interpretive lesson concepts.

There were many opportunities to access learners' prior knowledge which were overlooked by these student teachers (i.e., knowledge of artists, cultures, artforms, art movements, design elements, subject matter, or interpretive meanings in artworks). More important to the student teachers was the learners' studio experience, grade level, attitude, quality of studio work, or special needs. Overall, the student teachers in this study seemed to compartmentalize their thoughts of learners' prior knowledge to studio activities or to the learners' attitude or skill in relation to the planned studio activity.

It is worth noting that one teacher considered the prior knowledge of her ninth grade students by finding out about their art instruction at the middle school level:

Students were not knowledgeable in art history or design concepts Middle school not DBAE--students were of varying art backgrounds. (Teacher 19, high school)

Research Questions 1 and 2 of this study were designed to investigate student art teachers' understanding of the meaning and function of key concepts and learners' prior knowledge in art teaching. Key concepts and learners' prior knowledge were selected as variables for study because they have been identified in cognitive learning research as important organizational components in the acquisition and retention of information.
Furthermore, key concepts selected by these student teachers are indications of the teachers' content knowledge. The teachers' consideration of learners' prior knowledge is an indication of their general pedagogical knowledge and knowledge of cognitive learning theory. The analyses of findings based on Research Questions 1 and 2 serve as baseline data for cross-analyses with data gathered for Research Questions 3 and 4.

**Research Question 3: What are the Effects of Teacher Education Interventions on Student Art Teachers' Pedagogical Content Knowledge?**

Student art teachers' content and pedagogical knowledge were investigated in this study. This investigation also served to examine the acquisition of such teacher knowledge by implementing five teacher education interventions designed to help student art teachers gain knowledge of key concepts and learners' prior knowledge in art teaching. Student teachers (a) self-critiqued their own lesson planning, (b) critiqued actual art teaching episodes, (c) critiqued a videotaped interview of an experienced art teacher, (d) listened and responded to direct instruction on teaching and learning research, and (e) re-critiqued their own lesson plan. All of these interventional activities are considered standard practice in teacher education (Bellon, Bellon, & Blank, 1992).

In addition to participating in these intervention activities, the teacher participants were given information about the terms "key concepts" and "learners' prior knowledge" in the form of contextual statements preceding Task 1—the critique of the videotaped art
lessons, and Task 3—the critique of the teacher interview. The teachers heard the experienced art teacher in the interview refer to key concepts and learners' prior knowledge in her teaching; these terms were also fully defined during a lecture on cognitive learning research.

Conceptual change theory prompted the design of these intervention activities (Ramsden, 1988; Roth, 1989; Roth, Anderson, & Smith, 1987). It was thought that clarifying the meaning of these terms during phase two of the study would cause those teachers who misunderstood the terms in phase one of the study to change their understandings before they completed workshop Tasks 1-5.

Since no definitions of terms were given during phase one, teachers originally critiqued their lesson plans utilizing their own existing knowledge of key concepts and learners' prior knowledge. Phase one data were therefore considered as a pre-test. Data from phases two and three of the study were considered post-test data as the teachers' knowledge of the meaning and function of key concepts and learners' prior knowledge became increasingly informed by the educational interventions. Data from all phases of the study were subsequently cross-analyzed. Ultimately, inferences were made about the effectiveness of each educational intervention toward developing preservice art teachers' knowledge of content and pedagogy (see Figure 1; Grossman, 1990).
Critique of Actual Art Teaching Episodes

During the phase two workshop, the student teachers observed and critiqued actual teaching as they watched a 34 minute videotaped unit of art instruction. Through a randomization process (described in Chapter III), 10 teachers were instructed to focus on the key concepts in the videotaped unit, and 9 teachers were prompted to focus on the young learners' prior knowledge. The Key Concept Focus Group, (designated Group A), and the Prior Knowledge Focus Group, (designated Group B), were formed in order to simultaneously collect data on two variables of teacher knowledge and to compare the effects of different preparatory contextual information on student teachers' understanding of content and pedagogy. Participants were unaware of the differences in their instructions.

Task 1A

For this task, the Key Concept Focus Group was prompted to identify the key concepts being taught in the actual art lessons (see Appendix F, Booklet A). As mentioned previously, different contextual statements preceded Tasks 1A and 1B. The contextual statement for Task 1A described the use of key concepts in lesson planning as a way of providing links between new information and learners' prior knowledge (see Appendix F, page 2, Booklet A). It was hypothesized that contextual information preceding task instructions would clarify any misconceptions student teachers had up to this time about the meaning and function of the term "key concepts."
Analyses of the data show that 7 of the 10 teachers disregarded Task 1A directions. They presented summaries of the teaching and learning activities in each lesson instead of focusing specifically on lesson key concepts. The following is an example of how a teacher summarized teaching and learning activities instead of identifying lesson content as instructed:

"Your task is to identify the KEY IDEAS/CONCEPTS being taught in this unit of instruction."

Lesson One:
That artists tell a story in their artworks. The teacher gives different examples—some wood carvings, paintings. The main concept is narrative artwork. She even included a little American history in the lesson.

The students are criticizing a painting. More about story-telling. The children sat on the floor and the teacher sat on the desk. She showed them an example of what they are going to do. The students are going to be working with clay.

Lesson Two:
Talked about a new artist who was self-taught. She showed them a reproduction that was a story from the Bible. Showed another painting and how it was different from the first style. Asked students to tell her how the artist is unique.

Think of a story about something from a book. Bring up their painting - explain their story (Teacher 4).

Although key concepts were intermingled within these listings of teaching and learning activities, overall, this teacher's focus was on listing the sequence of lesson activities not on gleaning lesson content from the observed instruction.

Disregarding the task in yet a different way, another teacher responded by critiquing the teacher's methodology:
She should have the kids guess the stories--she asks, Is there a story here? Then [she] tells it, instead of asking a student to guess it. (Teacher 1)

Only 3 of the 10 teachers interpreted Task 1A as it was designed. They identified lesson key concepts from the videotaped lessons. An example of a response that identified key concepts is as follows:

"Your task is to identify the KEY IDEAS/CONCEPTS being taught in this unit of instruction:"

Lesson One:
She used several examples to illustrate the fact that art is sometimes used for narrative purposes
placement—in regard to narrative qualities
idea of reading the content of artwork

Romantic style of art

Lesson Two:
Building on the idea of self-taught (primitive works) the un-traditional methods they use

layering—again building on the idea of order or placement in regard to narration
repetition—pattern (Teacher 6)

Compared to the previous teacher's response, this student teacher did not record the experienced teacher's questions, list the artworks being shown, list what the teacher and learners were doing, or critique the teacher's methodologies. This focused response only encompassed the identification of key concepts or ideas from the world of art and art-making.
The phenomenon of participants not focusing on lesson content was not unanticipated as some preservice teachers during the pilot testing of this study had listed the teaching and learning activities rather than identifying key concepts. As a result of those occurrences during the piloting of this study, the words "KEY IDEAS/CONCEPTS" were changed to uppercase letters and bold typed for emphasis in the participants' instruction booklet. In addition, a sentence was added to the verbal instructions in the protocol reminding teachers not to critique the teacher's methodology, class management skills, the students' behavior or the artroom--but to focus on the specific variable mentioned in their set of instructions.

**Task 1A summary.** Findings from this intervention reinforced phase one results that the teachers in this study were confused about the meaning and function of key concepts in lesson planning. They do not think of key concepts as lesson content and ideas central to art as much as they equated concepts with teaching methodologies, objectives, or the lesson agenda.

Despite the fact that 7 of the 10 teachers in the Key Concept Focus Group mistakenly listed teaching and learning activities as the key concepts of the lessons, it was possible to perform a modified cross-analyses of data. Descriptions of content included in the summarized critiques of videotaped teaching were separated out for cross-analysis with lesson content data from the phase one lesson plan critiques. During phase one, it
was determined that teachers 1-10 selected their lesson key concepts from the six content categories in the following order of frequency:

- studio concepts
- studio, interpretive, descriptive, and historical concepts
- formal concepts, learner attributes

The student teachers' heavy emphasis on studio key concepts in their own lesson planning did not seem to influence their ability to identify lesson content choices of the experienced teacher. They collectively described the experienced teacher's content choices in the following order of frequency:

- interpretive concepts
- historical concepts
- formal concepts
- studio concepts
- descriptive concepts
- learner concepts

Although teachers 1-10 most frequently selected studio key concepts in their own lessons, they recognized that the experienced teacher most frequently referred to key concepts which were interpretive in nature.

Responses from the three teachers who followed directions and gleaned key concepts from lesson activities in Task 1A were explored in order to compare their understandings to understandings held by the seven teachers who incorrectly completely the task. Only two common characteristics could be determined about these three teachers' understandings. They were among 6 of the 19 teachers (32%) who described interpretive key concepts most frequently or second in frequency in their original lesson.
plan critique; and they tended to reinforce their lesson key concepts with their lesson studio activity. There seemed to be no other distinguishing characteristics about the understandings of these three teachers that could be determined from their lesson plan critiques. They were not among the six teachers who on their own initiated a "concept" heading on their lesson plan format.

**Task 1B**

In Task 1B, student teachers 11-19 were prompted (a) to assess the prior knowledge of the learners in the videotaped lessons, and (b) to describe the lesson content that seemed new to the learners (see Appendix F, Booklet B). The contextual statement for Task 1B described learners' prior knowledge as an access for building knowledge by linking prior learning to new information (see Appendix F, Booklet B, page 2). Again, it was speculated that contextual information preceding Task 1B instructions would clarify teacher misconceptions in the phase one lesson plan critiques concerning the meaning and function of learners' prior knowledge.

Examination of teacher responses to Task 1B reveals that 5 of the 9 teachers disregarded the specific directions to consider learners' prior knowledge and instead summarized lesson activities. Two of the 5 teachers actually started out describing the learners' prior knowledge in lesson one, but quickly lost their focus and summarized the activities in lessons two and three. The following is an example of a teacher summarizing
lesson activities instead of inferring learners' prior knowledge from the videotaped lesson activities:

"Describe the STUDENTS' PRIOR KNOWLEDGE in each lesson:"

Lesson One:
asks general question
general observation - visual
assessing/reviewing past learning
Anyone know anything about E.P. [Elijah Pierce]?
Has anyone heard story that goes with this?
Asks student to compare what seeing to something in their life (i.e., comic strip).

Lesson Two:
review of last lesson
self-taught.
Why would I show you these 2 - connections? - Assessment
Comparisons
What do we call this kind of art?
foreground [sic].

How does this art relate to artist studied?
Shalom of Safed (Teacher 11)

Compared to the above response, the following teacher response does not repeat
the experienced teacher's questions, list what learners are doing, or list teaching and
learning activities. This focused response infers the learners' prior knowledge from the
learners' verbal responses, questions, attentiveness, age, body language, facial expressions,
and teacher interaction:

"Describe the STUDENTS' PRIOR KNOWLEDGE in each lesson:"

Lesson One:
Shopping w/mom
People in artworks
Elijah Pierce
Knowledge of what a story is
Knows a lot about Elijah Pierce
Working w/clay
relating information to contrast something

Lesson Two:
Knowledge of prior lesson. Reiterate what they learned relating it to new
information
Knowledge of Elijah Pierce
Story of Goldilocks
Students do story that they know -
Foreground info (Teacher 13)

Unlike the task of assessing learners' prior knowledge, the task of describing lesson
content new to the learners was adhered to by all 9 teachers in this group. The following
teacher response described new information in lessons one and two:

"Describe NEW INFORMATION in each lesson:"

Lesson One:
definition Narrative
Life history of Elijah Pierce
Creating pieces
Telling story in artworks - creating a narrative
working w/clay and the new process

Lesson Two:
Shalome Astoped [sic] life and history
how he worked and how to work in a similar manner (Teacher 13)

Task 1B summary. The content of teachers' responses to Task 1A and 1B were
remarkably similar even though they were given entirely different tasks. As with seven
teachers in the Key Concept Focus Group, five teachers in the Prior Knowledge Focus
Group responded to the task by sequentially listing the teaching and learning activities in
the actual teaching episodes instead of focusing on the specific variables mentioned in their
instructions.

Previous analyses of the teachers' original lesson plan self-critiques indicated that
teachers in the Prior Knowledge Focus Group considered the prior knowledge of learners
in five ways and in the following order of frequency:

- learners' studio knowledge
- learners' attributes, and learners' formal knowledge
- learners' descriptive and historical knowledge.

As described earlier, these teachers did not consider the learners' knowledge of
interpretive art meanings while planning their lesson.

Although only 4 of the 9 teachers followed directions and described the prior
knowledge of the learners, it was possible to sort through the summarized lists of the
other five teachers and complete a modified cross-analysis of this data. The analysis
procedure was similar to the modified Task 1A analyses when seven teachers in the Key
Concept Focus Group disregarded Task 1A directions.

In their lesson plan self-critiques, Group B teachers considered learners' studio
prior knowledge more frequently than other forms of knowledge. It is interesting that
they considered the prior knowledge of the learners in the videotaped lessons quite
differently. As a group, they categorized the students' prior knowledge (in the videotaped
lessons) in the following order of frequency:

- historical and formal knowledge
- descriptive and interpretive knowledge
- learner attributes
learners' studio knowledge

The studio knowledge of the learners in the videotaped lessons received the least considerations in the Task 1B critiques; whereas in the original lesson plan critique, studio knowledge was most often considered by teachers in the Prior Knowledge Focus Group.

The four teachers who followed Task 1B directions shared two characteristics—none of them considered the learners' knowledge of interpretive art meanings and none of them considered the learners' knowledge of subject matter in their lesson plan self-critiques.

Task 2A

Task 2A was designed to assess how and if beginning art teachers made connections between the lesson key concepts they had identified in the videotaped art teaching episodes. Research supports such connections as they strengthen the learners' on-going cognitive restructuring process (Prawat, 1989). The videotape of three actual teaching episodes was produced for the purpose of modeling sequential lesson planning in order to demonstrate how teachers make connections between and within lesson key concepts in a unit of art instruction. In Task 2A, the teachers were prompted to (a) review the lesson key concepts they had identified for Task 1A, and (b) indicate relationships between these key concepts in the three videotaped lessons. To indicate a relationship, teachers were to draw with a colored pen a connecting line between related concepts. These relationships could be within a lesson and/or between lessons within the
unit (see Appendix F, Task 2A). An example of a completed Task 2A form was shown on an overhead projection screen as Task 2 directions were given. The example depicted lines connecting key concepts between the three lessons and within a lesson (see Appendix F, Task 2A overhead transparency).

Task 2A summary. The data analysis of Task 2A indicates that all ten teachers recognized relationships between key concepts in the three lessons. Furthermore, 2 of the 10 teachers perceived relationships within a single lesson as well. The total number of relationships indicated by the teachers ranged from 3-11 relationships per teacher for the three lessons.

In their original lesson plan critiques, 11 of the 19 teachers (58%) stated that the elements and principles of design were the unifying connections between their lesson and other lessons or overall unit. In addition: (a) four teachers stated that the artform of drawing was the connection between their lessons and the overall art program, (b) two teachers claimed historical connections between their lesson and a year-long art history curriculum, (c) the medium of clay linked one teacher's lesson and the overall high school ceramic program, and (d) one teacher stated that there was no relationship between the content of his lesson and an overall unit or existing art program.

Interpretive and historical relationships were most often identified by the student teachers as they analyzed the videotapes of actual art teaching. The interpretive and historical relationships seem to stem from the fact that in Task 1A they identified
interpretive and historical concepts most frequently. (It was those previously listed Task 1A key concepts that teachers linked to Task 2A).

It seemed worthwhile to continue tracking the three teachers from Task 1A who followed directions and focused on lesson key concepts instead of listing teaching and learning activities. In Task 2A, they described the artform of drawing, historical concepts, and interpretive concepts as the connections between their lesson and their overall unit. They identified more interpretive and historical connections than other categorical connections in the experienced teacher's lessons. One of these three teachers was 1 of the two teachers in the Key Concept Focus Group who understood that key concepts can relate to other concepts within a single lesson as well as to concepts in other lessons.

Task 2B

Task 2B was designed to determine if these novice teachers would perceive a relationship between new information and learners' prior knowledge when they observed the videotaped lessons. The nine teachers were prompted to (a) look over their Task 1B descriptions of prior knowledge and new information and (b) draw connecting lines to indicate any perceived linkages between the learners' prior knowledge and new information in the three videotaped lessons.

Task 2B summary. Eight of the 9 teachers indicated an understanding of relationships between new information and prior knowledge during Task 2B. One teacher did not make connecting lines to indicate an understanding that new information in past
lessons becomes learners' prior knowledge in subsequent lessons. Eight teachers understood that new information can often be connected to what learners already know and that new information in past lessons becomes prior knowledge in subsequent lessons. The number of relationships indicated by these teachers ranged from 7-18 relationships per teacher for the three lessons.

Since these teachers did not consider learners' prior knowledge of interpretive art meanings in their own lesson plan critiques, it was curious that when they observed the instruction of the experienced teacher, they did recognize the learners' prior knowledge of the artworks' interpretive meaning(s).

Analyses of Task 2B included tracking the four teachers who followed Task 1B directions. All four of these teachers recognized relationships between learners' prior knowledge and new lesson information. They identified different forms of prior knowledge when they observed the experienced teacher's instruction than they had identified in their own lesson plans. When they critiqued the experienced teachers' lessons, 3 out of 4 of these teachers considered the interpretive knowledge of the young learners in the teaching episodes.

**Critique of Videotaped Interview of an Experienced Art Teacher**

The videotaped teacher interview was designed for the purpose of enabling these student teachers to gain information from a experienced art teacher about her use of key
concepts and learners' prior knowledge in lesson planning. It was yet another opportunity for student teachers to transfer their growing understanding of the meaning and function of key concepts and learners' prior knowledge in art teaching and listening. It was anticipated that the student teachers would contrast their existing understandings of key concepts and prior knowledge with the experienced teacher's understanding of these terms.

**Task 3**

Participants in both focus groups received the same contextual information preceding Task 3 (see Appendix F, page 5, Booklets A and B). The statement clarified the function of lesson key concepts and learners' prior knowledge in building art knowledge.

As they watched the teacher interview, all teachers were prompted to jot down the experienced teacher's descriptions of her: (a) learners' prior knowledge, (b) unit key concepts, and (c) lesson planning with key concepts (see Appendix F, Task 3). Task 3 responses were designed to be used primarily as reference notes for Task 4.

**Task 3 summary.** All teachers accomplished this task as directed. Responses from the Key Concept and Prior Knowledge Focus Groups were remarkably similar. Often using the experienced teacher's own words, the student teachers listed phrases or sentences which pertained to the experienced teacher's assessment of her students' existing
knowledge, her description of the key concepts in her lessons, and her explanations of how she planned lessons based on key concepts.

**Task 4**

Task 4 instructions prompted teachers (a) to reflect on their responses to Tasks 1, 2, and 3, and (b) to describe what "new ideas" they had learned as a result of listening to the teacher interview (see Appendix F). The Key Concept Focus Group listed a total of 21 new ideas they learned as a result of listening to the experienced teacher discuss her ideas, the Prior Knowledge Focus Group listed a total of 13 newly learned ideas.

The Key Concept Focus Group claimed to have learned more new ideas related to prior knowledge and lesson planning than they learned new ideas related to key concepts. Eight new ideas were about prior knowledge, 8 were about lesson planning, 4 were about key concepts, and 1 was of a general nature. Some prior knowledge ideas which the Key Concept Focus Group described as new to them are listed below:

I learned the importance of building upon prior knowledge and its relation to information retention. (Teacher 2)

I thought that it was a fabulous idea that the teacher first used an artist that the students knew and then introduced a new artist that they had never heard of before. This seemed extremely logical. I don't know why I never really thought of it before. (Teacher 4)

I like the idea of stringing along starting with a child's prior knowledge and adding the teacher's main ideas or concepts. Then this in turn will become prior knowledge making way for another round of new key ideas and concepts. It really does sound simple but I've always focused on new material ...when the students learn it or master it I move on. I never concentrated on how this information can help reinforce the prior knowledge and vice versa. (Teacher 5)
The [new] idea of doing an art project that can let the students bring in elements from their everyday life and put it in their art work. (Teacher 6)

Ideas about lesson planning which were new to the Key Concept Focus Group are represented by the following:

I learned how to link information by placing it contextually in between highly related information (Teacher 2)

I also liked that fact that she based some of her lessons on what is being covered in the other classes (Teacher 4)

The notion that any subject can be a spring board [sic] for researching and digging for information which can be utilized in creating a lesson. (Teacher 8)

She also did a great deal of thinking about which artists could relate to one another and how she was going to incorporate that art history into the studio activity. (Teacher 10)

The Key Concept Focus Group’s new ideas about key concepts were the following:

The fact that any art lesson can be altered and made age appropriate to be used with another age group. (Teacher 8)

The various ways that people have used to relay stories was new, although vaguely familiar (Teacher 3)

The Prior Knowledge Focus Group (Group B) described learning fewer new ideas (i.e., 13) than the Key Concept Focus Group described (i.e., 21). Group B listed 5 new ideas relating to key concepts, 4 ideas about learners' prior knowledge, and 4 miscellaneous new ideas about art lesson planning. The 5 new key concept ideas learned by Group B about key concepts are listed below:

Using artists who know one another as a connecting theme (Teacher 14)
The idea of relating artist friends is very interesting. Students need their friends and [friends] are very important in their lives (Teacher 19)

After listening to the teacher, I understood the connection between the artists. I liked the concept of comparing the artists' similarities and influences vs. their differences (Teacher 15)

I found the interconnecting of the 3 artists something that I've always wondered "How can I do that?" (Teacher 16)

Creating studios which relate to their [learners'] interests, color, storytelling and building different new techniques that are either simplification of [an] artist's style of one aspect of it (Teacher 12)

Group B's new ideas about prior knowledge are exemplified below:

Considering this [prior knowledge] building blocks is interesting. Giving them [learners] knowledge they will need for the next lesson in the lesson before (Teacher 12)

Building from your concept an idea, then going to artists they [learners] would appreciate and understand (Teacher 12)

I liked how the art teacher chose the first artist based on their prior knowledge (of Elijah Pierce) (Teacher 15)

Group B described learning new ideas about lesson planning in the following ways:

I live in Niagara Falls, and the subject itself has left countless opportunities for artists to capture its splendor in many unique ways. What would the link be, Nature, the Falls, media? This exercise has given me a new angle and direction to pursue for future lesson planning. (Teacher 16)

I learned that the artists and works that are used in lessons do not always have to be world famous artists. Being able to study and teach about lesser known artists would make a more well-rounded teacher. (Teacher 19)

I've always thought of using the same ole [sic] artists for my explars [sic] but I think it would be interesting to use some of my own local references and artisans and incorporate them into my lessons. (Teacher 16)
The microphone that the kids used really interested me and I think I will use it [microphone]. (Teacher 18)

Five teachers included ideas which were interesting to them though not necessarily "new ideas." These ideas are presented because they reveal facets of the student teachers' content and pedagogical knowledge:

Making connections between artists' experience and students' experience

Using local artists

"Sandwiching" and tying three artists together (Teacher 11)

Including the artist's life and background was not new, however, I have yet to connect any two or more artists' lives together (Teacher 3)

My lesson planning starts with and revolves around the studio project (Teacher 13)

You can modify concepts to age levels (Teacher 17)

Although I found many of the ideas explored in this video interesting (particularly to see them implemented) there was little that was NEW (Never seen or heard of before) (Teacher 7)

**Task 4 summary.** Task 4 (along with Tasks 1, 2, and 3), was designed to determine if preparatory contextual information and/or prior experience would affect a student teacher's ability to learn from observations of videotaped teaching episodes and from listening to an experienced art teacher talk about art teaching.

It was hypothesized that if two equivalent novice teacher groups were given different preparatory contextual information, responses from the two groups could be compared to determine the effects of different preparatory contextual statements on the
teachers' ability to transfer newly learned information. Implications for teacher education regarding the use of contextual information and the assignment of specific variables for classroom observation could then be discussed.

Analyses of findings from the student teachers' original lesson plan self-critiques and background information indicated, however, that the two randomly formed groups were not equivalent groups. First of all, 8 of the 10 teachers (80%) in the Key Concept Focus Group most frequently selected studio key concepts when they designed their lessons. On the other hand, 7 of the 9 teachers in the Prior Knowledge Focus Group (78%) most often selected key lesson concepts of a formal and interpretive nature. When they assessed their learners' prior knowledge, 7 of the 10 teachers in the Key Concept Focus Group (70%) most frequently considered studio experience and the learners' age and previous studio works. Five of the 9 teachers in the Prior Knowledge Focus Group (56%) most often considered prior knowledge in the form of studio experience.

Figure 8 illustrates that neither focus groups' key concept or learners' prior knowledge choices aligned with the prioritized choices of the full group (i.e., all 19 teachers).

Analysis of a questionnaire which gathered information on the participants' backgrounds showed that the focus groups differed considerably according to grade level student teaching assignments. Seventy percent of the Key Concept Focus Group had elementary teaching assignments, ten percent had middle school assignments, and twenty
percent had high school assignments. The Prior Knowledge Focus Group consisted of thirty-three percent elementary teaching assignments, thirty-three percent middle school assignments, and thirty-three percent high school assignments. Eighty percent of the teachers in the Key Concept Focus Group were seeking a baccalaureate degree with teaching certification; and twenty percent were post-baccalaureate students seeking teaching certification. Sixty-six percent of the teachers in the Prior Knowledge Focus Group were seeking a baccalaureate degree with teaching certification; and thirty-three percent were post-baccalaureate students seeking teaching certification. Sixty percent of the teachers in the Key Concept Focus Group self-selected their lesson focus for the lesson plan critique. Forty percent were assigned a focus by their cooperating teacher. Sixty-seven percent of the teachers in the Prior Knowledge Focus Group self-selected their lesson focus, thirty-three percent were assigned a focus by their cooperating teacher.

The non-equivalency of the two focus groups was an unexpected finding in the analyses of Task 4 data. Also problematic to the Task 4 analyses was the disregard with which teachers in both groups responded to Task 1A and Task 1B instructions. Teachers also seemed to disregard the contextual statement on their focus variable in Task 1. As previously reported, responses to Tasks 1A and 1B were remarkably similar considering
## LESSON KEY CONCEPT CHOICES

<table>
<thead>
<tr>
<th>The Key Concept Focus Group's Categorical Choices (Teachers 1-10)</th>
<th>The Prior Knowledge Focus Group's Categorical Choices (Teachers 11-19)</th>
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<tr>
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<td>Studio</td>
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<td>Descriptive</td>
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<td>Historical</td>
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<td>Learners (o)</td>
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**Full Group's Categorical Choices**
- Studio
- Interpretive
- Formal, descriptive
- Historical
- Learner

## LEARNERS' PRIOR KNOWLEDGE CONSIDERATIONS

<table>
<thead>
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</table>

**Full Group's Considerations**
- Studio
- Learner
- Formal
- Historical
- Descriptive
- Interpretive (o)

*Figure 8.* Comparison of Focus Group's and Full Group's Key Concept Choices and Learners' Prior Knowledge Considerations (Lesson Plan Critiques)
teachers were given different contextual cues and were instructed to write about different
variables. Such apparent disregard of the contextual statements made it moot to compare
the effects of such contextual statements.

Since analyses of the effects of contextual statements on student art teachers' subsequent understanding was not possible, analyses of Task 4 data consisted of tabulating the interview ideas new to the student teachers into three content categories. Those categories are: (a) newly learned ideas about learners' prior knowledge in lesson planning, (b) newly learned ideas about lesson planning, and (c) newly learned ideas about key concepts in lesson planning. This data was subsequently cross-analyzed with other data from phases 1, 2, and 3.

Teachers from both groups claimed to have learned more new ideas about learners' prior knowledge and lesson planning than they learned new ideas about key concepts from the art teacher interview. They listed 12 newly learned ideas about learners' prior knowledge, 12 about lesson planning, 9 about key concepts, and 1 of a general nature.

Task 4 instructions were designed to prompt teachers to reflect on their Task 1, 2, and 3 responses before they responded to Task 4. Only one response, however, indicated reflection on Tasks 1, 2, or 3:

After listening to the teacher, I understood the connection between the artists. I liked the concept of comparing the artists' similarities and influences vs. their differences (Teacher 15).
No other Task 4 responses indicated teacher reflection on responses to previous tasks. Instead, teachers' responses frequently parroted the terminology of the experienced teacher as she described her own thinking about the videotaped unit.

**Response to Direct Instruction on Teaching and Learning Research**

The fifth intervention of the workshop was a lecture on cognitive learning research. Through direct instruction, yet another attempt was made to clarify the meaning and function of the terms "key concept" and "learners' prior knowledge" as well as "cognitive learning theory" (see Appendix J for protocol). At the end of the lecture, short segments were shown from the videotaped art lessons illustrating cognitive learning theories being practiced in actual art instruction (see Appendix D for summary of videotape segments).

**Task 5**

After the lecture, participants were given a background questionnaire to complete. Modeled after a questionnaire in a previous art teacher education study (Kowalchuk, 1992), one portion of the questionnaire asked teachers to rate (on a scale of 1 to 5) their pre-workshop understanding of "key concepts" and "learners' prior knowledge" in art teaching:

"Check the phrase that best reflects your understanding of key concepts and learners' prior knowledge before this workshop:"
1. Not familiar with the terms

2. Familiar with the terms but had not considered the function of [key concepts and learners' prior knowledge] in lesson planning

3. Familiar with the terms but had not considered the function of key concepts and learners' prior knowledge] in higher-order teaching and learning

4. Know the terms, and consider [key concepts and learners' prior knowledge] in my own lesson planning

5. Know the terms, and value [key concepts and learners' prior knowledge] in the promotion of higher order thinking and teaching (see Appendix H).

Another portion of the questionnaire asked teachers to pick the phrase which best described how important key concepts and learners prior knowledge were to them after the workshop:

"Reflect on your lesson planning and check the phrase that best describes how important the consideration of key ideas and concepts is to your instructional design:"

1 4
never important — more important

1. NEVER been important to me

2. LESS important to me now than in the past

3. As important (SAME) to me now as in the past

4. MORE important to me now than in the past (see Appendix H).
Pre-workshop understanding of the function and meaning of key concepts. When teachers rated their pre-workshop understanding of key concepts, individual self-ratings ranged from 1 to 5 (out of 5). The average rating of the 19 teachers was 4.08. Many teachers claimed a high understanding of the function of key concepts in lesson planning, but only 7 (37%) indicated valuing key concepts as a way to promote higher-order thinking and teaching (level 5 rating). One teacher indicated that he was not familiar with the term "key concepts" before the workshop. This was a curious finding because during phase one of this study, he completed the lesson plan critique in which he described the key concepts in his lesson and made connections between those key concepts and his overall unit.

Post-workshop understanding of the importance of key concepts. Nine of the 19 teachers (47%) indicated that key concepts were "more" important to them after the workshop than before the workshop. (Three had previously indicated a high 4.5 or 5 pre-workshop understanding of key concepts; four had previously indicated a pre-workshop understanding of 4; one had indicated a pre-workshop understanding of 3; and one teacher said that the term "key concept" was unfamiliar to him before the workshop).

Nine of the 19 teachers (47%) stated that key concepts were as important to them after the workshop ("same") as they had been before the workshop. (Four had already indicated a high pre-workshop understanding of 5; and four had indicated a pre-workshop understanding of 4. One teacher placed the "same" importance (level 2 rating) on key
concepts after the workshop as she had before the workshop. This was another curious finding as this teacher completed a lesson plan critique in which she described the key concepts of her own lesson. She completed Tasks 1 and 2 in which she received contextual information about the importance of key concepts and was asked to identify key concepts in the videotaped art lessons. During Task 4, she stated that she had learned a new idea regarding key concepts:

The fact that any art lesson can be altered and made age appropriate to be used with another age group (Teacher 8).

In spite of these educational interventions, this teacher still rated herself with a level 2 understanding: "Familiar with the terms but had not considered the function of key ideas and concepts in lesson planning."

One teacher rated key concepts as "less" important to him after the workshop than they had been before the workshop. This is an especially intriguing finding as he claimed the highest possible pre-workshop understanding of key concepts (level 5). During Task 3, he stated that he learned no new ideas about key concepts, learners' prior knowledge or lesson planning from the experienced teacher.

It seems that most teachers came to place "more" importance on key concepts by the end of this study. Two student teachers maintained a low level of understanding or viewed key concepts as "less" important after the study then they had viewed them before the study.
Pre-workshop understanding of the function and meaning of learners' prior knowledge. Participant ratings of pre-workshop understanding of learners' prior knowledge ranged from 3 to 5 (out of 5). The average rating was 4.29, somewhat higher than their average understanding of key concepts (4.8). Only eight of the 19 teachers (42%) indicated that building upon learners' prior knowledge when planning lessons could be a way to “promote higher-order thinking and learning” (level 5 understanding).

Post-workshop understanding of the importance of learners' prior knowledge. Thirteen of the 19 teachers (68%) placed “more” importance on learners' prior knowledge after the workshop than they had before the workshop. (Four indicated a high 4.5 or 5 pre-workshop understanding of the term; six indicated a pre-workshop understanding of 4; and three indicated a pre-workshop understanding of 3).

Six of the 19 teachers (32%) placed the "same" importance on learners' prior knowledge after the workshop as they had placed on it before the workshop. (Five had already stated a high pre-workshop understanding of 5; one had a pre-workshop understanding of 4).

Most teachers placed "more" importance on learners' prior knowledge at the end of the study than they had at the beginning of the study. All 6 teachers who placed the "same" importance on learners' prior knowledge had a previous high (level 4 or 5) understanding.
**Task 5 summary.** As the phases of the study progressed, 9 of the 19 teachers (47%) came to place "more" importance on key concepts in their own lesson planning. The eight teachers who placed the "same" importance on key concepts after the workshop as they had before the workshop self-rated high pre-workshop understandings of 4 or 5. One teacher maintained her low pre-workshop understanding of 2.

Thirteen of the 19 teachers (68%) placed "more" importance on prior knowledge in lesson planning as the study progressed. The six teachers who placed the "same" importance on prior knowledge after the workshop as they had before the workshop started out with high understandings of prior knowledge (level 4 or 5).

Overall, the teachers in this study indicated a slightly higher pre-workshop understanding of learners' prior knowledge in lesson planning than of key concepts in lesson planning. Thirteen teachers (68%) claimed to understand that consideration of learners' prior knowledge during lesson preparation could be a way to "promote higher-order teaching and learning." Fewer teachers (47%) understood that lessons based on key concepts could be a way to "promote higher-order teaching and learning." Even though teachers claimed a greater pre-workshop knowledge of the meaning and function of learners' prior knowledge than of key concepts, they claim to have learned more "new ideas" about prior knowledge than they learned "new ideas" about key concepts.
Lesson Plan Re-Critique

During the third phase of this study, all 19 student teachers were given the opportunity to reflect as they re-critiqued their lesson from phase one. It was speculated that as a result of new understandings, the teachers would, if prompted, reconsider their original lesson plan and make changes indicative of those new understandings.

Two weeks after the workshop and seven weeks after writing their original critique, student teachers re-critiqued their lesson plan by again responding to the same questions in the original critique. All 19 teachers wrote comments on their re-critique form; but six teachers stated they would make no changes to their original lesson plan.

Categorical Key Concept Choices

Although they described the same lesson, fewer key concepts were identified by student teachers in their lesson plan re-critiques than in the original lesson plan critiques. In their original critiques, the teachers described a total of 97 key concepts; whereas 71 key concepts were described in their re-critiques. The average number of concepts described for a single lesson in the original critique was 5.11 as compared to 3.74 in the re-critique.

Figure 9 displays the six concept categories described by the student art teachers in their lesson plan re-critiques. The key concept categories are displayed in order of frequency of selection (see Figure 9). The interpretive category was the content category most often (47%) selected by teachers in the re-critiques of their lesson's key concepts.
Figure 9. Categorical Choices of Lesson Key Concepts by Student Art Teachers (Lesson Plan Re-critique)
Formal concepts were the second most often utilized (42%). Studio (32%) and descriptive (26%) concepts were the next most frequently used categories. Historical ideas (21%), and ideas related to learners' needs or attributes (16%) were the least used descriptions of lesson content in the re-critique (see Figure 9).

In Figure 10, re-critique findings are compared to findings from the first lesson plan critique. Interpretive key concepts were frequently chosen as lesson content by teachers in both critiques. Formal concepts were also frequently chosen. Studio descriptions moved from the most frequently (74%) selected category in the first critiques, to third most often selected (32%) in the re-critiques. Historical concepts were chosen only half (21%) as often in the re-critiques as they were chosen in the original critiques (42%). In both critiques, three teachers (16%) each described a key concept related to learners' needs or attributes (see Figure 10).

**Relationships Between Key Concepts in the Overall Unit**

Cognitive teaching and learning literature stresses the need for teachers and learners to establish connections between new information and previously learned information in order to build upon and continually restructure knowledge. Also stressed is the importance of carefully selecting key concepts which have connectability to concepts in previous and subsequent lessons (Koroscik, 1984, 1988, 1992; Prawat, 1989). In order to investigate the effects of reflection and teachers' awareness of the importance of
<table>
<thead>
<tr>
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<th>Number of teachers who selected this category (lesson plan critique)</th>
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<th>Number of teachers who selected this category (lesson plan re-critique)</th>
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<td>Concepts Related to Learner</td>
<td>12</td>
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**Figure 10.** Categorical Choices of Lesson Key Concepts by Student Art Teachers (Lesson Plan Critique, Lesson Plan Re-critique)
relationships between unit key concepts, one section on the re-critique forms prompted
teachers to describe the relationship between key concepts in their overall unit.

The data analysis indicated that formal concepts were the most frequently (68%) described links between the lesson and the overall unit of instruction in the teachers' original lesson plan critiques. Key concept relationships in the re-critiques were not nearly as weighted in one category as they were in the original critiques. Figure 11 shows the key concept relationships described by student teachers in their lesson plan re-critiques. Data analyses indicate that formal connections were still most frequently (42%) used to link lesson concepts in the unit of instruction. However, interpretive unit connections were described almost as frequently (37%) as formal connections in the re-critiques. Studio connections were not described as often (11%) as they had been in the original critiques (26%); but one additional teacher made an historical connection (16%) which had not been described in the original critiques (11%). No teachers in the phase one critiques indicated that they thought learner attributes could be a link between and within lessons. Three teachers (16%) described such a connection in their re-critiques. No teachers in either lesson plan critique described relationships between descriptive lesson concepts and the overall unit (see Figure 11).

The following two responses illustrate the wide range of teacher understandings of the importance of establishing relationships between concepts in units of instruction. One
teacher in her re-critique stated that relationships between unit concepts were not applicable in her year-long art history curriculum:

"Relate these Key Ideas/Concepts to Key Ideas/Concepts in other lessons within the overall unit:"

Not applicable. The year-long focus was "Great Masters"—each artist was approached in the same way. Discovering the personality of the artist and the environment which molded that artist (Teacher 1, grade level 5).

This teacher demonstrated no understanding that a year-long art history focus can and needs to be linked between past and subsequent historical information in order to build cohesiveness, promote access to prior knowledge, and aid in the restructuring of new knowledge. Compare Teacher 1's understanding to the understanding of Teacher 6 who also has a year-long art history focus:

"Relate these Key Ideas/Concepts to Key Ideas/Concepts in other lessons within the overall unit:

I would compare the motivation of [this artist] with those of the rest of the Time Line. How was what they did and why they did [it] different from what others did? (Teacher 6, grade level 4)

Although lessons about individual artists were taught separately and sequentially throughout the year, this teacher understood that underlying the implementation of new information about each artist were unifying concepts. These concepts establish that earlier artists influence later artists, and relate how individual artists are alike and different from one another. Historical information organized in this way is meaningful to learners unlike
Figure 11. Relationships Between Lesson Key Concepts and the Overall Unit as Described by Student Teachers in Their Lesson Plan Critiques and Re-critiques
compartmentalized information as illustrated by Teacher 1 which often can be recalled only through rote memorization and recall.

Reinforcement of Lesson Key Concepts with the Studio Activity

It was important to investigate how student art teachers thought they made connections between their lesson's stated key concepts and the planned studio activity in order to understand if lesson content was actually reinforced by art-making. During analyses of the original lesson plan critiques, key concept reinforcement with the studio activity was determined by a matching procedure. If the teachers' description of the studio activity referred to a key concept stated in the lesson plan critique, a match was noted. For example, the following teacher referred to the lesson's formal key concepts in her studio description:

"What were the Key Concepts in the Lesson?"

Main ideas were--1) Looking at the reproductions + placing the lines on their larger paper in appropriate places. 2) Filling in the areas w/colored dots 3) Value--the farther away or closer 2-gether u place the dots--gives a different range of values.

"How were the Key Concepts in this lesson reinforced by the studio activity?"

Key idea Lines--they were put into groups + each member was given a square (which was part of the reproduction) to follow the lines onto a larger square of paper. Had to match lines up w/rest of group.
Key idea Dots--filled in areas w/colored dots. Created different values by the placement of the dots. (Teacher 4, grade level 4)

Two examples of non-reinforcement of key concepts with the planned studio activity are as follows:
"What were the Key Concepts in the lesson?"

Abstraction—finding the essence of an animal.
How the animal has been abstracted in art throughout history and its purpose.
design—they were required to decorate their animal in a sacraffito [sic]-like style
that was highly stylized and patterned. This was a whole process that went from
thumbnail sketches to finished work.
other cultures' use of animals + why
(Teacher 16, high school ceramic class)

"How were the Key Concepts in this lesson reinforced by the studio activity?"

The students discovered the working properties of clay and the specific rules that
govern those materials. They learned they can only make the legs so long if it's to
stand, etc. (Teacher 16, high school ceramic class)

"What were the Key Concepts in the lesson?"

Students were to create their own creature, something that doesn't exist today.
Once they had thought about their creature they had to decide how they were
going to make their masks. The masks were going to be 3-dimensional also. They
had to do a sketch, have a life process, a legend, and a name for their creature.
We talked about Picasso and his masks, we also talked about African art. (Teacher
10, 7th grade)

"How were the Key Concepts in this lesson reinforced by the studio activity?"

Each students [sic] creature mask had to be 3-dimensional. They had to have all
the steps to come up with a finished product. (Teacher 10, 7th grade)

Teachers 16 and 10 offered general studio descriptions with references to either steps or
rules of art-making. There seems to be no teacher awareness of the need to build
relationships between the formal, historical, and interpretive key concepts and the studio
activities.
During data analyses of the original lesson plan critiques, all studio reinforcements in each concept category were totaled in order to investigate if some concept categories were reinforced by studio activities more than others. It was concluded that: a) teachers often did not reinforce their stated lesson concepts with the planned studio activity, and b) some key concept categories were reinforced by the studio activity more often than others. Figure 12 contrasts the number of teachers who described each concept category in their original critiques with the number of teachers who actually reinforced the key concepts with the studio activity description.

Seven of the original 10 teachers listing formal concepts referred to these concepts in their studio descriptions. More teachers described formal key concepts than actually referred to them in the studio activity descriptions. This was the case with each concept category. Key concepts were listed in the original lesson plan critiques but many of the key concepts were not reinforced with the planned studio activity descriptions. Eleven of the original 14 teachers listing studio key concepts actually mentioned processes, techniques, or skills in their studio activity descriptions (see Figure 12). Only 4 of the 10 teachers listing descriptive concepts referred to these concepts in their description of the studio activity; and only 3 of the 12 teachers described exploring interpretive concepts in studio production. Three teachers described their lessons as having a key concept related to learners, but only one teacher reinforced that concept with the planned studio activity.
Only 1 out of 8 teachers listing historical concepts referred to the historical concept in the studio description (see Figure 12).

These findings from the original lesson plan critiques illustrate that student teachers selected specific key concepts in their lessons, but they used the opportunity of the studio activity to strengthen student understandings of only fifty-one percent of the stated concepts.
- Number of teachers who selected this category of lesson content (lesson plan critique)
- Number of teachers who reinforced lesson concepts with the studio activity (lesson plan critique)

**Figure 12.** References to Lesson Key Concepts in the Studio Activity Descriptions by Student Art Teachers Before the Workshop (Lesson Plan Critique)
Analyses of the lesson plan re-critiques confirmed findings from the original critiques. Teachers planned to reinforce lesson concepts with the studio activity forty-nine percent of the time in their re-critiques. Figure 13 illustrates the reinforcement of lesson key concepts with studio activities in the re-critiques. More studio (i.e., techniques and skills) and formal concepts were reinforced by the studio activity than other concept categories. Five of the 6 teachers describing a studio concept referred to the concept in their description of the studio activity. Five of the 8 teachers describing a formal concept reinforced the concept with the studio description; 3 of the 5 teachers who planned to introduce a descriptive concept reinforced the concept with the studio explanation; and 3 of the 9 teachers listing an interpretive lesson concept described the reinforcement of that concept with the studio activity. One of the three teachers whose lesson contained a learner attribute key concept described a studio activity that reinforced that concept; while none of the 4 teachers who described historical key concepts reinforced those concepts with the studio description (see Figure 13). Stated lesson concepts in the studio, formal, interpretive, and descriptive categories were reinforced most often with the studio activity descriptions in the re-critiques. Concepts in the historical and learner categories were rarely reinforced in the re-critique studio descriptions (see Figure 13).
Number of teachers who selected this category of lesson content (lesson plan critique)

Number of teachers who reinforced lesson content with studio activity (lesson plan re-re-critique)

Figure 13. References to Lesson Key Concepts in the Studio Activity Descriptions by Student Art Teachers After the Workshop (Lesson Plan Re-critique)
Consideration of Learners' Prior Knowledge

Teacher considerations of learners' prior knowledge were investigated in order to determine if student art teachers in this study attempted to implement cognitive learning theory in their lessons by planning linkages between learners' prior knowledge and new information. In each of their lesson plan critiques, teachers were asked to describe the existing knowledge of their students. Figure 14 compares the teachers' descriptions of learners' prior knowledge in their original critiques and in their subsequent re-critiques. The biggest change in the teachers' thinking, as indicated by the re-critique data, was that teachers no longer most frequently considered the studio experience of the learners when they assessed prior knowledge (see Figure 14). By the last phase of the study, teachers most frequently (68%) considered the attitudes, needs, and interests of learners (i.e., learner attributes). They thought about studio knowledge second most frequently (37%). Teachers then considered learners' prior knowledge in this order: formal (21%), historical (16%), interpretive (19%), and descriptive (51%). It is important to note that 3 of the 19 teachers in their re-critiques indicated that they thought about the learners' knowledge of interpretive art meanings. As previously reported, no teachers thought about this particular form of their students' prior knowledge in the original lesson plan critiques (see Figure 14).
Number of teachers who described this category of learners’ prior knowledge (lesson plan critique)

Number of teachers who described this category of learners’ prior knowledge (lesson plan re-critique)

Figure 14. Comparison of Student Art Teachers’ Considerations of Learners’ Prior Knowledge from their Lesson Plan Critiques and Re-critiques
Post-Workshop Changes to the Original Lesson Plan

All 19 teachers made comments on their re-critique forms. Six teachers said they found no need to change their original lesson plan. Changes described by 13 of the 19 teachers were tabulated as follows:

- Studio activity needs work (5 out of 13 teachers)
- Need to add [formal] concepts to lesson content (2 out of 13 teachers)
- Need to add [historical] concept to lesson content (1 out of 13 teachers)

These changes corroborate the teachers' thinking throughout the study. The studio activity and formal ideas were high priorities in their planned lesson. Historical ideas were not frequently used by these student teachers in their own teaching. Two teachers reflect below on how they would change the ways they used key concepts in their lesson:

I would reconstruct the plan with more thought about where it was going. I should have thought more about the things that they were learning about Africa, and African masks, and if I could have taught the lesson better.

I think I would stress more my objectives, what my key concepts were, what I was trying to get out, more than the vocabulary they were supposed to learn

Two teachers wanted to change their method of instruction:

I might loosen it up a bit and make it less directive
I would leave the lesson [content] the same and work on my presentation of it

One teacher wanted to change the way she utilized learners' prior knowledge:

I would change the lesson simply by finding a way to relate my information regarding Matisse or gesture drawing to previous information to facilitate comprehension and retention
Re-critique summary. Overall, teachers listed fewer key concepts in their re-critiques than in their original critiques. They averaged 3.74 concepts in the re-critiques and 5.11 concepts in the original critiques. When teachers described lesson concepts in their phase one critiques, they talked mostly (74%) about studio concepts (i.e., procedures, techniques, skills, or characteristics of a particular media). They talked second most frequently (63%) about interpretive ideas and the elements and principles of design (53%). In their re-critiques, teachers' descriptions of lesson content changed. They talked about interpretive content most frequently (47%), and second most frequently talked about the elements and principles of design (42%). Studio concepts were the third most described lesson content (32%).

Those changes in the way student teachers described their lesson concepts—from studio most frequently to third most frequently and from interpretation second most frequently to interpretation most frequently—caused changes in the relationships teachers established among lesson concepts in their re-critiques. In other words, their original critique descriptions reflected many formal key concepts and formal relationships. The re-critique descriptions contained many formal relationships (42%). However, teachers described almost as many interpretive concept relationships (37%) as formal relationships in their re-critiques. Studio relationships, which had been described second most frequently in the original critiques were described third most frequently (11%) in the re-critiques. Interestingly, descriptive relationships, which are the most literal and perhaps
easily connected relationships, were not established by student teachers according to either lesson critique.

When student teachers critiqued the experienced teacher's instruction, they most described interpretive and historical key lesson concepts. Thus, interpretive and historical relationships in the experienced teacher's lessons were most often described as connecting ideas.

When describing how the studio activity functioned in their original lesson plan critiques, only fifty-one percent of the lesson key concepts were described by teachers as being reinforced with studio activities. Reinforced most frequently were:

- studio concepts
- formal concepts
- descriptive concepts
- interpretive concepts
- historical concepts
- concepts related to learners

In their lesson plan re-critique descriptions, teachers reinforced lesson concepts with the studio activity only forty-nine percent of the time. The same content areas were reinforced by the studio activity with subtle changes in the order of frequency. Concept categories were reinforced as follows:

- formal and studio concepts
- interpretive and descriptive concepts
- only one teacher reinforced concepts related to learners
- no teachers reinforced historical concepts
Despite attempts during phase two to clarify misconceptions, teacher misunderstandings of key concepts persisted. For example, one teacher still did not understand that key concepts have to do with lesson content. She continued to describe the learners' attitudes as her key concepts:

Students need a new attitude about art. They need to realize art is an essential part of their life and their schooling. They need to realize they will not get away with sloppy, effortless work ... Students have been trained from day one that art is a class to goof off and have fun [sic]. This attitude needs to be changed to art is a place to learn about (I am now student teaching in a middle school and can see first hand why these attitudes exist). (Teacher 3, high school level)

Another teacher listed as lesson key concepts two words--"cooperative learning." This re-critique response indicated this teacher's persisting confusion about the term "key concept." In her original lesson critique, she listed four formal key concepts (i.e., shapes, colors, overlapping, and balance) with no reference to how these formal structures affect the meaning(s) of artworks (semantic content). Her continuing confusion was confirmed when she described the teaching strategy of cooperative learning as her lesson key concept in the re-critique (Teacher 15, first, grade level 2).

Another teacher continued his preoccupation with the gimmick-like image of the pinhead figure which was the subject matter of his studio activity. In both critiques he stated the interpretive concept of recognizing advertisement in the world around us. However, he continually referred to the pinhead figure and the way he did not inform his students about the symbolism of the mysterious image until his students had almost completed their pastel drawing incorporating the image (Teacher 17, high school level).
In her re-critique, one teacher specifically described studio, formal, and interpretive concepts as she had in her first lesson plan critique. In her re-critique, she added "art history" as an additional concept:

Art history is important. I will continue to use it . . . whom I choose may be different (Teacher 18, Kindergarten level).

This teacher clearly valued historical content and intended to add more to future lessons. "Art history" as a concept, however, is not specific enough to be useful in planning lesson content. Specific art historical facts, particular biographical information about an artist, that artist's style or the context of the artist's art-making, as well as information about the way earlier artists and artworks influence artists and artworks of the present and future are the historical concepts needed to build lesson content.

In his original critique, one teacher described five categories of lesson content using conjunctive statements. He joined structural features with semantic features in his conjunctive statements. There was specific mention of art historical information regarding the key exemplars. It is note-worthy that when given an opportunity to re-critique the same lesson, he described his key concepts in this way:

"After reflecting on the Workshop, I would list the following as the KEY CONCEPTS in this particular lesson."

Becoming involved with media and becoming comfortable with the hands as a molding tool (Teacher 16, high school level)

At the end of the study, this teacher seems to have had a lesser understanding of what constitutes a lesson key concept than he had at the beginning of the study. His
concepts were stated as if they are objectives. He described no ideas about the medium that relate it to formal, descriptive, interpretive, historical, or studio meanings.

The student teachers' assessment of their students' prior knowledge varied subtly in the critiques and re-critiques. They most often (original critique) and second most often (re-critique) considered the studio knowledge of the learners. Consideration of learner attributes (i.e., grade level, attitude, and quality of studio work) was the next most often considered in the original critique and second most often considered in the re-critique. Learners' formal and historical knowledge ranked third and fourth in both critiques. Students' knowledge of interpretive art meanings was not considered in the original critiques and ranked fifth in the six considerations in the re-critique. Learners' attributes were least often considered in the original critiques and ranked fifth in the six re-critique considerations.

It is interesting that when student teachers observed an experienced teacher's instruction, they considered learners' prior knowledge in the following ways and in this order of frequency:

- historical knowledge and formal knowledge
- descriptive knowledge, interpretive knowledge, and knowledge of learners' attributes (i.e., grade level, attitude and quality of studio works)
- studio knowledge

It should be noted that the videotaped teaching episodes depicted more examples of direct instruction and student discussion than it depicted students working on the studio activity.
This depiction may have affected the student teachers' low consideration of learners' studio knowledge.

Last of all, 6 of these 19 students teachers (32%), when encouraged to do so, did not take the opportunity to make changes to their original lesson plans. Regardless of any activities in which they participated in this study, and regardless of the 7 weeks teaching experience they had accrued, they declined the opportunity to revise their original lesson plan with new knowledge gained from participating in this study or from the student teaching experience.

**Synthesis of Findings and Discussion**

Student teachers' responses to five teacher education interventions were analyzed in order to determine the effects on understanding of art content and pedagogy.

**Lesson Plan Self-Critique**

By participating in the original lesson plan self critique, teachers (a) reflected on their own lesson planning, (b) used current teaching and learning research terminology as they so reflected, and (c) provided pre-test data for the subsequent cross-analyses of pre- and post-test data. Self_critique responses indicated that all teachers reflected on their lesson plans, utilizing their prior knowledge of the terms "key concepts" and "learners' prior knowledge." Base-line data of teachers' understanding were collected which were compared to the inferred understanding of teachers as they critiqued actual teaching, critiqued a teacher interview, and re-critiqued their own lesson plan. The three purposes
of this intervention were accomplished, the effect being that teachers integrated research
and practical knowledge in the process of reflection.

**Critique of Actual Teaching**

The purposes of asking student teachers to critique the videotaped teaching episodes were four-fold. The critique provided an opportunity for these teachers to (a) observe an experienced art teacher implement a sequential unit of instruction, (b) apply current educational terminology to the critique of actual art teaching episodes, (c) acutely analyze art instruction in order to comprehend the lesson key concepts (content) and to make judgments about the learners' prior knowledge, and (d) determine if different contextual statements preceding the critique tasks would affect teacher understanding of key concepts and prior knowledge.

Teachers accomplished the first two purposes by observing the videotaped lessons and responding in participant response booklets. However, teachers were not successful in comprehending key concepts from lesson content in actual instruction or in assessing the prior knowledge of learners in actual instruction. These purposes were not accomplished because teachers disregarded Task 1A and 1B instructions to specifically describe lesson content or learners' prior knowledge. The last purpose of this intervention was also not accomplished because the student teachers disregarded the contextual statements.
The fact that teachers disregarded specific Task 1 instructions and contextual statements, and instead responded with general information to Task 1 lessened the effects of this intervention. The two focus groups' responses to Task 1 were strikingly similar even though they were asked to critique different variables while observing the videotaped art instruction. The similarity of responses from the Key Concept Focus and the Prior Knowledge Focus Groups necessitated modification to the analyses of Research Question 3. The activities of observing art instruction and being asked to critique specific components of that instruction did not cause teachers to think more discriminatively about lesson components or learners in the process of teaching.

It is possible that student teachers disregarded Task 1 instructions because they were accustomed to field observations in which they are not required to observe and analyze specific aspects of teaching. They instead make general observations of actual teaching, then share these general observations with other preservice teachers.

As a consequence of the teachers' disregard for the specificity of the Task 1 instructions, it is likely that this intervention was not effective in the further development of student teachers' content and pedagogical understanding as had been hoped. If specificity in understanding components of teaching and learning was a target goal in actual teacher education programs, the purpose of an assignment such as this would need to be explicitly explained. It is not a general, open-ended field observation--but an in-depth focus on one or two lesson components.
Critique of Videotaped Teacher Interview

As with the other interventions, the intervention of prompting participants to listen to an experienced art teacher talk about art instruction served several purposes. It served (a) to illustrate to these novice teachers an experienced teacher's understanding of key concepts and learners' prior knowledge in lesson planning, (b) to prompt teachers to reflect on their own ideas from Tasks 1 and 2 about lesson key concepts and learners' prior knowledge, and (c) to compare those ideas with those conveyed by the experienced teacher.

As a preparatory activity for Task 4, teachers were asked in Task 3 to write down the experienced teacher's ideas as they listened to the videotaped interview. These Task 3 responses served as reference for Task 4.

In their Task 4 responses, teachers were directed to describe the ideas learned as a result of listening to the experienced teacher talk about her teaching. They were enthusiastic in their descriptions of ideas regarding the meaning and function of key concepts in lesson planning and the several forms of learners' prior knowledge. Analyses of participant questionnaire data indicates that these teachers had a lesser understanding of key concepts than they had of learners' prior knowledge as the study began. In spite of that, they claimed to have learned more about prior knowledge from the teacher interview than about key concepts.
Data analysis to investigate the effects of the contextual statements on the responses of the two groups was not possible due to the teachers' apparent disregard for the contextual statements. Non-equivalency of the two groups also made this comparison inappropriate. Therefore, the student teachers' art and pedagogical understanding was inferred in other ways. For example, the understanding of key concepts and learners' prior knowledge was inferred from what the teachers considered to be new ideas. If something was a new idea, they did not have previous knowledge of it, for example:

I learned the importance of building upon prior knowledge and its relation to information retention. (Teacher 2)

The [new] idea of doing an art project that can let the students bring in elements from their everyday life and put it in their art work (Teacher 6)

Creating studios which relate to their [learners'] interests, color, storytelling and building different new techniques that are either simplification of [an] artist's style or one aspect of it (Teacher 12)

Considering this [prior knowledge] building blocks is interesting. Giving them [learners'] knowledge they will need for the next lesson in the lesson before (Teacher 12)

I learned how to link information by placing it contextually in between highly related information. (Teacher 2)

I also liked the fact that she based some of her lessons on what is being covered in the other classes. (Teacher 4)

The notion that any subject can be a springboard [sic] for researching and digging for information which can be utilized in creating a lesson (Teacher 8)

She also did a great deal of thinking about which artists could relate to one another, and how this was going to incorporate that art history into the studio activity. (Teacher 10)
The fact that any art lesson can be altered and made age appropriate to be used with another age group. (Teacher 8)

Using artists who know one another as a connecting theme. (Teacher 14)

The idea of relating artist friends is very interesting. Students need their friends and [friends] are very important in their lives. (Teacher 19)

Building from your concept an idea, then going to artists they [learners] would appreciate and understand (Teacher 12)

I learned that the artists and works that are used in lessons do not always have to be world famous artists. Being able to study and teach about lesser known artists would make a more well-rounded teacher. (Teacher 19)

Watching the interview of the experienced teacher seemed quite beneficial to these teachers in terms of gaining new information about key concepts, learners' prior knowledge, and lesson planning not previously known. It was also useful to others as a prompt to reflect on their own prior knowledge and restructure that knowledge in terms of the new information. Listed below are personal reflections described by the student teachers as they considered the experienced teacher's ideas:

I thought it was a fabulous idea that the teacher first used an artist that the students knew and then introduced a new artist that they had never heard of before. This seemed extremely logical. I don't know why I never really thought of it before. (Teacher 4)

I like the idea of stringing along starting with a child's prior knowledge and adding the teacher's main ideas or concepts. Then this in turn will become prior knowledge making way for another round of new key ideas and concepts. It really does sound simple but I've always focused on new material . . . when the students learn it or master it [I] move on. I never concentrated on how this information can help reinforce the prior knowledge and vice versa. (Teacher 5)

The various ways that people have used to relay stories was new, although vaguely familiar (Teacher 3)
After listening to the teacher, I understood the connection between the artists. I liked the concept of comparing the artists' similarities and influences vs. their differences (Teacher 15)

I found the interconnecting of the 3 artists something that I've always wondered "How can I do that?" (Teacher 16)

I live in Niagara Falls, and the subject itself has left countless opportunities for artists to capture its splendor in many unique ways. What would the link be, Nature, the Falls, media. This exercise has given me a new angle and direction to pursue for future lesson planning (Teacher 16)

I've always thought of using the same ole [sic] artists for my explars [sic] but I think it would be interesting to use some of my own local references and artisans and incorporate them into my lessons (Teacher 16)

I have yet to connect any 2 or more artists' lives together (Teacher 3)

Listening to the experienced art teacher talk caused these student teachers to understand new ideas about key concepts, learners' prior knowledge and lesson planning.

It did not, however, seem to prompt the teachers to compare these newly learned ideas with their Task 1, 2, and 3 responses. Nor did the interview cause the teachers to compare their lesson planning strategies with a veteran teacher's lesson planning strategies. Consequently, few misconceptions were reduced.

Response to Direct Instruction

Direct instruction on teaching and learning research is standard practice in teacher education. Task 5 was designed to (a) clarify misunderstandings which student teachers had held up to that time about the meaning and function of key concepts and learners' prior knowledge in cognitive teaching and learning, (b) bring about awareness of these
components in teaching and learning processes, and (c) illustrate research theories practiced in actual art teaching. Responses indicate that 9 of the 19 teachers thought key concepts were “more” important after the workshop than they had thought they were before the workshop. Thirteen of the 19 teachers came to value learners' prior knowledge “more” after the workshop than they had before the workshop. This intervention seemed effective in accomplishing the intended purpose of increasing the awareness and value placed by teachers on these two variables. The extent to which new information from direct instruction clarified previous misunderstandings or transferred in other ways was investigated by analyzing the lesson plan re-critiques.

**Lesson Plan Re-critique**

The frequency with which teachers described particular lesson concepts in their re-critiques changed from their original critique descriptions. Teachers no longer described more studio key concepts than other concepts; they described interpretive concepts more than other concepts. They still described many formal concepts in their re-critiques; and studio concepts were now the third most described lesson concepts.

As a result of the many formal concepts in the student teachers' original lesson plan critiques, many of the relationships drawn among their lessons were formal in nature. In their re-critiques, interpretive relationships were established almost as often as formal relationships because the re-critique lesson concepts were most frequently interpretive in nature.
Did teacher understanding of the term key concepts change as a result of the interventions in the study? When re-critique responses were individually analyzed, confusion over the term "key concepts" continued. Only 5 of the 19 teachers (27%) listed a key concept in their re-critique that combined structural (i.e., formal, literal) and semantic (i.e., interpretive, nonliteral) art meanings. Three of the teachers continued to list formal ideas with no interpretive features about the effects of these formal features on the meaning(s) of the key artwork. At least 3 of the 19 (16%) teachers still listed the key concepts of the lesson as the studio activities. One teacher continued his preoccupation with the subject matter of the studio project as the lesson key concept and another continued to list her students' poor attitudes as the key lesson concept. Newly learned ideas from the teacher interview about key concepts did not seem to transfer to the student teachers' lesson plan re-critiques.

The student teachers' confusion about the function of studio activities persisted in the re-critiques as evidenced by the fact that only forty-nine percent of the stated lesson concepts were reinforced by planned studio work. Student teachers identified relationships between concepts in their lessons and the overall unit. They recognized relationships between concepts in the videotaped teaching episodes. Half of the time, however, they did not describe relationships between their own stated lesson key concepts and their lesson studio activity.
Understanding the forms and uses of learners' prior knowledge changed according to data gathered in the teachers' critiques and re-critiques. At the beginning of the study, teachers mostly considered the learners' studio knowledge as they planned lessons. It is notable that many teachers described interpretive key concepts in their original critiques but none of the 19 teachers thought about the learners' previous interpretive knowledge. Three of the 19 (16%) teachers thought about this form of knowledge in their re-critiques. More teachers indicated that building upon learners' prior knowledge in lesson planning was a way to promote higher-order teaching and learning than understood the use of key concepts as a way to promote higher-order teaching and learning.

When asking student teachers to re-critique a lesson plan in the future, it might be helpful to encourage them to spend as much effort on the re-critique as they spent on the original critique. It could be that some teachers saw little necessity to respond again to the same questions regarding the same lesson. The practice of reflection, however, is not only encouraged in teacher education but beneficial to teaching at any level of experience (Dewey, 1933; Schon, 1987; Zimpher & Howey, 1987). It is possible that these beginning teachers did not perceive the benefit of such an activity and that is why the length of their re-critiques was shorter than the first critiques. Data analyses of the re-critiques did
not indicate that teachers were more selective in their key concepts, studio, and other lesson choices; they simply offered fewer descriptions.

The descriptions and enthusiasm expressed by these student teachers indicate that listening to an experienced teacher talk about art instruction was the most effective intervention for learning the uses of learners' prior knowledge and key concepts in lesson planning. Transfer of these new ideas was manifested in the higher value placed on key concepts and prior knowledge in the post-workshop participant questionnaire (i.e., Task 5). However, teachers did not seem to bridge the knowledge gained from the teacher interview to the re-critique activity. As previously discussed, thirty-two percent of the teachers declined to make additions to their original lesson plan critique, only forty-nine percent of the teachers reinforced their lesson concepts with the studio activity, only 5 teachers (27%) described a lesson plan which joined structural and interpretive meanings, and many teachers still misunderstood the meaning of the term "key concepts."

Research Question 4: What are the Effects of Student Art Teachers' Knowledge Base, Knowledge-Seeking Strategies and Dispositions on Their Lesson Planning?

Recent literature in art education presents a cognitive learning model to explain the relationship among various facets of cognition, including the learners': knowledge base, knowledge-seeking strategies, and dispositions toward learning
The investigation of Research Question 4 was based on the premise established in Chapter II that teachers need to be learners (Feinman-Nemser, 1983; Hawkins, 1973; Wildman and Niles, 1987). Thus, a cognitive model describing learners is applicable to teachers as learners. Facets of teacher cognition were studied to ascertain their combined effects on the lesson planning of student art teachers. This exploration was not exhaustive as not all components of a student art teacher's knowledge base, search strategies and dispositions were explored, but strands within each facet were considered as part of this study.

**Student Art Teachers' Knowledge Base**

Two teacher knowledge variables, (a) key concept choices, and (b) understanding of learners' prior knowledge were the focus variables of this investigation. In a recent article, Leinhardt (1993) used the word *strands* to symbolize the interwovenness of teacher knowledge components. These strands when woven together make a whole which is very different than the individual strands that make it up. The strands are not interchangeable or self-contained, but when woven with other strands make up totalities or arrangements that are different from other totalities and arrangements because of the strands that are part of each unique whole (p. 14). The variables of teachers' key concept choices and teachers' understanding of learners' prior knowledge are strands of a teacher's content and pedagogical knowledge. Woven together, they represent aspects of a
teachers' pedagogical content knowledge—which has been viewed for years as an amalgamated form of content and pedagogical knowledge transformed for the purpose of teaching (Grossman, 1990; Shulman & Sykes, 1986). Several factors within the teachers' knowledge of key concepts and learners' prior knowledge were scrutinized in this study to better understand the complexity of a teacher's knowledge base and its effects on curriculum design.

**Pedagogical Content Knowledge**

Student teachers' understanding of lesson key concepts was a focus variable in this study because the selection of key concepts to teach are a teacher's way of directly communicating knowledge of topics, principles, laws and overarching ideas in a discipline (Grossman, 1990; Hasweh, 1985). As one student teacher described:

I have to connect the ideas in my own mind first. I like to present the key concepts in a logical, connective manner. (Teacher 4, 4th grade level)

Learning objectives derive from the lesson key concepts as does the choice of art exemplars to represent key concepts, the design of the lesson studio activity, and the agenda of teaching and learning activities. Cognitive learning theory describes key concepts as ideas situated at the heart of a discipline which promote connections within an instructional scheme. Teachers' key concept choices and the concepts' connectability to an instructional plan affect understanding in the visual arts (Efland, 1977; Eisner, 1972; Koroscik, 1988). A student teacher explained:
Key ideas and concepts affect lesson planning of the studio activity to the point where the [studio] activity has meaning. The concepts give the studio activity meaning (Teacher 16, high school level)

The range of student art teachers' lesson key concept choices were presented in Research Question 1 findings. Understanding of the meaning and function of key concepts in art instruction were presented as well. The effects of choosing lesson key concepts are discussed in the presentation of findings to this question.

Evident throughout all phases of this study were the misunderstandings held by student art teachers about the meaning and function of key concepts in art teaching and learning. Analyses of the teachers' original lesson plan critiques indicate that they considered key concepts to be lesson objectives, the studio product, the steps in the studio activity, the elements and principles of design and ideas related to learners (i.e., negative attitudes toward art class and low quality of studio works). When asked to identify the key concepts in actual art lessons, most student teachers in this study did not distinguish between key concepts (lesson content) and the sequence of teaching and learning activities in the observed art lessons. Although 10 of the 19 (53%) teachers were given preparatory contextual information about the function of key concepts in lesson planning before they were prompted to identify key concepts in practice, most of the ten teachers did not transfer information in the contextual statement to the key concept identification task. When given the opportunity to listen to the experienced teacher in the
videotaped lessons talk about her understanding and decision-making regarding key concepts in the observed lessons, the student teachers claimed to have learned several new ideas about the selection of key concepts in art lesson planning.

A lesson plan re-critique provided these teachers an opportunity to transfer to their previous lesson plan critique new learning gained from the teacher interview and other interventional activities. As stated earlier, most of the teachers did not transfer new learning from the study's interventional activities to their lesson plan re-critique. Phases one and two misunderstandings of the meaning and function of key concepts in lesson planning remained during the third phase of this study.

When asked on the participant questionnaire (see Appendix H) if they considered their art lessons to be based on "big" ideas—(i.e., ideas central to the field of art), 15 of the 19 student teachers (79%) indicated that they thought so. Two of the 19 teachers (11%) indicated that they thought their lessons were sometimes based on big ideas; 2 of the 19 teachers (11%) did not think that their lessons were based on big ideas in art.

Big art ideas are comparable to the "most relevant" ideas described in Koroscik's (in press) cognitive model of art learning (see Figure 2, Chapter II). She refers to art ideas that are antithetical to "most relevant" ideas as "least relevant" ideas.
When asked if they had trouble deciding what constitutes "big" ideas in art, 14 of the 19 student teachers (74%) said they had no trouble deciding what big ideas are. One teacher expressed having occasional problems deciding what are big art ideas; and 4 of the 19 teachers (21%) stated that it was difficult for them to distinguish big ideas from other ideas in art. The perplexing aspect of these findings is that only 1 of the 4 teachers who claimed to not base lessons on big art ideas admitted that he had trouble deciding what big ideas are. The other three people stated that their lessons are not based on big ideas, yet they had no problems in distinguishing big art ideas. Did they then intentionally plan art lessons not based on big (i.e., less relevant) ideas? Moreover, how could the four teachers who admitted they had difficulty in deciding what are big art ideas claim in a subsequent response that their lessons are based on big ideas? These findings are yet further illustrations of the confusion that exists in the knowledge base of these student art teachers about art ideas, key concepts and relevant lesson content in art instruction.

Such perplexity is problematic to the field of art education because superficial, confused, or less relevant teacher content knowledge could result in simplistic key concept choices or in inappropriate choices of art exemplars to represent lesson concepts. Oversimplification and superficial teacher
understanding could also result in the design of studio activities which do not reinforce the lesson key concepts or art exemplars.

**Studio Experience as a Knowledge Source**

On the participant questionnaire used in this study, student teachers were asked to rate their studio experience on a scale of 1-5 in 23 areas. The numbers 1-5 represented studio experience in the following ways—the lower the number, the higher the studio experience.

1 = Highly experienced  
2 = Much experience  
3 = Some experience  
4 = Hardly any experience  
5 = No experience

The student teachers felt themselves to be most experienced in general design (m=1.56), then in charcoal and pastel drawing (m=1.67), clay (m=1.78), graphite and colored pencil drawing (m=1.89), sculpture (m=1.89) and pen and ink drawing (m=2.05). They had more experience with tempera painting (m=2.11), than with oil (m=2.39) and acrylic (m=2.56) painting. They had some experience in printmaking—more in relief printing (m=2.44) than in intaglio printing (m=3.22), silkscreen (m=3.44) or lithography (m=3.56). They had limited experiences in weaving, fiber/fabric, papermaking, bookmaking, jewelry making and film and video.
It is likely that their high confidence in drawing influenced these teachers' choices of studio activities and art materials. Nine of the 19 teachers (47%) designed a studio activity focusing on the artform of drawing (e.g., pastel drawing, gesture drawing, still life drawing, figure drawing). For their studio activities, six of the teachers' (32%) used their self-stated strong design backgrounds to focus on formal elements in the construction of collages. Three of the teachers drew upon their experience in sculpture to help students create Pariscraft or paper mache' masks, or a day animal. Only one studio activity focused on painting (i.e., non-objective watercolor painting).

**Understanding of the Function of the Studio Activity in Art Teaching**

It was inferred from one-on-one interviews with 12 of the 19 student teachers (63%) that these teachers often plan lessons around the studio activity or "project." After they chose the medium for their lesson, they would fit ideas/concepts around that studio activity.

As presented in Research Question 3 findings, student teachers in this study used the studio activity as reinforcement of stated lesson concepts approximately half of the time. Studio and formal concepts were the categories most reinforced by the studio activity in the lesson plan critiques and re-critiques. Descriptive and interpretive concepts were the categories reinforced by the studio activity third and fourth most often in the lesson plan critiques and re-critiques.
Most of the associations that student teachers made between lesson key concepts and studio activities utilized low road transfer of knowledge. Based on superficial similarities, those transfers involved little need for reflective thinking (Salomon & Perkins, 1989). For instance, five teachers planned studio activities with the same medium or in the same style as the featured artist, or with the same subject matter as the featured art exemplars. These attempts illustrate efforts to promote transfer through the process of "hugging" ideas/concepts with a learning activity that is similar to the lesson's ideas/concepts (Perkins & Salomon, 1988). These novice teachers' use of hugging was associated with the structural, descriptive, and/or formal features of artworks—which coincides with a less experienced art viewer's ability to interpret literal art meanings (Koroscik, 1989).

Due to their own minimal prior art knowledge, many of these teachers planned studio activities around literal art meanings. An artwork's nonliteral, semantic, expressive, and/or interpretive meanings require specific knowledge which perhaps many of these novice teachers did not yet possess and consequently could not reflect in their teaching activities.

"Bridging" studio concepts with lesson concepts far from each other was rarely utilized by student art teachers in this study. Bridging to promote far transfer requires a high degree of prior art knowledge, a knowledge of conceptual frameworks in a discipline, an understanding of public and shared meanings of art,
and a knowledge of art-making beyond the scope of a novice's knowledge and experience.

**Research Knowledge in Art Teaching**

It was inferred from the findings to Research Questions 1, 2, and 3 that the student teachers in this study had little prior knowledge of cognitive learning theory. This inference was initially made in phases one and two because of teachers' confused understanding of lesson key concepts in their lesson plan critiques, and their inability to identify key concepts in videotaped art instruction. This impression was reinforced by critique responses which verified teachers' continuing misunderstandings about the terms "key concepts" and "learners prior knowledge."

However, a finding was presented in Research Question 1 that 6 of the 19 teachers (32%) had included (on their own) a "concept" or "concept to be learned" topic heading in their lesson plan. This contradicts the inference that teachers had not been previously exposed to the term "key concepts" and the function of key concepts in teaching and learning.

Post-workshop analysis of participant questionnaires reveals that 16 of the 19 teachers (84%) said they were familiar with the term "key concepts" before the workshop began. Fifteen of the 16 teachers (79%) stated that they learned about lesson key concepts from their undergraduate teacher education classes; four
teachers (21%) said they also learned about the term from their cooperating teacher or supervisor or during the process of student teaching; and four teachers (21%) also learned about key concepts from personal research. The conclusion drawn from this perplexing finding was that these teachers transferred little from their pre-workshop exposures to cognitive learning theory. Of the transfers made, several were in the form of misconceptions.

Findings from Research Questions 2 and 3 indicate that these student teachers thought about their students' prior knowledge most frequently in terms of the learners' studio knowledge and experience. They next thought about the learners' prior knowledge of design elements and principles. These teachers missed many opportunities during lesson planning to consider prior knowledge in other ways (i.e., historical, descriptive and/or interpretive knowledge). Although the teachers talked about many interpretive lesson concepts in their original lesson plan critiques, not one of them thought about their students' knowledge of interpretive, nonliteral meanings in art as they planned how to best teach their interpretive lesson. When they re-critiqued their original lesson plan, three teachers considered the interpretive prior knowledge of their learners whereas they had not considered this form of prior knowledge before. It is interesting that most of the teachers did consider learners' interpretive knowledge when they observed the experienced art teacher as she taught lessons with much interpretive content.
Post-workshop analyses of participant questionnaires indicate that 15 of the 19 teachers (79%) said they were familiar with the term "learners' prior knowledge" before the study began. Nine of the teachers (47%) learned about the meaning and function of learners' prior knowledge from their cooperating teachers, during the process of student teaching, or from classroom teachers; 8 of the 19 teachers (42%) learned about prior knowledge in learning from their undergraduate teacher education classes; and five (26%) learned about prior knowledge from personal research. The understanding these teachers transferred from previous instruction about prior knowledge was focused on learners' studio experience, knowledge, and skills.

According to a framework constructed by Bellon, Bellon, and Blank (1992), these teachers had not yet integrated their research knowledge base with their practical knowledge, nor did they understand research terminology (p. 19). Bellon, Bellon, and Blank (1992) describe outcomes of teaching from a research knowledge base. Their description provides a developmental framework for teachers as they incorporate research knowledge into their teaching:

- develop a sound, current, pedagogical knowledge base
- understand a common research on teaching vocabulary
- identify important themes from research on teaching
- understand how teachers have integrated their research and practical knowledge
develop insights from research which can improve current practice

engage in collegial problem-solving and improvement activities (p. 19)

At the end of this study, there was noteworthy progress in some student teachers' pedagogical understandings as they came to realize that there are several forms of learners' prior knowledge. Some teachers expressed learning how prior knowledge serves an essential function in learners' cognitive re-structuring of new information with existing knowledge.

INTERVIEWER: So, you see a relationship between what we're finding out about how people learn meaningfully and how we can plan lessons?

PARTICIPANT: Yeah, you almost have to see the relationship, otherwise you kind of ask yourself, "why am I teaching this?" and when people who are not in the art field are asking you, you know, they challenge ...'it's only art, it's no big deal' ... if you were just teaching isolated little bits of facts, or just how to draw ... then why would you be doing it? ... there has to be reasons ... are you relevant?

And so I guess that's why I'm always thinking of it because so many people say, 'well, you're just the art teacher', and they think you play with paint all day. You're playing with ideas, not paint, and they're relevant ideas, and I guess the more than you can connect them [ideas], the more that they'll stay with the children ... (Teacher 2, grade level 2)

**Student Teachers' Knowledge Seeking Strategies**

The search strategies of: (a) self-reflection, (b) seeking experienced practitioners' advice, (c) responding using the works of art critics and historians, and (d) utilizing to personal studio experiences were focus strands in this part of the study. As with teachers' knowledge base, the investigation of teachers' search
strategies was not exhaustive but sought to represent the interwovenness of a teacher's knowledge-seeking and knowledge-application strategies to understand how these factors affect art lesson planning.

**Self-Reflection as a Search Strategy in Art Teaching**

In her cognitive model of art learning, Koroscik (1993; in press) provides a directional continuum of learners' knowledge-seeking strategies from those that are "least effective" to "most effective." These strategies interact with facets of the learner's knowledge base and dispositions. The results of this study indicate that self-reflection was not an effective search strategy for these student art teachers. They were given opportunities to reflect during Tasks 4 and 5 and in the re-critique, however, they did not use reflective opportunities as a means to seek art or pedagogical knowledge. In Task 4, teachers were prompted to reflect on the ideas they previously recorded while critiquing the videotaped art lessons. The intent was that the teachers would gain new ideas from the experienced teacher interview, then reflect back on their own responses about key concepts or learners' prior knowledge in her lessons. The student teachers would then integrate new learning with previous understandings. However, only one of the teachers thought back to her Tasks 1 and 2 responses in order to compare them to comments of the experienced art teacher. Instead, teachers listed ideas that were new to them as a
result of listening to the experienced teacher in the videotaped interview. They then reflected generally about those new ideas—for example:

I like the idea of stringing along starting with a child's prior knowledge and adding the teacher's main ideas or concepts. Then this in turn will become prior knowledge making way for another round of new key ideas and concepts. It really does sound simple but I've always focused on new material... when the students learn it or master it [I] move on. I never concentrated on how this information can help reinforce the prior knowledge and vice versa. (Teacher S)

It is notable that several of the new ideas listed by the student teachers were in the experienced teacher's words. The teachers made note of her ideas but did not translate her thoughts into their own words, which may suggest a lack of understanding or low-level of understanding by these teachers.

In Task 5, the student teachers were prompted to reflect on their pre-workshop knowledge of key concepts and learners' prior knowledge. The importance they placed on each before and after the workshop was also assessed. Most said they were familiar with both terms before the workshop but they placed more importance on the terms after the workshop.

As stated before, teachers' reflections on whether their lessons were based on "big" ideas in art and if they had trouble deciding what were big ideas in art were contradictory. Through the process of self-reflection, it was thought that teachers would make a connection that lessons are not likely based on big ideas if
teachers admit they have difficulty making distinctions between big art ideas and "less relevant" ideas.

The phase three lesson plan re-critique was the last reflective opportunity in this study for the teachers to transfer new learning from the five educational interventions. The re-critique prompted the student teachers to reflect on previous responses regarding key lesson concepts, the function of the studio activity in the art lesson, and considerations of learners' prior knowledge. The student teachers wrote less in their re-critiques than they wrote in their original critiques, seemed to put less thought into what they did write, and made few references to thoughts in their original critique. Six of the 19 teachers (32%) declined to make any reflective changes on their original lesson plan. Overall, these student teachers demonstrated general novice characteristic—they were not keenly aware of why they failed to comprehend or when they needed to check their solutions; and they tended to represent problems at a superficial level (Chi, Glaser, & Farr, 1988, p. xvii). If placed on Koroscik's (1993, in press) continuum, these student teachers were somewhere in the middle, not the "least effective" nor the "most effective" in their use of self-reflection as a knowledge searching strategy.

Zimpher and Howey's (1987) model of teacher reflection affirms these conclusions about the student teachers' low level of reflective competence. On a
developmental scale, they are at a novice level of learning and applying reflective techniques and skills:

**Technical competence**—teachers learn and apply specific reflective techniques and skills.

**Clinical competence**—teachers examine what they are doing in the classroom, and make changes based on that inquiry and reflection.

**Personal competence**—teachers move away from self-awareness and survival concerns. They use their knowledge of adult moral cognitive development to inform their practice and to foster an understanding of self in the context of teaching.

**Critical competence**—teachers move from consciousness-raising about school practices to reconstruct and transform school and society through collaboration and/or critical inquiry (p. 101-127).

**Experienced Art Teachers as Knowledge Sources**

Listening and responding to the experienced art teacher's interview seemed to be the most effective knowledge-seeking and knowledge-application strategy for student teachers in this study. They responded with enthusiasm and wrote more about what they learned from listening to the experienced teacher than they wrote about other activities in the study. They described plans to use new ideas from the teacher interview in future lessons. In view of these findings, it seems that what experienced teachers say and do has great impact on student art teachers.

It is cause for concern then that on the participant questionnaire, 11 of the 19 teachers (58%) described not having seen art teaching with key concepts during their early undergraduate field observations.
Cooperating Teachers as Knowledge Sources

Findings from the lesson plan critiques indicate that requesting advice from cooperating teachers was an often used knowledge-seeking strategy by these student teachers. The following is a summary of the findings about the cooperating teachers in this study.

At least five of 19 cooperating teachers (26%) affirmed the implementation of student art teachers' lessons which taught the elements and principles of design as key concepts exclusive of interpretive or expressive meanings. At least three cooperating teachers (16%) approved the implementation of student art teachers' lessons which included a studio activity with no established connections to other forms of art knowledge (i.e., interpretive, descriptive, historical, and formal).

In the process of explaining how their art unit related to past and future lessons or units in the schools' overall art program, 3 of the 19 student teachers (16%) stated that their cooperating teachers had no plan for the entire school year. One student teacher stated that the art program at his school "doesn't have units ... [but] goes from one thing to another." Another teacher described "no plans or units for the school year ... [the art program] floated along from one thing to another." A third teacher said the unit planning was done by "activity, not by concepts."
No doubt such instructional modeling influenced the student teachers' understanding of art teaching and learning, and ultimately impacted the art understandings of their young learners. These findings are underscored by the fact that the student teachers in this study were most affected by the information provided by an experienced teacher (i.e., videotaped interview).

Experienced teachers were the most often used resource by student teachers in this study. In spite of that fact, cooperating teachers who sanction teaching art from only one source of knowledge, or who themselves have no overall curricular plan may not be the most effective knowledge source for preservice teachers who are engaged in building art and pedagogical knowledge, and attempting to put research knowledge into practice. Cooperating teachers also need to be learners, continually searching for ways to develop their professional knowledge.

The first coop I had, in elementary, quite a few of her lessons were directive, extremely directive... 'well, now, we take the green crayon and here's blue, and this is how you learn the primary colors'. She would teach things like that. 'These are the primary colors, these are the complementary colors'... but just in and of itself, that is not a big idea—the complementary colors... because where are they [complementary colors] going to get you?... anywhere?... it just doesn't make sense.

She would direct whole lessons based on primary colors, complementary colors, and how to use a line, but everything was directed, so there was nowhere else for the idea to go... she was considered a very excellent art teacher in the building by the other people because she had nice little products hanging up all over the school but no one thought to ask 'shouldn't art class be more than learning about the primary colors?'... (Teacher 2, grade level 5).
Another teacher made these comments in her one-on-one interview:

I have to fight for every little bit of content that I put in my lessons.

INTERVIEWER: Because the coop or the students are used to making art all the time?

Both. I mean ... because the coop is used to art-making all the time—the students are used to art-making all the time, so to try to get them to talk about something else ... when he does talk to them about other things, he tells them, maybe two minutes ... 'yes, in Japan, they do a lot of nature things ... here's a bird, here's a fish, they do this'. He also tells them things that he doesn't know. He says things like 'I know that in Egypt artists were treated like thus and so' ... but he hasn't backed it up with any research.

And I'll say, Do you know that?

'Well, I'm sure that they were'

Yeah, but do you know that for sure?

'I'm sure they do that everywhere'

And I'll say, well, if you go out to the southwest and you look at the Hopis, they don't treat their artists the same way ... they don't have the same concept about it that we do ... (Teacher 7, high school level)

**Art Critics and Historians as Knowledge Sources**

The teachers in this study were asked on the participant questionnaire (Kowalchuk, 1992) to indicate on a scale of 1-5 what features about artworks they most often emphasized when planning and teaching their lessons. There were 17 items ranging from an artwork's literal, structural features (i.e., subject matter,
shape) to nonliteral interpretive features (i.e., artist' expressive meanings, intent).

Numbers on the rating scale represented the following frequencies:

(1) = Always
(2) = Most of the time
(3) = Occasionally
(4) = Rarely
(5) = Never

The numerical average of each of the 17 items was calculated. The lower the average number, the more frequently that characteristic was emphasized in the student teachers' lesson planning and teaching. It was not surprising that these teachers described artworks' subject matter as the most emphasized feature in their lessons ($m=1.42$). The surprising finding was that in lesson planning they least emphasized what critics and others said about artworks ($m=2.89$). They claimed to frequently talk about an artist's style ($m=1.53$), art history ($m=1.58$), an artist's life ($m=1.63$), and artist intent ($m=1.63$) most of the time. If they did not include the public and shared meanings regarding the historical context in which an artwork was created, or use research about the artist's style, life, and intent, where did they get the information in order to teach such a lesson to others? The literal meanings of artworks are often observable to viewers, but understanding an artwork's expressive, semantic, nonliteral, and interpretive features requires effort
and a high degree of motivation on the part of art learners to search for meanings.

These beginning teachers demonstrate several of the novice art learner

characteristics described by Koroscik (1989):

More experienced art viewers organize the search for information and the construction of art meanings on conceptual frameworks drawn from their knowledge of the discipline. Less experienced art viewers have difficulty using acquired knowledge to interpret artworks; thus their constructed meanings are often limited to "psychological reports" or personal meanings.

More experienced art viewers assume comprehension failure is due to their own lack of sufficient art knowledge and/or the unavailability of adequate contextual information. Less experienced art viewers often assume understanding art does not require any specified knowledge.

More experienced art viewers approach art searching for multiple explanations, seeking to challenge and extend theories and conceptual frameworks beyond their usual scope. Less experienced art viewers approach art searching for singular answers, seeking to find what an artwork is about [subject matter].

Based on Koroscik's cognitive learner model (1993, in press), it was concluded that these beginning art teachers used ineffective search strategies when gathering information to teach lessons. Teaching about their most frequently mentioned feature, subject matter, might not require a great deal of searching for information—especially for artworks with low levels of abstraction. However, to teach about highly abstract artworks or contextual information or artist intent, would require effective search strategies and teachers would need to rely on information from art critics and historians.
Inferring student teachers' dispositions from their lesson plan critiques and re-critiques, written responses to Tasks 1-5, and one-on-one interviews provided minimal data on the ways these teachers approach learning. Koroscik's (1993, in press) cognitive model of art learning places learners' dispositions on a continuum between “low motivation” and “high motivation.” Because student teaching is structured in order to gain judgment from others, teachers in this study often indicated high motivations to integrate forms of their knowledge base, resources, and search strategies in order to make those judgments as positive as possible. They sought to increase competence. It was not within the scope of this study to judge if the teachers were motivated by a mastery disposition (Prawat, 1989) or by self survival or class control (Kagan, 1992) as described in teacher education literature.

It could be determined, however, that 6 of the 19 teachers (32%) were not motivated to add changes to their lesson plan re-critiques and 7 of the 19 teachers (37%) declined to participate in the learning opportunities of a one-on-one interview. Three teachers (16%) declined both opportunities. Most teachers stated they were not motivated to research art critics' and art historians' ideas when they planned art teaching and learning activities. The twelve teachers (63%) who participate in one-on-one interviews said they were overwhelmed with all there was to learn and do while student teaching (i.e., designing units of instruction, organizing and writing lesson plans, first
teaching themselves information and studio procedures in order to teach them to their students, managing a class, and becoming familiar with school procedures and routines). Many of them expressed frustration if their cooperating teachers were not demonstrating a motivation to learn new ideas themselves, or seemed set in their ways:

He's been teaching for 20 years, and he has student teachers all the time, but he doesn’t use his [tuition] vouchers. He never goes back to school. He doesn’t read about art, I don’t think...(Teacher 7, high school level)

She used the same [studio] products year after year, and they said they could tell what time of year it was by which project she was working on (Teacher 2, grade level 5)

These teachers thoughts are voiced in the words of Feinman-Nemser (1983): “the classroom is a place to learn more about teaching and learning. Learning is part of the job of teaching” (p. 150).

**Synthesis and Discussion of Findings**

The following examples from data in this study demonstrate how student art teachers’ knowledge base, search strategies and learning dispositions affect their teaching. Patterns of misunderstanding (Perkins & Simmons, 1988) combined with descriptions of art novices and art experts (Koroscik, 1989), were used as frameworks to present the following cross-phase findings:

**Scenario 1.** The steps in the studio activity were sometimes listed as the key lesson concepts in these student teachers critiques:

Main ideas were - 1) Looking at the reproduction & placing the lines on their larger paper in appropriate places. 2) Filling in the areas w/colored dots 3) Value
- the farther away or closer 2-gether u [sic] place the dots - gives a different range of values. (Teacher 4, grade level 4)

The main idea I wanted to convey is to loosely sketch the human form by using the chart of proportion. I gave them several guidelines on the size of human parts and a proportion scale. They were to keep the human form simple (only sketching circles and ovals). Sketching was another important part. The looseness and overlapping of sketching was to be used to show shape and also to learn from mistakes. (Teacher 5, grade level 5)

The above descriptions do not contain ideas about the meaning (i.e., interpretive or semantic) of the art-making activities. No artists and artworks which might best represent these studio ideas are referred to in the description.

Teachers who listed only studio activities as lesson key concepts indicate a one-dimensional understanding or art teaching and learning. Such misunderstanding coincides with Perkins and Simmons (1988) description of compartmentalized (i.e., isolated, separated) knowledge. The difficulty with isolated views of lesson content are that they tend to constrain art teachers from relating one form of knowledge (i.e., studio, formal) to other ways of experiencing art. If art teachers do not relate studio works to artists, an art-making context, an historical time period, or interpretive or descriptive meanings, it is possible they perpetuate the misunderstanding than studio activities are the only way to teach and learn about art. There is little likelihood that art learners will link art-making to other forms of art information if the art teacher has not first modeled such connections.

This studio-only lesson plan reflects a teacher's one-dimensional art experience and narrow search for singular answers--not multiple meanings of art (Koroscik, 1989).
Scenario 2. Compartmentalized understanding likely caused another student teacher in this study to isolate her lesson's formal concepts from other art features (i.e., interpretive or nonliteral art meanings). When asked to describe the key concepts in her lesson plan critique, this teacher submitted the following laundry list of formal concepts:

- Shapes—geometric (circle, square, oval, rectangle, triangle) secondary colors, color mixing (what colors make purple, orange, green?), overlapping, repeating, balanced composition (Teacher 15, grade levels 1 and 2)

By submitting this response, she indicated that art can be understood by recognizing and using formal art elements (i.e., shape, color, repetition, balance). However, in her lesson plan, she did not connect these design elements and principles to other ways of responding to art (i.e., historical and interpretive meanings).

The teacher selected Henri Matisse's paper cut-out collages, *Memory of Oceania* and *Chinese Fish*, as art exemplars of her formal lesson concepts of shape, color, overlapping, balance and repetition. Her young learners were challenged to create a collage with five different geometric shapes plus an additional shape of an object from the ocean. The students were to repeat some shapes and to overlap others. The instructional goal was to increase student awareness of shapes and colors around them and to teach the design principles of repetition and balance. The teacher planned to evaluate the students' collages in relation to their use of color, shapes, repetition and balance.

What is problematic with her ideas is that there was no mention of how shapes and colors affect the meanings of an artwork. The teacher did not inform her students that the
shapes in Henri Matisse's Memory of Oceania and Chinese Fish were simplified, symbolic shapes of sea animals, fish, land, sky, water, and sea plants. Matisse’s color choices, like his creation of shapes conveyed his fond feelings and happy memories of visits to the South Seas (Brommer, 1988). Though his cut-outs are charming exemplars which exhibit the formal elements of shape, color, repetition and overlapping—to strip-down the study of such works to formal features exclusively is to miss the interpretive art lessons one can learn from Matisse.

No doubt many of these primary students learned to recognize shapes and colors and to accomplish the procedures of overlapping and repetition. It is unfortunate, however, that they were not given explanations of how shapes, colors, overlapping and repetition may be used in the creation of artworks that express feelings or recreate memories.

The compartmentalization of Matisse’s paper cut-outs as exemplars of design elements only is likely caused by this teacher’s undeveloped skill and lack of expertise in interpreting nonliteral meanings in artworks (Koroscik, 1989). She recognized the literal, formal aspects of Matisse’s paper cut-outs (i.e., shapes, colors, repetition, and medium), but did not comprehend the nonliteral or expressive meanings in these works.

In her lesson plan re-critique, written seven weeks after the original lesson plan critique, this teacher further illustrated her persisting compartmentalization of formal meanings in art instruction. She again described the elements and principles of design as
the links between this lesson and her overall unit. Her assessment of the students’ prior
knowledge in regard to this lesson was also based on formal criteria. She considered her
students’ knowledge of:

pattern (in nature), and their observations of their everyday environment

Her re-critique description of how the studio activity reinforced the lesson key concepts
was explained this way:

“After reflecting on the Workshop, I would describe the studio activity as
reinforcing this lesson’s KEY CONCEPTS in the following ways:”

All of these key concepts will lead into principles of art. For ex. Line, shape, color—the students will then be able to put these elements into a balanced composition, proportion, etc.

Upon reflection, she proposed these lesson changes in her re-critique:

I would have focused more on composition and the way the collage filled up the space.

After describing formal lesson concepts, formal connections between this lesson and the overall unit, considerations of learners’ existing formal knowledge, and formal criteria for the studio product, it was inconsistent when she stated the following lesson key concept(s) in her re-critique:

Cooperative learning

Cooperative learning defined by Johnson and Johnson (1989) is the instructional use of small groups so that students work together to maximize their own and each other’s learning. It is a teaching methodology, not art information, art concepts or lesson content.
Perhaps one of this teacher's instructional aims was to use cooperative learning groups in the implementation of her lesson. However, as discussed in Research Question 1, teaching strategies are not lesson concepts.

The teacher's "cooperative learning" response illustrated yet another form of misunderstanding—garbled knowledge. Perkins and Simmons (1988) define garbled knowledge as occurring when newly acquired knowledge gets confused in ways which lead to incomplete misunderstandings or oversimplification of facts. With the uncertainty that exists in this teacher's mind about her lesson key concepts, it is improbable that her students gained a clear understanding of the concepts in her lesson either.

**Scenario 3.** Research findings state that teacher knowledge lacking in depth and breadth (i.e., naive conceptions) impedes the acquisition of advanced forms of knowledge (Perkins & Simmons, 1988; Koroscik, 1993). Naive perceptions were demonstrated by several teachers in this study. However, one situation is particularly noteworthy as the teacher demonstrated not only naive art knowledge but naive pedagogical knowledge as well.

The following lesson key concepts were stated in this teacher's lesson plan critique:

- Henri Rousseau had no formal element training, no training in art at all. He nevertheless became a famous artist.

- Students should have more confidence—and use more dramatic strokes, [and] not throw away their work, etc. (Teacher 3, high school level)
In addition to biographical and stylistic information about the painter Rousseau, the students' poor attitudes and low quality studio works were what this teacher described as key concepts. But content about Rousseau’s untrained style and his subsequent fame are singular art ideas unless paired with information about the meaning or context of his art-making. Such ideas by themselves do not constitute “relevant” or big art ideas. Her assessment of students’ lack of confidence and poor work habits likely led this teacher to her behavioral objectives of trying to improve both. Lesson objectives, however, are not content central to the field of art.

Her naive descriptions of lesson concepts seem prescriptive as she explained how her lesson would cure the students’ poor attitudes and improve their studio products. She knew that Rousseau had no formal art training, yet became a well known artist. She apparently speculated that students might relate to Rousseau’s lack of technical training and feel more confidence in their own unskilled drawing ability:

The unit is basic drawing. The students needed confidence in themselves in order to complete their drawings. The concept of a primitive artist, one without formal training, should lift their spirits...they will gain enthusiasm and confidence in their abilities to draw, and therefore improve their drawings.

Students will identify his [Rousseau’s] lack of formal skills, and identify with him...Students will turn in their drawings at the end of class without having erased them or thrown them out...Students will use darker lines, showing more confidence and improving their drawings.

The teacher went on to describe her overall unit on basic drawing with Degas’ works as exemplars, and with a focus on design elements. She explained that she
introduced the high school students to the work of Henri Rousseau as an auxiliary lesson to the basic drawing unit. She offered the following reasons for the auxiliary:

Students have learned the formal elements of art and have attempted to draw the still lifes using them. The drawings, after prompting and critique improve, yet the students' attitudes have [sic] not. They do not believe they should try because they 'cannot draw.' Morale needs improvement, so that drawings will improve.

The lesson was devised strictly from its necessity [sic]. The students needed self-esteem, so I showed them an artist who is famous, yet draws as they do. My entire intent was focused on their emotional needs, hopefully improving their drawings.

Rousseau's lack of training and innocent painting style reminded her of the limited art training and naive drawing style of these high school students. She thought that pointing out similarities between Rousseau's lack of formal training and the students' lack of experience would bolster their confidence in their own art-making abilities. The premise must have seemed all the more appealing since Rousseau went on to obtain fame. Moreover, she theorized that increased confidence would cause the students to produce higher quality drawings which would lead them to feel pride in art accomplishment.

It is unlikely that bridging knowledge about Rousseau's untrained style to the high school students' lack of training brought about the teacher's desired behavioral or studio objectives. In the first place, this teacher had a naive understanding of the context of Rousseau's art-making. Rousseau's goal was to paint in a realistic style. Some people believe his lack of training and technical limitations made that goal impossible, but Rousseau believed himself to be a great painter. His fellow artists admired his honesty, hard work, and psychological sophistication, in spite of the limitations of his technical
The critics and public often laughed at his paintings during his lifetime. It was not until after his death that his paintings were ranked with the exemplar paintings of the Impressionists and Cubists of that time period (Chapman, Gaetano, Judson, et. al., 1987). The facts that Rousseau believed in himself and loved to paint were Rousseau’s motivations, not his lack of expertise or a desire for recognition. He had a mastery disposition and a passion for painting—reminders of these would more likely have encouraged some students to try harder to develop their artistic abilities. The teacher’s reminder that their own untrained style resembled a famous artist’s limited technical abilities seems a simplistic motivational strategy at best.

The students’ lack of formal art training and confidence were compounded by their lack of motivation, lack of pride in their artworks, careless work habits, and prior laissez-faire experiences in art class. It appears that in the past these students were seldom engaged by their art-making experiences. When the teacher assessed the learners’ prior experiences and knowledge in such oversimplified ways, she exhibited naive pedagogical knowledge in addition to oversimplified art knowledge. Her simple prescription to solve complex issues illustrates the superficial way novices in general represent and understand problems (Chi, Glaser, & Farr, 1988, p. xvii).

Weeks later, the teacher made these additional comments in her lesson plan re-critique:

“After reflecting on the Workshop, I would list the following as the KEY CONCEPTS in this particular lesson:”
Students need a new attitude about art. They need to realize art is an essential part of their life and their schooling. They need to realize they will not get away with sloppy, effortless work.

"After reflecting on the Workshop, I would make these additional comments about why I selected these KEY CONCEPTS:"

Students have been trained from day one that art is a class to goof off and have fun. This attitude needs to be changed to art is a place to learn about art. (I am now student teaching in a middle school and can see first hand why these attitudes exist).

"After reflecting on the Workshop, I would describe the following relationship(s) between the KEY CONCEPTS in this lesson and key concepts in other lessons within the overall unit:"

The whole unit was an attempt to fight the attitudes within the class. I wanted to (and did) turn them around and teach them to LEARN again in art class.

"After reflecting on the Workshop, I would describe the studio activity as reinforcing this lesson’s KEY CONCEPTS in the following ways:"

Individual attention and instruction continually pulled the students back on track so that their minds were not given a chance to wander far from the ART EDUCATION going on.

"After reflecting on the Workshop, I would make these additional comments about the STUDENTS’ PRIOR KNOWLEDGE in regard to this particular lesson:"

They ‘knew’ that previous art classes had demanded little to nothing of them and that by pleading non-talent they had been able to get by without turning in GOOD work. This was to be proven wrong in my class, as the lesson showed them

"After reflecting on the Workshop, WHAT WOULD YOU CHANGE about this lesson plan?"

I could have also included Edward Hicks.

I believe it was important to have turned them around in my own, quiet way. I would not have been able to do that if I had taught 4-8th grades FIRST. I gained their respect by speaking to them as adults. I never raised my voice.
After reflecting, I find more that I did was RIGHT, and didn’t need changing, than was WRONG and in need of adjustment.

Scenario 4. Findings from cognitive learning research indicate that some ideas in a domain are simply more important that other ideas (Prawat, 1989). It is necessary in lesson planning to be able to distinguish which ideas are more important then others (Koroscik, 1990). Such an ability reflects both strong content and pedagogical knowledge. A few student teachers in this study said they had difficulty distinguishing big ideas from less important but supporting ideas. The inability of one teacher to discriminate between the importance of lesson concepts was particularly noteworthy. His inability to distinguish less important ideas from key lesson concepts parallels descriptions of underdifferentiated knowledge (Koroscik, 1990; Perkins & Simmons, 1988). The following lesson key concepts were stated in this teacher’s lesson plan critique:

Advertisement or art in everyday life we can’t escape it. The students were ask [sic] to create a CD type drawing that they would be proud of once they knew what the pinhead was (the pinhead was a promotion for a Rock band called the pinheads). (Teacher 17, high school level)

The above description contains an interpretive concept (i.e., art in everyday life), a studio concept (i.e., CD type drawing), and a concept related to subject matter (i.e., pinhead). The students were expected to use pastels for the creation of an environment that answered the question “Who are the pinheads and where do they come from?” In order to create their own imaginative environments, it would seem that students would need instruction on drawing with pastels and exposure to exemplars of expressionistic
landscapes or other environments from the world of art. However, pastel drawing techniques and environments as subject matter received little consideration in the lesson planning of this teacher. To gain information on pastel drawing techniques, he instructed students to read a chapter in the art textbook and complete a worksheet. There seems to have been no reference to seascapes, landscapes, surreal environments, or any type of background setting from the world of art to illustrate the subject matter concept of an environmental setting for the pinhead creature.

Instead, the teacher continually focused on the subject matter of the pinhead image. Since the students were unfamiliar with the image, it appears that this teacher used this subject matter as a “gimmick” to build students’ curiosity and maintain enthusiasm for the assignment. Each of his responses to the six questions in the lesson plan critique were about the subject matter of the pinhead despite the fact that throughout the lesson plan he describes “advertisement in the world around us“ his key lesson idea. Such responses demonstrate his lack of ability to distinguish the importance of the supporting subject matter concept from the lesson’s more important interpretive concept—the impact of advertisement in the world around us. The following questions and answers are from the lesson plan critique. Each response illustrates the teacher’s preoccupation with the pinhead image to the virtual exclusion of other lesson concepts:

“Describe your students' prior knowledge:”

The students had no prior knowledge of the concept of this lesson plan that was the strength of it. They knew it was to promote something but what was it just one person or what?
“Why did you select these key concepts?”

It was a here and now lesson [—] a year from now everyone may know what these little guys are [—] the fact that I had a channel 7 news clip asking the question what are these guys made it a happening

“Relate these key concepts to key concepts in other lessons within the overall unit”

There was no direct relationship with a unit but indirectly it related to art in the world around us. There is always a reference to advertisement.

“How are the key concepts in this lesson reinforced by the studio activity?”

Hopefully it was a thinking lesson [—] the students were left in the dark and only given a little information at a time [—] the idea was for them to figure out what was going on? What were these little guys doing and what was their purpose [?] They were asked to create were [sic] they came from some aspect of their origin. Since artists have been the eyes of the unknown their environments were a story in themselves.

“Additional comments about your lesson planning:”

I hope this was a different lesson than most It had ups and downs in regards to the students’ excitement level [— it drove them crazy not knowing what these guys were. They couldn’t stop guessing, they wanted me to tell them— they questioned wither [sic] I even knew or not when they got frustrated. When they finally found out it was a [local] Rock band they went crazy [—] they were all over me about information about getting tapes and t-shirts etc., [—] where was the pinhead from and how [did] I know them[?]

As further demonstration of this teacher’s inability to differentiate between the most important and supporting lesson concepts, all art exemplars chosen as representation of the lesson’s concepts were about the pinheads. The teacher used a TV news clip, line drawings, t-shirts, and CD covers of the pinhead image. The only examples of pastel drawings techniques were from the chapter in the textbook. No art examples of
lanscapes, seascapes, surreal or other environments were used to stimulate students' imaginations in their creation of environmental settings for these pinhead images.

Because of the emphasis this teacher placed on the pinhead image, his students will likely remember the subject matter of this lesson. Is it as likely that they gained new knowledge of pastel drawing techniques or knowledge of artworks that depict imaginative environments? Will they recognize the interpretive meanings of advertisement in the world around them? Due to the underdifferentiated focus this teacher placed on the lesser concept of the pinhead image, the main concepts are not as likely to be remembered as will be the gimmick of the pinhead.

**Scenario 5.** Another example of underdifferentiated teacher knowledge was demonstrated by Teacher 2 when she wrote the following in her lesson plan critique:

This lesson was very successful. However, if the teacher cannot make it exciting to the kids, they will be bored. I had to grab their attention right away with the 'gore' associated with Van Gogh. Once I had their attention, I had to be very enthused about Van Gogh. Lots of gestures, movements prints...

As mentioned earlier, more important to art learning than Van Gogh's mental problems were his use of intense color and his expressionism. He knew color and valued it more highly than any painter before him--his work foreshadowed the great role color would play in art or the future (Lynton, 1985). The expressiveness of his work influenced many modern forms of art and many modern artists.

**Scenario 6.** One student teacher described an interdisciplinary lesson with a science teacher in which masks were created. The lesson was part of an art unit on the
elements of design, focusing on line, plane, color, and form. In her lesson plan critique, she described the following lesson key concepts:

Students were to create their own creatures, something that doesn’t exist today. Once they had thought about their creature they had to decide how they were going to make their masks. The masks were going to be 3-dimensional also. They had to do a sketch, have a life process, a legend, and a name for their creature. We talked about Picasso and his masks, we also talked about African art.

(Teacher 10, grade level 7)

The teacher described using the formal elements of line, plane, color, and form to help students develop an awareness of the aesthetics of tribal African masks. Her search for meanings of tribal objects from another culture with a formal method represents confused knowledge-seeking strategies. The function and making of tribal masks are deeply rooted in African religious and secular traditions. African tribal objects were not intended to be displayed in museums or public settings and cannot be fully understood when seen out of context or discussed within formalist paradigms (Howlett, 1991). The function of such objects, the symbolism of their forms and colors and the context in which they are made are the ways to understand such objects.

Moreover, the student teacher asked the learners to create imaginary or fantasy creatures for their masks—imaginary creatures are not part of the original context of African tribal mask making. Due to the teacher’s mixed-up content knowledge about the meaning and function of these artifacts, it is possible that her students developed the misconception that African masks are of imaginary creatures. That notion more parallels the learners’ prior knowledge of American mask making which is all the more reason to
differentiate the African context of mask making from the American context of mask making.

As further illustration of her superficial understanding of the meanings of African tribal masks, this teacher explained the lesson’s “relation to life” as follows:

Students can relate these masks to masks we wear today. Masks serve for many purposes. Welders, divers and sports players wear masks to protect themselves from injury. Doctors wear masks against spread of germs. The media shows us examples of masks hiding the identity of criminals.

Her analogy that protective, or criminal, masks have similarities to African tribal masks is yet another illustration of garbled teacher knowledge (Perkins & Simmons, 1988). It is unfortunate and highly likely that this teacher’s mixed-up understandings and ineffective knowledge-seeking strategies caused her to convey to her learners the misunderstandings that (a) lines, planes, colors, and forms are the most appropriate ways to understand African tribal masks, (b) imaginary animals are the subject of African tribal masks, and (c) African tribal mask-wearing has similarities to another culture’s masking of criminals’ identities.

The above six scenarios integrate cross-phase data depicting the interactive effects of teachers’ knowledge base, knowledge-seeking strategies, and dispositions on their decision-making and teaching practices.
CHAPTER VI
CONCLUSION

This study was designed to investigate the influence of student art teachers' content and pedagogical knowledge on their teaching. Content knowledge was determined by analyzing the key concepts on which student teachers based their "most successful" lesson plan. Examined as well were the art exemplars which teachers selected to represent key lesson concepts, and the studio activities they designed to reinforce the lesson concepts. Pedagogical knowledge was inferred through the ways student teachers linked new information to their plans to accommodate the prior knowledge of learners. Teachers' dispositions and the ways in which they searched for knowledge to inform their teaching were other interactive strands examined in this study.

The research questions that guided this study parallel past investigations of teacher knowledge in other domains (Carlsen, 1988; Lampert, 1986; Wilson, 1988). Recent studies which have as their focus art teacher knowledge and its effect on teaching (Kowalchuk, 1992; Short, 1995) also informed this exploration.

Major cross-phase findings to each of the research questions are highlighted in the first section of this conclusion. Methodological issues which surfaced during this
investigation are discussed in the second section. Recommendations for future research are presented in the last section of this chapter.

**Cross-Phase Findings**

Cross-phase findings for each of the four research questions which generated this study are highlighted as follows:

**Research Question 1: What Key Concepts do Student Art Teachers Choose for Art Instruction?**

Before the study began, 16 of the 19 student teachers (84%) indicated on a background questionnaire that they were familiar with the term "key concepts." Data analyses soon revealed that most of the teachers misunderstood the term. They considered key concepts to be elements and principles of design, steps or skills in a studio activity, the studio project, subject matter, lesson objectives, or activities which might improve learners' poor attitudes and/or studio products.

As the student teachers described their "most successful" lesson plan, they tended to include more key concepts than could be realistically thoroughly taught in one lesson. Several teachers listed four or more lesson concepts, including four teachers who listed seven or more key concepts in their lesson plan. Educational research recommends limiting the number of key lesson concepts to a few ideas so learners will not be overwhelmed (Glaser, 1984; Prawat, 1989; Resnick, 1987).
The ways these student teachers described their lesson in the lesson plan critique often differed from the actual content presented in their lesson plan. They most often described their key lesson concepts as formal ideas (i.e., design elements and principles, subject matter). The actual content of their lesson plans, however, included more studio and interpretive ideas than formal ideas.

Descriptive and historical content were seldom incorporated in the lesson plans of these student teachers. Studio projects and activities were at the center of their lessons both before and after the teacher workshop.

At least 5 of the 19 cooperating teachers (27%) prompted their student teachers to plan a unit focus on a design element or principle. The formal focus was pre-determined for those student teachers, yet the relationships they created between new formal information and the students' prior knowledge, and the ways they chose to reinforce formal concepts with studio activities were of their own choosing. Whether or not formal features of an artwork were related to interpretive features was a decision the student teachers were free to make.

There was no indication that the student teachers were encouraged by their cooperating teachers to relate interpretive art meanings to their unit's formal focus.

At the beginning and end of the study, many of the student teachers' lesson critiques were one-dimensional. They did not describe relationships between the artworks' structural and semantic meanings. Such narrow lessons rarely enable learners to explore
the vitality of art through higher-order thinking processes such as perception, analysis, appreciation, and interpretation (Clark, Day, & Greer, 1987; DiBlasio, 1985; Efland, 1977).

The student teachers expressed the understanding that lesson concepts need to relate to concepts in past and future lessons in order for transfer of learning to occur. By their own descriptions, however, a few teachers did not understand that concepts can relate to one another within a lesson as well as relate to one another between lessons.

At the end of the study, 15 of the 19 student teachers (79%) thought they based their lessons on big ideas (i.e., key concepts). Big and key art ideas are comparable to the "most revelant ideas" referred to in Koroscik's (1993, in press) cognitive model of art learning. Two of the 19 teachers (11%) explained that they thought their art lessons were "sometimes" based on big ideas, and 2 teachers (11%) did not think that their lessons were based on big ideas. Five of the 19 teachers (26%) admitted that they had trouble deciding what were big ideas in art.

Research Question 2: How do Student Art Teachers Utilize Learners' Prior Knowledge in Lesson Planning?

During the first and last phases of this investigation, many student teachers most often thought about their learners' studio experience when they considered prior knowledge. They thought second most often about the learners' knowledge of design elements and principles.
Twelve of the 19 student teachers (63%) described interpretive concepts in their original lesson plan critique. However, none of these teachers thought about their students' prior knowledge of interpretive art ideas. How did they plan to teach those interpretive concepts with no thought about the learners' previous experience with such ideas? In their re-critiques at the end of the study, 3 teachers (16%) said they thought about the learners' prior knowledge of interpretive art meanings as they re-planned how they would teach their lesson's interpretive concepts.

After listening to the videotaped interview of the experienced art teacher, many student teachers claimed that for the first time they understood how new information in a lesson could become prior knowledge in future lessons.

**Research Question 3: What are the Effects of Teacher Education Interventions on Student Art Teachers' Content and Pedagogical Knowledge?**

The student teachers in this study were not accustomed to focusing on specific lesson components as part of their teacher training, nor as they critiqued actual art teaching. During the workshop/tasks and workshop/lecture, they paid no attention to task instructions and contextual statements which focused on a specific lesson component. When asked to critique one lesson variables in a videotaped unit of art instruction, they instead produced a general summary of the teaching and learning activities.
The teachers' responses to the educational interventions indicated few transfers of learning (i.e., personal reflections, changed answers, use of research terminology, or additions to previous answers). Instructions for Task 4 (videotaped teacher interview) and Task 5 (participant questionnaire) specifically prompted the teachers to reflect on previous responses before completing the task. Findings from the lesson plan re-critiques exhibited very few transfers of learning between tasks.

Student teachers seemed the most enthused and learned the most "new ideas" from observing the interview of the veteran art teacher. This experienced teacher explained how she assessed her students' prior knowledge and planned lessons around key concepts.

After watching the interview of the experienced teacher, some student teachers explained they did not realize that what is new information to learners in one lesson, becomes existing knowledge for these learners in subsequent lessons. This seemed a logical idea to them, and they wondered why they had not previously thought of the idea or its implications for lesson planning.

After submitting enthusiastic responses to the teacher interview, it was curious that the student teachers' transferred little learning from the teacher interview to the phase three lesson plan re-critiques. The student teachers seemed unable or unwilling to apply ideas learned from the veteran art teacher to their own process of lesson planning.
After the workshop, the student teachers indicated that they understood key ideas and learners' prior knowledge were more important in lesson planning than they had previously thought.

Reflection does not seem to be an activity in which these student teachers are willing to invest effort. The phase three lesson plan re-critique was an opportunity for them to reflect on what they had learned from the workshop. However, average length of the re-critiques was considerably less than it had been in the original critiques. It was speculated that the teachers might be more articulate in their re-critique as a result of new learning from the teacher workshop and that would explain the short re-critiques. After further analyses, however, this did not seem to be the case. The average length of the re-critiques seemed to be less because six teachers chose not to make changes to their original critique, and perhaps some teachers were uninterested in spending time on something that in their perception they had already accomplished (original lesson plan critique).

**Research Question 4: What are the Effects of Student Art Teachers' Knowledge Base, Knowledge-Seeking Strategies and Dispositions on Their Lesson Planning?**

The lesson plans by these student teachers reflected their own inexperience as art learners and their naive understandings of art meanings. The studio activity seemed to be their prevailing lesson consideration throughout this investigation. Aside from the studio
activity, their lesson content was interpretive and formal in nature. They consistently missed opportunities to link interpretive meanings to an artwork's formal features or to reinforce interpretive and formal features with studio activities.

Since the teachers had superficial or oversimplified understandings of artworks' interpretive meanings, their lesson presentations of interpretive art meanings were weak, and in some cases, non-existent.

Lack of transfer was indicated by the student teachers' written responses to each activity in this study. They did not transfer information from their original lesson plan critique to the critique of actual art teaching. They did not compare newly learned ideas from the teacher interview to their own ideas previously expressed in the workshop. Few new ideas which they described learning from the teacher interview were used in their lesson plan re-critique.

This group of student teachers had concentrated studio experiences in general design and drawing. Nine of the teachers' (47%) incorporated a drawing activity in their lesson plan, 6 of the teachers (32%) planned a focus on design elements to create a collage, 3 of the teachers (16%) planned a lesson to create a sculpture and 1 teacher focused on non-objective watercolor painting in her lesson plan.

The teachers claimed limited experience with print-making, weaving, fiber or fabric works.
The student teachers rarely mentioned knowledge gained from research as a useful resource when planning art units. Before the teacher workshop, a few teachers cited personal research as their source for learning about key concepts and learners' prior knowledge. A few teachers referred to two textbooks from their teacher education coursework which discussed higher-order teaching and learning strategies (i.e., Bellon, Bellon & Blank, 1992; Kirby & Kuykendall, 1991).

The curriculum planning, knowledge-seeking strategies, and dispositions of cooperating teachers greatly impacted the practices and understanding of these student teachers. Their cooperating teachers were their main knowledge source. Whether or not the student teachers searched further for information was influenced by the student teacher's own knowledge-searching strategies as well as the knowledge-searching strategies of the cooperating teacher. If the cooperating teacher did not relate formal and interpreive art meanings, did not link the studio activity to the lesson concepts, or did not use information from art historians or critics, the student teacher was less likely to do so.

When asked to rate seventeen features about art they most often emphasized when planning their lessons, these student teachers rated what critics and others said about artworks as the feature they least emphasized of all seventeen features. They claimed in their background questionnaires to frequently teach about artists' lives, historical periods in art, artist intent, and artists' styles. Where did they get the information to present about these features if they didn't use information from art critics and historians?
Methodological Issues

This study was in the planning stages for months in order to construct a research design which would critically inform the research questions from several perspectives. In spite of these efforts, some methodological issues surfaced during the investigation which need to be addressed at this time.

Just as student teachers in this study claimed more awareness of the importance of learners' prior knowledge in teaching and learning, I too became more cognizant of this factor. Thus, in retrospect, I now understand that phase one data would have more effectively informed the research questions had I reviewed the student teachers' lesson plan self-critiques earlier in the study. Following the research protocol, I did not scan the lesson plan critiques until weeks after they had been collected. This scanning occurred after the workshop/lecture took place. As a result, the workshop lecture on teaching and learning research was prepared with an understanding of the prior knowledge of student art teachers in general, but not with specific knowledge of these student art teachers' understandings (i.e., misunderstandings). The already collected data from the lesson plan critiques would not have been affected if the data had been reviewed prior to the workshop. However, review of the lesson plan critiques prior to the workshop/lecture would have informed the lecture, and might have enabled me to confront more student teachers' misunderstandings than were confronted in the workshop/lecture. Clarification of teacher misunderstandings was the goal of the workshop/lecture.
In addition, the one-on-one participant interviews might have yielded more useful information if I had analyzed the lesson plan critiques two weeks prior to conducting the interviews. (Several of the interviews were conducted the morning after I received the lesson plan critiques.) My lack of familiarity with the student teachers' understanding of key concepts and learners' prior knowledge made the one-on-one interviews general in nature. The data was too general in many cases to inform the specificity of the research questions.

During the planning of this study, a panel of experts was asked to evaluate the content and face validity of the participant response booklets and the prototpye video of art teaching episodes. The request for their input was open-ended. Thus, they each responded in a different form. If they been prompted to respond to the five tasks in the participant response booklet, their responses would have been available for analysis with the novice teachers' responses in this study. Such data would have added to novice expert research on art teaching and learning. As it was, the experts input was beneficial to the planning of the study, but not applicable in the analyses of data.

A complementary data source—the young learners' understandings of the key concepts in the lessons—would have further informed this investigation. Such a source has been collected in other studies of teacher knowledge (i.e., the Knowledge Growth in Teaching Project at Stanford).
Recommendations for Future Research

The field of art education is overdue for research on the education of art teachers and the impact of art teachers' various forms of knowledge on art teaching in this country. Investigations beget investigations, and this dissertation is no exception. This academic endeavor revealed far more ideas for future research than there will be time to implement them. Below is a list of recommendations which would further inform research on art teachers' knowledge base, knowledge-seeking strategies and dispositions:

A longitudinal study of these beginning art teachers' content and pedagogical knowledge would provide information on the effects of teaching experience on teacher knowledge and practice.

A replication of this study with experienced teachers would yield data for comparison and contrast with these novice teachers' understandings. Such a study would add to the directional framework already established in novice expert educational literature (Glaser & Chi, 1988; Koroscik, 1989).

Investigations of other strands within an art teachers' knowledge base (i.e., syntactic and substantive subject matter knowledge, curricular knowledge and instructional knowledge) would inform general teacher education research. Such a study would be particularly useful to teacher education research in art as studies of teacher knowledge are not prevalent in the research literature of art education.
Art teachers' choices of art exemplars to represent key art concepts would inform yet another strand of research on the pedagogical content knowledge of art teachers.

Art teachers' use of the studio activity in art teaching and learning needs to be a focus of future research in order to determine how the unique activity of studio is used in the everyday teaching of art.

A study of the teaching of art teachers at different instructional levels (i.e., elementary, middle school and secondary) would yield findings not yet investigated in art education literature. An exploration like this was not within the scope of this study.

In conclusion, student teachers' understandings (i.e., relevant or irrelevant knowledge, skills, and experiences), interact with their knowledge-seeking strategies (i.e., effective and ineffective), and learning dispositions (i.e., high motivation or low motivation) to affect their teaching. Their teaching, in turn, affects their students' understandings in art.

Student teachers in the Department of Art Education at Buffalo State University, Buffalo, New York were the participants in this investigation. The purpose of the study was not to generalize to populations or universes from this group of teachers, but to expand and generalize theories (Yin, 1984, p. 25). Certainly findings from this exploration align with previous theories in teacher knowledge research (Shulman, 1986, 1987; Grossman, 1990) and novice expert research (Chi, Glaser & Farr, 1988; Glaser, 1984; Glaser & Chi, 1988; Koroscik, 1989).
Particularly exhibited in this study was the great influence experienced teachers have on novice teachers. The student teachers' inability in this study to transfer what they learned from the experienced teacher does not detract from the finding that beginning art teachers seem more affected by the words and actions of veteran art teachers than by general observations of actual art teaching, the completion of lesson plan critiques and re-critiques, research about teaching and learning, or listening to direct instruction.
APPENDIX A

SAMPLE PARENTAL CONSENT FORM
PHONE REGISTRATION DUE BY JUNE 16

457-7023, leave message, you will be contacted

Address___________________________________________________________

Parents' Names_________________________________________________________________

Phone (Home)__________________ (Work)_______________________________

1992-93 Grade __________At____________________________________School

Parent’s Signature________________________________________________________

You will receive confirmation of your child’s enrollment.

By enrolling your child in this class, you are consenting to allow your child to participate in classroom instruction which will be video-taped. This taping is part of a dissertation research study by Jeanie Auseon, a doctoral candidate in the Art Education Department at The Ohio State University.
This unit of instruction contains three summarized art lessons taught by an experienced art teacher. It demonstrates the following:

- Sequential teaching of three lessons within a unit of art instruction
- The use of key concepts in art teaching as a strategy to promote higher-order thinking about art
- The linking of key concepts between and within lessons in a unit of art instruction
- The utilization of learners’ prior knowledge in art teaching as a strategy to promote higher-order learning
- The reinforcement of key concepts and learners’ prior knowledge with studio activities
Preface

The art instruction in this video is from an actual unit of lessons with fourth and fifth grade students. The unit lasted for eight class periods of two hours each. The students at times used a hand microphone for better sound quality. At no time was instruction rehearsed or were the students advised as to what to say.

Unit of Instruction: Art Education (topic heading on videotape)

Lesson One

[Several art reproductions are at the front of the art room. The teacher is standing at the front of the art room. Fourth and fifth grade students are seated on the floor around her.]

Every one of these artworks tells a story. This one tells a story. How many of you like to go shopping when Mom wants to go shopping? A whole bunch of you.[maybe not].

Guess what? I don’t know whether you can tell it; let me just bring this up where you can see it. Do you see the lady is kind of pulling him along, like hey, maybe I don’t want to go down to the well to get water with you? Do you think? Tells a story. Raphael? Tells a story. What story? A famous story. Saint George and the Dragon. And Saint George is going to defend the fair maiden from the dragon. And by the way, this painting is at the National Gallery in Washington, DC, and it is no bigger than this paper my lesson plans are written on. Kind of surprise you? All right. This one, who is this guy? George Washington crossing the Delaware. And do you know what, they fought a tough war, but
in this painting it is very, what we would call romantically done, in that everybody is
dressed well, they are well fed. You don’t even see their breath in spite of the fact that the
water is chunks of ice! Do you notice that? Tell a story? Yes. Tells a story about
Washington Crossing the Delaware. This one? (Laughing). You know it is Elijah
Pierce’s. And is it a painting? These are not paintings, this one is a wood carving, and it
tells a story about the place where Elijah Pierce was born. Tell a story? This one tells a
story. And this is rather interesting, did you know that this is not a clay pot? It is a gourd
that has been dried, and they have scratched, or etched, into it and put little stains of
colors on it. And when you get a chance, you have to look at it because it is just beautiful.
There is a parade of animals, a parade of people. I looked at it the other day, I came up
with all kinds of stories. This one? This one, believe it or not when you start looking at it
carefully, with some of the people having their faces blocked out, do you see how he
blocked out some of the faces? Some of them you see their hands and you don’t see much
of the rest of them. Some of them you can see parts of their head. Look, most of these
you can see their head, you can see the heads here, he has even blocked out something
here. You see old-fashioned cars and trucks in a line going down someplace, and horses
going up there. Think you can make a story up out of something like that? You surely
could! Does anybody have an idea what a narrative is? This is all narrative artwork.
Every one of these pieces is narrative artwork. Emily?

*It tells a story.*
You’ve got it. I’ve been saying it tells a story. Elijah Pierce. Does anyone know anything about Elijah Pierce?

_He did carvings._

He was a woodcarver. Tony?

_He was black._

He was black. Bob?

_He was also a barber._

He was a barber. And he was a barber where? Special place.

_Columbus._

Columbus, Ohio. OK. And I will tell you I met him. He was an absolutely marvelous person to talk with. He was born in the deep south. And his father was a slave. But we had a thing called the Civil War around Abraham Lincoln’s time, and Elijah Pierce’s father was freed as a boy. So Elijah Pierce never had to be a slave, but, he heard lots of slave stories from whom?

_His father, his dad._

His father, and I’m sure there were uncles, and aunts, and grandparents. Elijah Pierce as a little boy, every moment he had that he didn’t have to work, he’d go find himself a piece of wood, pull out his favorite pocket knife and...

_Carve._
Carve some wood. He loved woodcarving! [Close up of woodcarving *Obey God and Live* by Elijah Pierce]

[Students are seated on floor around teacher who is holding a reproduction of the artwork]

*He's leafing through a book, kind of, and he looks like something is hitting him or something, like, like instead of reaching for the Bible he reached for another book....like God touched him or something and then he's dead or something.*

He is definitely down flat isn't he? Same person do you think? Do you see that we see him three different times don't we? Have any of you heard the story that goes with this one? Tony, tell me.

*He said that he was in his house and he like did something bad or something and he said that God struck him and he fell down and he was put to bed and so he said to like “Obey God and Live.”*

Thanks, Tony for sharing. That was great. What do you see?

*Well that lady behind him in brown when he got struck by God she was holding him...that lady right there.*

All right, good observation. Do you see what he sees? Hey, same person is here and over here. Here she is standing in back of him, here she is holding him because he is kind of on the downward side, isn’t he? What do you see, Jenna?

*The same woman is down by the bed.*
The same woman is down by the bed, good observation! You are using your eyes. Now let me ask you something. I see this person here, and here, and here. I see this person, here, here and here. What does that tell me about placement of objects? What does it tell me? Tony?

Well, it's like telling a story...like frames in a comic strip...

Excellent example! In a comic strip. Don't you see the story, frame after frame, after frame? The only thing he didn't do is put the frame in, did he? He just tells all of it in one big composition.

[Teacher seated at table, students standing around table while she demonstrates and discusses the studio work.]

He sometimes, when he did his woodcarvings, he carved just the way we are going to. We mark out a frame and then dig out around it so that we have that frame showing. So a frame is going to be a part of what we do. All right, can you see it? Now this one, we have how many people in here?

[Clay tile: teacher-made studio example]

Four people.

All right. And this is a mother, and a father, and a sister, and a brother.

Two people in there that are children.

All right. What do we have down here?

House.
Did Elijah Pierce have a house?

*Umhum.*

Do you suppose this house has anything to do with these four people?

*Umhum.*

Do you suppose they live in that house?

*Umhum.*

We got part of this story, didn’t we?

*Looks like they are picking something...*

They are picking something! Does anyone want to venture a guess what they might be picking out in the fields? What those little things might be? Sarah?

*Cotton?*

Marcie?

*Mushrooms?*

Mushrooms, and you got it! Mushrooms. Now why do you suppose those mushrooms had to be a little oversized?

*So you could see them.*

So you could see them, and something else. We are working with clay. How many of you have worked with clay? Is this kind of tough to get something so tiny you can hardly handle it in your hands? Yes. All right. Does this piece tell a story?

*Umhum*
Yes. It tells a story about a family of people, who live in this house, and travel in this car, and they go pick mushrooms. After you have your frame, then you start to think about your story. What do you want to tell about you? Something that you do. Does it have to be complicated? No, something very simple. Frame, plan, tell a story about yourself...

[Camera pans around art room as students are working on their clay tiles—then samples of students’ finished clay tiles are shown close up.]

**Lesson Two** (Topic heading on video tape)

[Teacher seated at front is holding up a reproduction of Elijah Pierce’s *Slavery Times*. Students are seated around her looking at the example.]

Okay, this particular woodcarving you know. We have talked about it. We have talked about the artist. We have talked about his life. We have talked about his style of art. We have talked about the characteristics of things that he uses in his art. Now I am going to share with you an artist whom you have not heard of probably before. Shalom of Safed is from Israel. And just as Elijah Pierce was a self-taught artist, Shalom of Safed is also self-taught. Now he has been a silversmith, a watch maker, a toy maker, and more recently, a painter. Why would I share this work by Elijah Pierce, and then show you Shalom of Safed’s work? Is there some kind of connection that you see between these two art works? All right. Kit?
Both are made from people who did not start out and weren't trained as artists.

All right. Good observation. Kareem?

*They both have colorful paintings.*

Very good! Is there someone else that could tell something about this painting just by looking at the title of it? Kit?

*It's from the Bible, because Exodus is something about a book in the Bible, and it is showing a picture of what happens in Exodus.*

So it is a story from the Bible, isn't it? And we know that Elijah Pierce many times did stories from the Bible. So that is one connection between these two people, and we see that color is a connection. Any other connection that you see between these two artists?

And I remember that this one is probably brand new to you. Bob?

*Both of the artists use a lot of detail.*

Good observation! And this is very true. Mary has something.

*Both of the people have lots of people in their paintings.*

Does that give you any kind of clue about what they like and don't like? Leslie?

*Well, they probably both like people.*

Probably both like people, or at least to tell things about people don't they? Bob?

*Both of the paintings and woodcarvings tell a story.*

And what do we call that kind of artwork? What do we call it? Bob?

*Narrative!*
They each tell a story. It is narrative artwork. Now I would like to go back and look at Shalom of Safed's work on the basis of some of the detail. Because there are some ways in which his work is very much like Elijah Pierce's. There are ways in which his work is not so much like Elijah Pierce. Do you see a way in which something is very much his way of doing things? What about the way he draws or the way he arranges things? Look at those things. Kareem?

Kind of like he puts them in order. Like from small to big. Like the really small guys in the front and then at the bottom they get bigger like the guys on the horses.

Is that kind of out of the ordinary of what we usually think of doing?

Yeah.

How do we usually think of doing our art? The things that are in the foreground, or at least we think of as in the foreground, what do we tend to do to those things that are close to us?

Make them bigger.

Right! And he has not necessarily done that, has he? Would I be right in saying he has ignored perspective or depth? All right. Something else that you notice that is distinctive about the way he places things? Dimitri?

He always places them in order from top to bottom or actually from bottom to top.

All right! Very orderly, isn’t he? Very. Do you see what he is talking about when they are this way? How he clusters certain types of figures, almost groups them. Do you get a
sense of something going on here? Pattern! I heard the word pattern! Anyone else notice something about Shalom of Safed's artwork that is very distinctive, making it his. Tony? Well if you look at other artists' work, like other people look different, they each have their own kind of like face and body, but his, they all look the same, they all have their little beards, and they have the same shape of body, and the same thing on their heads, and you see at the top all the people in the red and then the next people in blue, then green, then under they are all in brown and red and green. They all look alike. Sort of like he is just stamping it or something.

Very good! Have you noticed that he has done something to this composition to kind of let you know that this is one kind of space, and this is another kind of space, and this is another kind of space? Leslie?

Well, he separated a lot of stuff...like you have the little men, then you have that brown ground, then you have some more men, then you have those hills, then you have that thing, and then you have the sky.

[Close up: Shalom of Safed's Exodus]

How could we describe that? Someone that I haven't heard from. Kristina?

Layers.

It is in layers. Do you notice that? Now Shalom of Safed tends to take his story, and this is kind of different for us, he gives us the right now, the most recent, and then he layers it
back in time. Do you understand that? He always has a ground line. There is always
earth down here, a ground line. And he always tops it off at the top with what?

*Clouds.*

Clouds, sky, sun, moon, whatever he needs. But do you understand that if you were
doing *The Three Bears,* Goldilocks wouldn’t be going to the little bear’s cottage down
here, she’d be up here someplace going to the cottage. Do you understand that? I’d like
you to think about a story. It can be as simple as *The Three Bears.* It can be more
complicated, again, don’t get it too complicated. But you want animals, people, pretend,
real, whatever. But you are not going to tell a story about you. You are going to tell a
story about something from a book. Because is this from a book? [Holding up *Exodus*
painting by Shalom of Safed]

*Umhum.*

Yes. This is from a book. It is a story. It is narrative artwork, but it is not an
autobiography.

[Camera pans around art room as students are working on their paintings then samples of
students’ finished layered paintings are shown close up.]

[Bob is standing by teacher at front of room holding up his layered painting.]

First of all, how about telling us a little bit about the story...
[Bob] Well, I did the life cycle of the butterfly, I did the egg, caterpillar, cocoon, then the butterfly, and uh, that's my story.

Then how does your work relate to what we've said about Shalom of Safed?

[Bob] Well, it has like the trees and the clouds and then the layers...

[Close up of teacher holding up a xeroxed handout, giving a writing assignment]

On the back page of this packet about Shalom of Safed... I would like you to use the black marker and think about Shalom of Safed as a person... What do you know about him as a person? Write down three things that tell us about Shalom of Safed as a person... Then it says [handout] “Here are three ways I would describe about his artworks,” look back at the samples of his artworks, then, the last thing we'd like for you to write... "I think his artworks are about the following ideas."... Again, look at the questions, then look at the artworks that are xeroxed in this particular packet.

Lesson Three (Topic heading on videotape)

[Teacher is seated on a chair, students are seated around her. She is showing them Aminah Robinson's: Life is a Book and Everyday is a Page. Unwritten love letter].

The work we are going to look at now is the work of another local artist. She is from Columbus, Ohio. She is living right now, lives over on the East side of the City. Her
name is Aminah Robinson. She has a nice long name. It is actually Aminah Brenda Lynn Robinson, but we are just going to call her Aminah Robinson. Now there is something very special about her, and I had mentioned it to you when we had first introduced Elijah Pierce. Does anyone remember what was so special about her and Elijah Pierce. Tony? 

_She was a friend of Elijah Pierce._

All right. She not only was a friend of Elijah Pierce, but she went to school just about a half block from Elijah Pierce’s barber shop and right next door to the Columbus Museum of Art. She went to what we now call Columbus College of Art and Design. Now, does this make her in any way different than the other two artists that we have studied? Caroline?

_Well, the other two are untrained artists, and she is a trained artist._

That’s it exactly! She is the only trained artist of the three that we are going to look at. Now since she was a good friend of Elijah Pierce, when Elijah Pierce died, well, first of all you have to remember, that day after day, when she would go to college at CCAD, she’d stop off at the barber shop and talk with Elijah Pierce. So he really became a very dear friend, a very dear person to encourage her, not only in her art, but even on how to live life. Because he was about 40 years older than she is, so when Elijah Pierce died, for Aminah Robinson, she was being separated from a very, very dear and special person in her life. I want to back up for just a moment and show you something that Elijah Pierce
had done while he was living. He did something that we have not talked about. He did what we call message signs.

[Close up of Elijah Pierce’s Your Life is a Book]

And he had these up all over his barber shop in the little extra room which was his gallery. And this particular one, if I may have it for a moment, Dimitri. This one right here, can anyone see that well enough to read what Elijah Pierce carved in the wood? Kareem?

_Elijah, your life is a book and every day is a page._

Elijah, your life is a book and every day is a page. Yes. What does he mean by that? He had something to say. Tony?

_Well, the way he wrote it, it sounds like somebody is like telling him, like that’s the way it is, like, Elijah, your life is a book. Like, I mean he wouldn’t be like talking, well he could be talking to himself, but like I’m not sure what he means or anything, but somebody is probably telling it to him._

All right. Knowing Elijah Pierce the way you do, what do you think, or who do you think, would have given him the idea for this, Tony?

_God._

Yes, yes I think so. This was an idea he had by studying the Bible and he came up with this, and in a sense he is talking to himself, and I think in another sense, he thinks God is talking to him. And he says, Elijah, your life is a book, and every day is a page. Now today, everything that I do is one page of my life, and all of those pages together make up
my book of life. Does that help you to understand what he was saying? He felt that
everything he did in a single day made up a page in his book of life and that all of those
pages together were the total book about his life. Make sense? Kind of? All right! Now
notice the way he has designed that piece of wood. Typical, with a frame. Now this is
Elijah Pierce. And if you will hold that one Dimitri. Then we have Elijah Pierce dying.
Aminah Robinson has lost a friend, a very dear special friend. So what does she do?
Kit?

_She does a picture or painting devoted to Elijah Pierce—because he was her friend._

That’s it exactly! It is by Aminah Robinson. Just as some people would write a poem as a
tribute to a dead person, or they might write a story about the person, Aminah Robinson
has done this piece of artwork. It is not wood, because she is not a wood carver. She
might put some wood in a piece, but she is not a wood carver. But what she has done, is
she has used rags and ink and natural materials, and put it all on a very heavy paper, and
then sometimes she glues all this on a piece of cardboard, or poster board, or matt board
to make it stiff enough. But she has done this piece as a tribute to her friend. Now if you
look at that piece, and you look at this piece, what do you see?

[Close up of both works: Elijah Pierce’s _Your Life is a Book_; Aminah Robinson’s
_Unwritten Love Letter_]

_Both have the word Elijah, and they are both telling him something._
All right, anything else about it, where you see a connection between these two pieces of art work. Keely?

*They are both about a book of life.*

All right. Jenna?

*It is the same shape, only one is upside down.*

Did you notice that? She even has taken the shape that he [Elijah Pierce] used in his message sign, and she has done a very similar thing, except it would be upside-down shape-wise. But it is very similar. All right. Now, look at some of the things that are in this particular piece. What do you see that is a part of the tribute to Elijah Pierce?

Michael?

*It has a picture of him, I think he is trying to carve something, and it says, ‘Elijah Pierce your life is a book and every day is a page’. And that is basically what that one says.*

She is basically repeating what he had already written as a part of the tribute. Good observation! Sarah?

*She kind of put a frame on the piece of artwork.*

And is that a connection with Elijah Pierce’s work? Yes it is. She has put a frame on her work, just as Elijah Pierce tended to put a frame on his work. Do you see anything else in this work that tells you something about this tribute to Elijah Pierce? Caroline?

*It told the time that he lived from 1892-1984, and it also says woodcarver, that he was a woodcarver.*
Anything else that you observe in this? Mary?

*Well, it looks like stamps in the background.*

That’s it exactly. And I know you may not be able to see it from here, but let’s see. Here is one of Martin Luther King. They are all black people. Duke Ellington, the musician. Are these people that people do not know anything about? Each stamp represents a well-known black person.

*Maybe she thought the stamps would look like woodcarvings, and maybe that could be like his extra room in his barber shop, and he could be sitting on that chair and carving them, and then those could be all of his woodcarvings hung up on the wall, like I haven’t heard of any with all of those, like ones that have faces on them like that, but maybe that was her purpose with the stamps, to look like woodcarvings.*

Tremendous observation! I’ll tell you something, Tony, that we didn’t have time to get into. Elijah Pierce sometimes carved the figures in wood of very well-known people.

Anyone else observe anything about this particular piece? Yes, Emily?

*I don’t know what it means, but it says like unwritten love letters or something like that.*

I was hoping someone would notice that. An unwritten love letter.

[Kareem] *Well, maybe she like really, really liked him a lot, but she never like got to tell him, because like he died, and so she never got to tell him that she like kind of loved him.* All right. Now, when she says that she loves him, is that in a romantic way, or another kind of love?
[Kareem] Maybe another kind of love.

Are there other kinds of love than romantic kinds of love?

Yes.

Do you have a love for your parents?

Yes.

That is an entirely different kind of love, isn’t it?

[Emily] Maybe, she loved him like a father or something, because he was about 40 years older than her and she kind of looked up to him, maybe.

She definitely did. She greatly admired this man, and I’m sure would respect him as a parent.

[Teacher at front of room giving the third assignment.] What I would like you to do is think about either something in your own life, where you live, what you do, etc., or someone who is very important in your life, or it could be people who are a part of a poem, a song, something that you know that you have read, that kind of thing. Then take your piece of paper, think through what it is that you want to draw. In this particular case, our sample is from a play called “The Quilters”. [Close up of sample] This is the quilt that is being developed, and it becomes a total composition. Again, Aminah Robinson, many times will do as our other artists have done, at times they put words into their compositions that are a part of the whole story.
[Camera pans as students work on third assignment. Close ups of finished collages are included.]
[The following appears at the end of the videotape:]

Produced, Directed & Edited
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Videography by
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Shalom of Safed
Aminah Brenda Lynn Robinson

The Art Images Viewed
in this Unit were
for Educational Presentation
TRANSCRIPTION OF AN 18-MINUTE VIDEOTAPED TEACHER INTERVIEW

This teacher interview is of the teacher in the “Unit of Instruction” videotape. In the interview she explained her lesson-planning process and her decision-making regarding the videotaped lessons. Topics discussed were:

- Students’ existing knowledge in lesson planning
- Selection and organization of lesson content
- Key concepts and ideas in lesson planning
ART TEACHER INTERVIEW

(TOPIC HEADING ON VIDEOTAPE)

This morning we are going to try and focus in on two things about art teaching. As we are finding out, those of us that are just beginning and those who have been in it for a while, and those who have been in it for a number of years, there are many things involved in planning art instruction and actually teaching those lessons. What we are going to focus on today is the prior knowledge of the students and how you consider that in art teaching. And also how we go about thinking about ideas and picking ideas and concepts that we're going to teach, and then how that is organized into units of lessons.

Students' Existing Knowledge

(Topic Heading on Videotape)

What did you consider to be the prior knowledge of the students that you had in this art class?

First of all I thought about the fact that all of these children probably have had some art teaching in school, they have had some studio experience. I anticipated that they
probably would have at least to some degree talked about a piece of art. They would have some experience with a variety of media. They would have, because of their age, some life experiences.

These were fourth and fifth graders?

Correct. They would, because of their age, have a prior knowledge of historical events. They would have some prior knowledge of the artists' stories that they had read or heard. I also thought that possibly there would be some prior knowledge of the one artist that had been chosen to be studied, which was Elijah Pierce. The reason being that just a short time before we had this series of classes, there had been a large show of Elijah Pierce's work at the local Columbus Museum of Art, and that possibly some of these students had been down to the museum, had seen his work, plus because these students were coming from a variety of schools, some of the students might actually have had some exposure to Elijah Pierce's work because of this show, and their teachers might have focused on some of his works.

So these were not all students that you have had before?

Correct.

Or from this area?

Right. I think that about half of the students were students that I was not familiar with or were not familiar with me, so I had to make some stronger assumptions with those children than with the ones I'd had before. Now with the children that I had had before,
I knew what their experience had been, because I had been their art teacher for a number of years. So I really had to expect that I would have a mix, quite a mix of backgrounds, in respect to their art education. I also knew that young people... really visually they enjoy and are comfortable with more realistic, or at least what they consider to be realistic art. They like art that has detail. They love color. They love patterns. They like things that they can to a degree understand.

Selection and Organization of Lesson Content

(Topic Heading on Videotape)

So Elijah Pierce was the first artist that you talked about. Then how did you make the decision to talk about Shalom of Safed and then Aminah Robinson next?

I really think that the medium that we used was a major decision in that. In order to give the children a change of pace, we started out with an artist that children, in some cases at least, already know. They are familiar with him [Elijah Pierce], they are comfortable with him. Then we move to an artist they’d never heard of.

With quite an unusual name, too, really.

Yes, and also he was very different in ways that he laid out his compositions.

So you had that contrast to build on from the first familiar exposure. So then how, so that then determined that Aminah Robinson would be at the end?

Yes she would be last.
She wouldn't be first because you are sort of building on the idea of the relationship, at least as I understand it. Elijah Pierce was a mentor to her and so it's that idea that earlier artists influence artists that come after them or that they have a friendship with...

Yes.

That seemed to be a very strong connection—how one came after the other.

Right! And another thing, with Shalom of Safed, put Elijah Pierce first, and put Aminah Robinson last, and they are so strongly connected, not only because of location but for so many other reasons. And let them literally embrace Shalom of Safed in the middle. I just—I liked the whole idea of that.

Was there any other thing about prior knowledge, or your thinking about building knowledge that had to do with the selection of these works?

Well, definitely, there were reasons for the selection of each piece—of course I had to keep in mind the concepts that I was going to teach. I needed to keep in mind the knowledge and experience of these children—but a very beautiful connection that is very easily made and was used in the selection of these two pieces of work right here....[Elijah Pierce's *Life is a Book and Every Day is a Page*, and Aminah Robinson's *Unwritten Love Letter*] I would not probably have said anything about this work by Elijah Pierce had it not been that I was going to show the memorial piece that Aminah Robinson had done, and there is so much connection between these two pieces visually that it was a 'built-in' between these two pieces, and there were so many other reasons in addition to
that connection to use those pieces, but in both pieces you see the connections in their idea of subject matter, you see connections that way, you see her respect for his work, in recognizing just even the outline shape of this piece and her using that in the memorial she did.

And just repeating the words certainly shows her valuing of the message also. I remember on the video that you really showed them simultaneously, but you really had to start with this one, because you said first of all you need to understand... so it seemed to me that you were picking this work, explaining how it came about, and then from that they had some prior knowledge of this one which could lead to some understanding of this work—which if you were to just view this work by itself—the meaning is really...there's meaning...but it's not anything like what it is [meaning] with the two of them together.

I guess what I'm thinking about is that in this whole series, I had to constantly think that whatever piece of knowledge that a student gains at one moment in time in our discussion becomes a piece of prior knowledge for the next step, in what is going to happen and so this whole series was just a stairstep, like building blocks, one upon the other—and what you started out with helps you to understand this—and this all together helped you to understand the next. And what happens is that we start out with one artist, you get acquainted with the characteristics of his work, well, then you get to your next artist and you are able to look at what is common and what isn't common and then you begin to see your students being able to talk more.
There's more to talk about, actually.

Right! There is more to talk about and it can be less teacher talk because you want it to be the children who are talking.

Key Concepts and Ideas

(Topic Heading on Videotape)

Is there anything else in terms of your key concepts that we haven't mentioned that you might have considered in planning this unit?

One of the things in planning the unit, would be the fact that since it was storytelling, I wanted to include in it a reflection of the experience of the children. So you have the artists and their experience, especially Elijah Pierce and Aminah Robinson, and then the studio experiences that you plan, you can look into this idea of personal experience, which we did on the clay project, which we did as we studied Elijah Pierce particularly—and then they had a choice they could use personal experience when it came to doing the collage with Aminah Robinson in mind. But we also chose an activity with Shalom of Safed where instead of using your own personal experience, it could be personal knowledge from a book or a part of a book, or a poem, or something like that, and the story would be told from that.

So there is a difference here in the stories that the artists chose to tell, in that some were autobiographical, and others were an illustration of something they heard or knew about or that they cared about but that had happened to somebody else.
In terms of key ideas or teaching with concepts generally, how do you go about deciding on key ideas or concepts that you want to use in your units?

*When I choose a subject, or an artist, whatever it is, that is maybe the key ingredient theme-wise, then I start thinking in terms of the artwork, and what a child of a particular age can understand or can grasp hold of. Sometimes a more difficult concept can be put very simply, or I can even just give them just a segment of a concept, depending upon their age. I wouldn’t start out with a very young child and say ‘all right, we are going to study the elements and principles of design’—but if I introduce something about line with a very young child, a line can tell a story, all right, we can demonstrate that they can do it,—but then you can take that statement and go a lot farther with it. With an older child, you can say that a line not only expresses an idea, it can express a mood, or feeling. So you are enlarging upon things. Many times I have taken a concept that I see in an artbook written for adults and I can modify that down to a statement that a young child can understand and we can work from there. That is the foundation for what they are going to have for further learning. I can take a theme or subject that a classroom teacher is focusing upon and I can still teach basic art concepts that I need to help these children have over the years. You know, regardless of what that subject or theme is, you can take some of the concepts that are involved with line—I can use those with a teacher who has a unit on animals, or a unit of fairy tales, or is studying Australia. The subject*
that a classroom teacher is focusing on can simply be a springboard for me to start looking and searching out, but still using the same basic concepts that I need to have the children exposed to or become aware of.

Right, I’m sure that there are some big ideas that you do teach,—have taught over and over again—but I can just about guarantee that you probably haven’t done it with the same artists and the same artworks everytime you teach it—because I know that you’re always challenged to teach those concepts—but in ways where you’re always learning too, you’re learning right along with your students.

Yes, I find that exciting! When I’m no longer excited, then I need not to be here.

Ah, which is maybe a good place to end this—a very appropriate place—for not only are we teachers, we’re learners ourselves.
The following appears at the end of the videotape:

Produced, Directed & Edited
by
Jeanie Auseon

Videographic by
Afif Arabi
Jeani Auseon

Video Editing Facility
Edit & Copy

Special Thanks to
4th & 5th Grade Students
Joanna Swisher
Dr. Judith Koroscik
Dr. Elizabeth Kowalchuk
Georgianna Short
Dr. Carol Stavropoulos
Dr. Alan Yarletts

Special Thanks to
Windermere School
Upper Arlington Schools
Columbus, Ohio
Elijah Pierce
Shalom of Safed
Aminah Brenda Lynn Robinson

The Art Images Viewed
in this Interview were
for Educational Presentation
APPENDIX D

DESCRIPTIVE SUMMARIES OF

ILLUSTRATIVE SEGMENTS FROM

THE VIDEOTAPED UNIT OF ART INSTRUCTION

These illustrative segments were used during the workshop's direct instruction on cognitive teaching and learning research. The segments demonstrate cognitive learning theories implemented in actual art teaching.
The fifth activity of the workshop was a lecture on cognitive learning research. During the lecture, clarification was made of the terms key concepts, learners’ prior knowledge, higher-order thinking and cognitive learning theory (see Appendix J). Short segments from the videotaped “Unit of Art Instruction” were shown to illustrate cognitive learning theories practiced in actual art instruction. The teacher in the videotaped unit demonstrated the following practices based on cognitive learning theory.

Illustrative film segments:

#1 Since the ability of students to learn new concepts depends on their prior knowledge, teachers need in some way to determine what the students already know about the new ideas being presented. The teacher in the unit of instruction attempted to assess what these students already knew about the featured artist she would be introducing.

#2 Research indicates that in order to transfer learning from one experience to another, teachers need to pose questions that encourage students to reach back to ideas from prior learning to apply to new learning. The teacher in the unit of instruction prompted students to think back to lesson one and build a “bridge” linking those ideas and concepts to new information presented in lesson two about a different artist.

#3 The teacher in the unit of instruction attempted to clarify an idea that she knew could be a potential misunderstanding for pre-adolescent learners. She helped the young learners identify some of the meanings of the word “love.”

#4 At the beginning of the videotape, the teacher provided examples, analogies, and/or metaphors to illustrate the overall unit concept that artworks can tell stories.

#5 Teachers need to be selective about their key ideas. The teacher made use of a key idea from the field of art criticism. She presented the concept that the placement of objects in artworks affects the meaning the viewer constructs of the work.

#6 The teachers re-used a key concept (i.e., the placement of objects in an artwork affects the meaning of the work). She used the concept first in lesson one with Elijah Pierce,
in lesson two with Shalom of Safed, then with Aminah Robinson in lesson three.

#7 Teachers can use analogies familiar to learners to illustrate key concepts. The teacher in the video used the story of “Goldilocks and the Three Bears” to help students understand how they would place sequential events and objects in the layered style of Shalom of Safed.
APPENDIX E

SAMPLE LESSON PLAN SELF-CRITIQUE FORM
LESSON PLAN SELF-CRITIQUE

The following activity is part of a dissertation research study. You should spend no more than 15 minutes on your responses. Select the lesson plan from your student teaching experience which you consider to be your most “successful” plan. Please include a copy of that plan with this critique; then describe your lesson planning and decision-making regarding the following ideas:

Your STUDENTS' EXISTING/PRIOR KNOWLEDGE

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The KEY IDEAS/CONCEPTS in the lesson

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Why did you select these **KEY IDEAS/CONCEPTS**?

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Relate these **KEY IDEAS/CONCEPTS** to key ideas/concepts in other lessons within the overall unit

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How are the KEY IDEAS/CONCEPTS in this lesson reinforced by the studio activity?

ADDITIONAL COMMENTS about your lesson planning

Remember to include a xeroxed copy of your lesson plan
THANK YOU!!!
APPENDIX F

SAMPLE PARTICIPANT RESPONSE BOOKLETS

Response Booklet A (Key Concept Focus Group)

Response Booklet B (Learners' Prior Knowledge Focus Group)
WORKSHOP ON
LEARNING RESEARCH
AND THE
LESSON-PLANNING PROCESS
IN ART INSTRUCTION

by Jeanie Coy Auseon

Fall 1993
FOCUS ON

KEY IDEAS/CONCEPTS

in a

UNIT OF ART INSTRUCTION

When units and lessons focus on a few key ideas, learners are more likely to form connections between their existing knowledge and new information.
OBSERVATION:

Your task is to summarize the KEY IDEAS/CONCEPTS being taught in this unit of instruction.

Lesson One:

Lesson Two:

Lesson Three:
OBSERVATION:

To demonstrate how KEY IDEAS/CONCEPTS from one lesson relate to concepts in other lessons, turn back to page 3 where you noted the key ideas/concepts in the observed lessons. Draw lines with the colored pen to indicate relationships between key concepts in the three lessons. A diagram will be provided to further illustrate these directions.

(Answer this question on page 3)
OVERHEAD TRANSPARENCY USED
FOR ILLUSTRATION

OBSERVATION:

Your task is to summarize the KEY IDEAS/CONCEPTS being taught in this unit of instruction.

Lesson One:

Lesson Two:

Lesson Three:
Focus on the

TEACHER'S

DECISION-MAKING

PROCESS

When lesson planning considers the students' existing knowledge and focuses content on a few key concepts, learners are more likely to form connections between their own knowledge and new information.
OBSERVATION:

Jot down some specific details describing what you learned about the TEACHER'S DECISION-MAKING when she planned this unit of instruction.

Segment 1: Consideration of STUDENTS' EXISTING KNOWLEDGE

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Segment 2: Selection and organization of KEY IDEAS/CONCEPTS

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Segment 3: KEY IDEAS/CONCEPTS

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OBSERVATION

Consider your responses to the first video. Describe what NEW IDEAS you learned from listening to the teacher interview. Please be as specific as possible in your description.

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WORKSHOP ON
LEARNING RESEARCH

AND THE

LESSON-PLANNING PROCESS

IN ART INSTRUCTION

by Jeanie Coy Auseon

Fall 1993
Consider

STUDENTS' EXISTING/PRIOR KNOWLEDGE

When planning a

UNIT OF ART INSTRUCTION

When planning units and lessons, consider the students' existing knowledge. Learners are more able to form connections between their own knowledge and new information if they can relate the new information in some way to what they already know.
OBSERVATION:

From your own knowledge of learners, and from observing this summarized unit of art instruction, describe

1) the STUDENTS' EXISTING/PRIOR KNOWLEDGE in each lesson
2) the NEW INFORMATION presented in each lesson

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OBSERVATION:

To demonstrate how STUDENTS' EXISTING/PRIOR KNOWLEDGE relates to NEW INFORMATION, turn back to page 3 where you noted students' prior knowledge and new information. Draw connecting lines with the colored pen that show relationships between and within students' prior knowledge and new information in a unit of instruction. Note that relationships might exist between prior knowledge and new information, and also within new information from lesson to lesson. A diagram will be provided to further illustrate these directions.

(Answer this question on page 3)
OVERHEAD TRANSPARENCY USED
FOR ILLUSTRATION

OBSERVATION:

From your own knowledge of learners, and from observing this summarized unit of art instruction, describe
1) the STUDENTS' EXISTING/PRIOR KNOWLEDGE in each lesson
2) the NEW INFORMATION presented in each lesson

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Focus on the

TEACHER’S

DECISION-MAKING

PROCESS

When lesson planning considers the students’ existing knowledge and focuses content on a few key concepts, learners are more likely to form connections between their own knowledge and new information.
OBSERVATION:
Jot down some specific details describing what you learned about the TEACHER’S DECISION-MAKING when she planned this unit of instruction.

Segment 1: Consideration of STUDENTS’ EXISTING KNOWLEDGE

Segment 2: Selection and organization of KEY IDEAS/CONCEPTS

Segment 3: KEY IDEAS/CONCEPTS
OBSERVATION:

Consider your responses to the first video. Describe what NEW IDEAS you learned from listening to the teacher interview. Please be specific as possible in your description.
APPENDIX G

OVERHEAD TRANSPARENCIES (1-18)
USED IN EDUCATIONAL LECTURE ON
CURRENT LEARNING RESEARCH

PHASE TWO WORKSHOP
Two Goals in Lesson Planning

1. To be a higher order thinker/learner yourself

2. To promote higher order thinking/learning on the part of your students
Transparency 2:

A COGNITIVE PERSPECTIVE ON LEARNING

- Views knowledge as *what is learned*; behavior is a result of that learning

- Examines the interaction of a learner's prior knowledge and the learning process

- Views learning as a constructive process, not merely the accumulation of facts and concepts

- Considers the student's knowledge-seeking strategies when they
  - seek new knowledge
  - apply previously acquired knowledge, skills and experiences to new learning
  - construct new understandings

- Considers the learner's active mental construction to be at the heart of instruction...the construction does not simply get larger; it is in a constant state of restructuring
Transparency 3:

The student's mental construction is unlike a growing collection of eggs in a basket...
Transparency 4:

rather,

it’s been likened to a scaffold
Resnick’s (1987) definition of higher order thinking is quoted most often by researchers:

Higher order thinking is nonalgorithmic. That is, the path of action is not fully specified in advance.

Higher order thinking tends to be complex. The total path is not “visible” (mentally speaking) from any vantage point.

Higher order thinking often yields multiple solutions, each with costs and benefits, rather than unique solutions.

Higher order thinking involves nuanced judgment and interpretation.

Higher order thinking involves the application of multiple criteria which sometimes conflict with one another.

Higher order thinking often involves uncertainty. Not everything that bears on the task at hand is known.

Higher order thinking involves self-regulation of the thinking process. We do not recognize higher order thinking in an individual when someone else “calls the plays” at every step.

Higher order thinking involves imposing meaning, finding structure in apparent disorder.

Higher order thinking is effortful. There is considerable mental work involved in the kinds of elaborations and judgments required.
Transparency 6:

TWO WAYS TO PROMOTE HIGHER-ORDER THINKING/LEARNING

1. Consider the learner's prior knowledge

2. Design lessons around key concepts in a field
All the accumulated knowledge, (including misunderstandings),
skills and experiences a student currently possesses

What the student already knows about the material being studied

(Koroscik 1993, Prawat 1989)
STUDENTS' PRIOR KNOWLEDGE ABOUT ELIJAH PIERCE

- They recognize a few of Elijah Pierce’s works
- They know that he was a barber by trade
- They know that he was an African-American
- They know that he lived in Columbus, Ohio
- They know that he was a wood-carver
On their own, students were able to bridge the following concepts from lesson one to lesson two:

- That Elijah Pierce and Shalom of Safed were untrained artists
- That both artists made colorful artworks
- That they both made artworks about God
- That their artworks are detailed
- That they both included a lot of people and animals in their artworks
- That their artworks tell stories
- By reading the title “Exodus” from Shalom of Safed’s painting, one student could connect his prior knowledge about the story of “Exodus” from the Bible to the story depicted by Shalom of Safed.
- Students, prompted by the teacher, made the assumption that since both artists included a lot of people in their artworks, they must like telling stories about people.
Transparency 10:

CLARIFY POSSIBLE MISCONCEPTIONS
Transparency 11:

Students came up with the following ideas regarding Aminah Robinson’s tribute to Elijah Pierce.

- Creating an artwork as a tribute to a dead friend can be a form of showing love for that person.

- If she didn’t get to tell him she loved him before he died, that may be why she calls her love letter to Elijah Pierce “unwritten”.

- The love she had for Elijah Pierce (which she indicated in her artwork), probably wasn’t romantic love, but a love like we have for a parent or mentor.
Key ideas are the basic concepts that lie at the heart of a discipline and allow for a rich set of connections...

(Prawat, 1989)
"BIG" KEY CONCEPTS/IDEAS

- Some ideas in a field of study are simply "bigger" ideas than other ideas

- Worthwhile concepts are measured by their meaningfulness to learners to the field of study

- Big ideas are measured by their contribution to the "connectedness" of the cognitive structure that learners are building
Transparency 14:

The placement of objects in an artwork affects the meaning of the work
BIG IDEA

The placement of objects in an artwork affects the meaning of the work

In the woodcarving, "Obey God and Live", Elijah Pierce shows the same people over and over in various parts of the work. The students determined that:

- Pierce's placement of people is analogous to the repetition of characters in a comic strip, except without the frames
- Elijah Pierce's actions and repetition of people are shown in sequence
- Viewers' eyes follow the images in an artwork, the mind then puts the story together
Transparency 16:

The placement of objects in an artwork affects the meaning of the work
BIG IDEA

The placement of objects in an artwork affects the meaning of the work

After viewing a few of Shalom of Safed's paintings, the students determined that he:

- Didn’t use perspective or show depth by making people/objects in the foreground appear larger than people/objects in the background
- Told his stories chronologically, placing the oldest events at the top of the painting, and the most recent events at the bottom of the painting
- Told his stories in horizontal layers
Teacher’s use of an analogy to define a learning activity

Using Shalom of Safed’s story-telling layout, “Goldilocks and the Three Bears” would be told in the following ways:

Since events are layered chronologically from the top of the page down, (Goldilocks would be shown at the top of the page as she entered the bears’ house, (because this is the event furthest back in time).

Goldilock’s breaking of Baby Bear’s bed would be in the bottom layers of the artwork, (since this event is near the end of the story).
PARTICIPANT QUESTIONNAIRE

Name______________________________________________ Date__________________

This questionnaire is your opportunity to provide information about your general education, art education training, teaching experience, and studio art experience. Please know that your answers will be kept strictly confidential.

1. What is/was your undergraduate degree and major in college? (Check all that apply)
   _____ B.A. _____ B.S. _____ B.F.A. _____ Other:

   _____ Education
   _____ Art Education

   _____ Studio, specify area: __________________________________________

   Other:_____________________________________________________________

2. Indicate the kind of teacher certification you will receive:
   _____ Undergraduate certification
   _____ Post-baccalaureate certification

3. Please list any other degrees you possess.

4. Have you attended presentations sponsored by National or State Art Education Associations?
   _____ Yes  _____ No

   If yes was your answer to question 4, describe some thing(s) you learned about higher-order teaching and learning at a presentation that helped you to be a better art teacher

5. Check the phrase that best reflects your understanding of students' prior knowledge before this workshop.

   _____ Not familiar with the terms.
   _____ Familiar with the terms but had not considered the function of students' prior knowledge in lesson planning.

   (Kowalchuk, 1992)
Familiar with the terms but had not considered the function of students' prior knowledge in higher-order teaching and learning.

Know the terms, and consider students' prior knowledge in my own lesson planning.

Know the terms, and value students' prior knowledge as a way to promote higher-order thinking and teaching.

6. If you indicated that you consider students' prior knowledge in lesson planning and/or higher-order thinking and teaching, please describe where and in what circumstances you learned about this consideration.

7. Check the phrase that best reflects your understanding of key ideas and concepts before this workshop.

Not familiar with the terms.

Familiar with the terms but had not considered the function of key ideas and concepts in lesson planning.

Familiar with the terms but had not considered the function of key ideas and concepts in higher-order teaching and learning.

Know the terms, and include key ideas and concepts in my own lesson planning.

Know the terms, and value key ideas and concepts in your lesson planning and/or higher-order thinking and teaching.

8. If you indicated that you include key ideas and concepts in your lesson planning and/or higher-order thinking and teaching, please describe where and in what circumstances you learned about this consideration.

(Kowalchuk, 1992)
9. Do you consider students’ prior knowledge when designing studio activities?

_____ No  _____ Yes

If so, how does considering your students’ prior knowledge affect your planning of studio activities?


10. Do you consider key ideas and concepts when designing studio activities?

_____ No  _____ Yes

If so, how does considering key ideas and concepts affect your planning of studio activities?


11. Reflect on your lesson planning and check the phrase that best describes how important the consideration of students’ prior knowledge is to your design of instruction.

_____ Considering students’ prior knowledge during lesson planning and teaching is MORE important to me now than it has been in the past.

_____ Considering students’ prior knowledge during lesson planning and teaching is as important (SAME) to me now as it has been in the past.

_____ Considering students’ prior knowledge during lesson planning and teaching is LESS important to me now than it has been in the past.

_____ Considering students’ prior knowledge during lesson planning and teaching has NEVER been important to me.

12. Reflect on your lesson planning and check the phrase that best describes how important the consideration of key ideas and concepts is to your design of instruction.

_____ Considering key ideas and concepts during lesson planning and teaching is MORE important to me now than it has been in the past.

_____ Considering key ideas and concepts during lesson planning and teaching is as important (SAME) to me now as it has been in the past.

_____ Considering key ideas and concepts during lesson planning and teaching is LESS important to me now than it has been in the past.

_____ Considering key ideas and concepts during lesson planning and teaching has NEVER been important to me.

(Kowalchuk, 1992)
13. I consider the content of my lessons to be based on BIG ideas/concepts from the world of art, and not merely biographical, procedural, or descriptive information.

_____ No       _____ Yes

14. I have trouble deciding which are BIG ideas/concepts in art and which are ideas that are not so BIG.

_____ No       _____ Yes

15. During your pre-student teaching observations, did you observe art teachers teaching about key ideas and concepts?

_____ No       _____ Yes

16. During your student teaching, has your cooperating teacher discussed the consideration of students' prior knowledge during lesson planning?

_____ No       _____ Yes

17. During your student teaching, has your cooperating teacher discussed key ideas and concepts when planning lesson content?

_____ No       _____ Yes

(Kowalchuk, 1992)
18. What do you emphasize about artists and artworks during your lesson planning and teaching? Circle the number that corresponds to the frequency with which you generally discuss the following ideas about artists and artworks.

- **Line**
- **Shape**
- **Color**
- **Value**
- **Pattern**
- **Texture**
- **Emotional qualities**
- **Medium**
- **Subject Matter**
- **Artist’s style**
- **Historical period in which the artwork was created**
- **Culture in which the artwork was created**
- **Artist’s intent**
- **What critics and others say about the artwork**

<table>
<thead>
<tr>
<th>Idea</th>
<th>Always (1)</th>
<th>Most of the time (2)</th>
<th>Occasionally (3)</th>
<th>Rarely (4)</th>
<th>Never (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line</td>
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<td></td>
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<td></td>
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<td>Value</td>
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<td>Pattern</td>
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<td>Texture</td>
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<tr>
<td>Emotional qualities</td>
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<tr>
<td>Medium</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Subject Matter</td>
<td></td>
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<td></td>
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<tr>
<td>Artist’s style</td>
<td></td>
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<tr>
<td>Historical period in which the artwork was created</td>
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<tr>
<td>Culture in which the artwork was created</td>
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<tr>
<td>Artist’s intent</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>What critics and others say about the artwork</td>
<td></td>
<td></td>
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</table>

**Other (explain, please):**

(Kowalchuk, 1992)
19. Circle the number that indicates your experience with the following studio processes and materials

<table>
<thead>
<tr>
<th>Process</th>
<th>Highly experienced</th>
<th>Much experience</th>
<th>Some experience</th>
<th>Hardly any experience</th>
<th>No experience</th>
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<tbody>
<tr>
<td>Painting</td>
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<tr>
<td>Acrylic</td>
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<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Oil</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Tempera</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Watercolor</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
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<tr>
<td>Drawing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pen &amp; Ink</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Charcoal &amp; pastel</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Graphite &amp; colored pencils</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Photography</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Film &amp; Video</td>
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<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Printmaking</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lithography</td>
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<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Intaglio &amp; Etching</td>
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<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
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<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
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<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
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<td>Sculpture</td>
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<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Clay</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Weaving</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Fiber &amp; fabric</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Glassblowing</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Bookmaking</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
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<tr>
<td>Papermaking</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Jewelry making</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Design</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Other (explain)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Kowalchuk, 1992)
APPENDIX I

SAMPLE LESSON PLAN RE-CRITIQUE FORM
LESSON PLAN RE-CRITIQUE:

During the Workshop on Learning Research and the Lesson-Planning Process, you did the following:

• Observed a summarized unit of art instruction
• Listened to an art teacher talk about learners' prior knowledge and teaching with concepts
• Heard about, and observed learning research being put into practice

Think about the lesson plan which you critiqued earlier in the semester. Please read your first critique, then re-critique that particular lesson plan by responding to the following questions:

After reflecting on the Workshop, I would make these additional comments about the LEARNERS' PRIOR KNOWLEDGE in regard to this particular lesson.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

After reflecting on the Workshop, I would list the following as the KEY CONCEPTS in this particular lesson.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

________________________________________________________________________
After reflecting on the Workshop, I would make these additional comments about why I selected these KEY CONCEPTS.


After reflecting on the Workshop, I would describe the following relationship(s) between the KEY CONCEPTS in this lesson and key concepts in other lessons within the overall unit:
After reflecting on the Workshop, I would describe the studio activity as reinforcing this lesson’s KEY CONCEPTS in the following ways:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

After reflecting on the Workshop, WHAT WOULD YOU CHANGE about this lesson plan?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

(Continue on back of page if necessary)
APPENDIX J

PROTOCOL FOR PHASE ONE: LESSON PLAN SELF-CRITIQUE
PROTOCOL FOR PHASE ONE: LESSON PLAN SELF-CRITIQUE

Time: 20 minutes

SAY: The following activity is part of a dissertation research study. You should spend no more than 15 minutes on this writing activity. Think again as we did last week about the lesson plan from your student teaching which you consider to be your most “successful” lesson plan.

SAY: I have a xeroxed copy of that lesson plan which you turned in last week that I’ll pass back to you now. When you finish the writing activity this evening, please staple a copy of your plan to your critique.

SAY: Please turn to pages 1, 2, and 3 of the self-critique form at your seat. Read the instructions silently, raise your hand if you have any questions.

(Pause for questions)

SAY: You may start the critique.

SAY: You have 15 minutes left to write.

SAY: The time is up, please staple the copy of your lesson plan to your critique and turn them in now. Thank you.
APPENDIX K

SAMPLE LESSON PLAN FORMAT
| Lesson Plan Format | Buffalo State College  
<table>
<thead>
<tr>
<th></th>
<th>Art Education Department</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teacher:</strong> The person teaching the lesson</td>
<td><strong>Date:</strong></td>
</tr>
<tr>
<td><strong>School:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Class &amp; Grade:</strong> Period of the day can also be included</td>
<td></td>
</tr>
<tr>
<td><strong>Length of lesson (time frame):</strong> Lessons can take more than one class period</td>
<td></td>
</tr>
<tr>
<td><strong>Descriptive title:</strong> In a few words or a short sentence describe this lesson.</td>
<td></td>
</tr>
<tr>
<td><strong>Relation to larger unit:</strong> Describe how this lesson relates to a larger unit. Mention historical, cultural, critical, and/or technical aspects of the unit.</td>
<td></td>
</tr>
<tr>
<td><strong>Major goal (teacher aim):</strong> Describe the primary, overriding concern of the lesson. The big idea. The important concept you want the students to learn about art (students will learn, understand, discover, invent, etc...).</td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong> List all supplies and materials to be used. Include consumable and non-consumable materials, teacher products, visual resources, AV equipment, and art exemplars.</td>
<td></td>
</tr>
</tbody>
</table>

**Motivation and presentation:** Describe the lesson in a sequential order. If the lesson will last more than one class session, describe each session (class 1, class 2, etc...). Be sure to include talk about artists, artworks, &/or cultures. Describe how you will check for comprehension.

**Timing of lesson:** Briefly outline how much time is needed for each part of the lesson. Include time to check for comprehension, time used for discussion, time used for studio Production, time used to clean-up, time for closing discussion, etc...

**Discussion and evaluation:** Describe how you will know if your goals and objectives were met. Explain how you will know your students learned what you intended.

**Relation to life:** Briefly explain why this lesson is relevant to students and their life. Consider that you are answering the questions: So what? Why is this important?

**Supplementary activity:** Develop a related activity that reinforces your objectives.

**Preparation needed:** Describe what must you do before you are ready to teach this lesson.

(Kowalchuk, 1993) Fall 1993 Pilot Test
APPENDIX L

PROTOCOL FOR PHASE TWO: EDUCATIONAL WORKSHOP
PROTOCOL FOR PHASE TWO: EDUCATIONAL WORKSHOP ON CURRENT LEARNING RESEARCH

General Introduction
Time: 5 minutes

(Place video Unit of Art Instruction into VCR. Distribute booklets and sharpened pencils before students arrive. Two TV/VCRs will be placed at one end of the room so that they can be clearly viewed by all students. There will be a hook-up between the two VCRs which will show one tape on both monitors).

SAY: My name is Jeanie Auseon. I'm a doctoral candidate at The Ohio State University. Because of my life-long love of learning, and my experiences in teaching art to students of all ages in formal and informal settings, my research interest is in art teacher education.

SAY: I'm especially interested in how you as preservice art teachers make sense of art teaching that you observe during various stages in your teacher training.

SAY: For instance:

How many of you have been sent out to observe experienced art teachers?

(Participants indicate yes by raising hand)

Were you instructed to observe specific aspects of art teaching?

(Participants indicate yes by raising hand)

Did you write general impressions of the art instruction?

(Participants indicate yes by raising hand)

Did you have a chance to talk with the teacher that you had observed?

(Participants indicate yes by raising hand)

Before your student teaching, did you have the opportunity to observe the teaching of all the lessons within a unit of art instruction?

(Participants indicate yes by raising hand)
SAY: Today, you will be asked to observe specific things in two videotapes about actual art instruction. Because your responses must reflect your own thinking, there can be no discussion during these activities or during the 10-minute break. There are refreshments available during the break.

SAY: The first video you are going to view is one summarizing a unit of art instruction. The teaching of the entire unit took 18 hours, eight sessions of 2 and ¼ hours each. The teacher in the video has taught art in a public, elementary school for many years. The students live in an upper-middle class community, and are fourth and fifth graders. They self-selected to take this two-week class in art during the summer of 1993. The art teacher presents new information, reviews information and connects information between the three lessons within the art unit.

SAY: It's important that you understand that this is not a "how-to" tape. The teacher doesn't do everything "right." The art instruction is typical in many ways, and atypical in others. In each of the lessons, the video shows the students talking about an artist and discussing that artist's works. During the class discussions of the entire unit, more than one artwork by each artist was studied.

Also, the studio assignments in the video are abbreviated. The actual assignments, demonstrations, and explanations were extremely detailed and complete.

This study asks you to consider lesson planning only. The teacher's class management, delivery style and methodology are not issues of this study. Do not critique the art room itself.

Please do not generally summarize each lesson, instead focus on the specific aspects of teaching that your booklet refers to.

**View and Critique Videotaped Unit of Art Instruction**

**Time:** 45 minutes

**Task 1A and Task 1B**

SAY: After being instructed to observe specific things, you may write your responses while viewing the video. The video lasts 34 minutes. There are three lesson episodes to view; at the end of each lesson, you will be given one additional minute to complete your response. Please do not look ahead in your booklet. Now, please turn to page 2 and read it silently. Then turn to page 3, and read the instructions. Raise your hand if you need any clarification of what you are to do.
(Pause for clarification)

**SAY:** I will start the video now.

(Play lesson one)

**SAY:** Please take one minute to complete your descriptions.

(Pause)

**SAY:** I will start lesson two now.

(Play lesson two)

**SAY:** Please take one minute to complete your descriptions.

(Pause)

**SAY:** I will start lesson three now.

(Play lesson three)

**SAY:** Please take one minute to complete your descriptions.

(Pause)

**Task 2A and 2B**

**SAY:** Please turn to page 4 in your booklet and read silently the instructions. Are there any questions before we get started on task 2?

(Pause for questions)

**SAY:** You will have 5 minutes to complete this task. You may start your response now.

**SAY:** You have 3 minutes left to write.

**SAY:** Your time is up. Please close your booklets. We'll have a 10 minute break, help yourself to refreshments. Please do not leave the room or talk about your responses to the activities thus far.
Break
Time 10 minutes

View and Critique Teacher Interview
Time: 30 minutes

Task 3A and Task 3B

(Place video Teacher Interview into VCR).

SAY: The videotaped art lessons you observed today are typical in that the art teacher had a great deal of freedom in deciding what to teach and how to teach it when planning these lessons. As future teachers, you will spend a lot of time making decisions regarding lesson planning and implementation.

SAY: The video you're about to view will focus on the decision-making process this art teacher went through to design and implement the lessons you viewed. The video lasts 17 minutes. Please focus on the teacher's descriptions as you consider responses to the next questions. Again, you may write while watching the video. Turn to page 5 and read it silently, then turn to page 6 for the next instructions. Raise your hand if you have any questions.

(Pause for questions)

SAY: I will start the video now.

(Play segment #1)

SAY: You may take one minute to complete your observations.

(Pause)

SAY: Here is segment #2.

(Play segment #2)

SAY: You may take one minute to complete your observations of segment #2.

(Pause)
SAY: Here is segment #3.

(Play segment #3)

SAY: You have one minute to complete your observations of segment #3.

(Pause)

SAY: That completes Task 3.

Task 4A and Task 4B

SAY: Please turn to page 7 for the next instructions. Read them silently. Raise your hand if you need any clarification of what you are to do.

(Pause)

SAY: you will have 5 minutes to respond. When time is up, again please close your booklet. You may start your response.

SAY: You have 3 minutes left to write.

SAY: Your time is up. Please close your booklets.

SAY: Thank you very much for your participation during this part of the study.

Illustrated Lecture on Cognitive Learning Research
Time: 30 minutes

(Organize transparencies for overhead projector. Place Illustrated Videotaped Segments into VCR).

SAY: This next activity involves direct instruction on current research about learning. It has been shown that teachers have many things to consider when planning units and lessons. You’ve already begun to find that out in your own student teaching, haven’t you? Today in teacher education, we hear mention of higher-order teaching and learning. Have you been challenged to design units, lessons, and questioning strategies that promote higher-order thinking/learning on the part of your students? If two of your goals in lesson planning are:

(show transparency #1)
TWO GOALS IN LESSON PLANNING

1) To be a higher-order thinker/learner yourself
2) To promote higher order thinking/learning on the part of your students

SAY: You might be interested in hearing about recent findings from learning research. Today, we are going to look at some research on learning generally and apply it specifically to art education. The similarities of learning processes across all subject areas make such an application possible.

SAY: In the 1960s, psychology and learning research began to focus on cognition and away from behaviorism. Learning research before the 1960s, viewed behavior as what was learned. A cognitive perspective toward learning differs from a behaviorist perspective in that:

(show transparency #2)

A COGNITIVE PERSPECTIVE ON LEARNING

- Views knowledge as what is learned; behavior is a result of that learning.
- Examines the interaction of a learner's prior knowledge and the learning process.
- Views learning as a constructive process, not merely the accumulation of facts and concepts.
- Considers the student's knowledge-seeking strategies when they seek new knowledge, apply prior knowledge, skills and experiences to new information, construct new understandings.
- Considers the learners' active mental construction to be at the heart of instruction...the construction does not simply get larger; it is in a constant state of restructuring.
SAY: This notion is not like a growing collection of eggs in a basket...

(show transparency #3)

The student's mental construction is unlike a growing collection of eggs in a basket...

(BASKET IMAGE)

SAY: Rather, it's been likened to a scaffold...

(show transparency #4)

rather, it's been likened to a scaffold...

(SCAFFOLD IMAGE)

SAY: Today we will discuss how to foster connections within the learner's mental construction. Such connections encourage higher-order thinking/learning. Higher-order thinking has been defined as:
Resnick's (1987) definition of higher-order thinking is quoted most often by researchers:

- Higher order thinking is nonalgorithmic. That is, the path of action is not fully specified in advance.

- Higher order thinking tends to be complex. The total path is not "visible" (mentally speaking) from any vantage point.

- Higher order thinking often yields multiple solutions, each with costs and benefits, rather than unique solutions.

- Higher order thinking involves nuanced judgment and interpretation.

- Higher order thinking involves the application of multiple criteria which sometimes conflict with one another.

- Higher order thinking often involves uncertainty. Not everything that bears on the task at hand is known.

- Higher order thinking involves self-regulation of the thinking process. We do not recognize higher order thinking in an individual when someone else "calls the plays" at every step.

- Higher order thinking involves imposing meaning, finding structure in apparent disorder.

- Higher order thinking is effortful. There is considerable mental work involved in the kinds of elaborations and judgments required.
SAY: Research suggests two ways to promote higher-order teaching/learning:

(show transparency #6)

<table>
<thead>
<tr>
<th>TWO WAYS TO PROMOTE HIGHER-ORDER THINKING/LEARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Design lessons around key concepts in a field</td>
</tr>
<tr>
<td>2) Consider the learner's prior knowledge</td>
</tr>
</tbody>
</table>

SAY: What is prior knowledge?

(Show transparency #7)

<table>
<thead>
<tr>
<th>WHAT IS PRIOR KNOWLEDGE?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• All the accumulated knowledge, (including misunderstandings), skills, and experiences a student currently possesses</td>
</tr>
<tr>
<td>• What the student already knows about the material being studied (Koroscik 1993, Prawat, 1989)</td>
</tr>
</tbody>
</table>

SAY: The ability of students to learn new ideas/key concepts depends on their prior knowledge. Thus, teachers need in some way to determine what the students already know about the new ideas and key concepts they are presenting.

The following is a segment from the first lesson in the videotape. It shows the teacher attempting to assess what these students already know about the featured artist.

(Show illustrative segment #1)

SAY: The student responses are one word answers - indicating memorization of facts. They do, however give the teacher this baseline data:

(show transparency #8)
<table>
<thead>
<tr>
<th>STUDENTS' PRIOR KNOWLEDGE ABOUT ELIJAH PIERCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>• They recognize a few of Elijah Pierce's works</td>
</tr>
<tr>
<td>• They know that he was a barber by trade</td>
</tr>
<tr>
<td>• They know that he was an African-American</td>
</tr>
<tr>
<td>• They know that he lived in Columbus, Ohio</td>
</tr>
<tr>
<td>• They know that he was a wood-carver.</td>
</tr>
</tbody>
</table>

**SAY:** So, after this teacher presented new information in lesson one, what can she/he do to help learners access this knowledge and apply it to new information?

**SAY:** Research tells us that in order to transfer learning from one experience to another, teachers need to pose questions that encourage students to reach back to ideas/concepts from prior learning to apply to new learning. The following segment is an example of the teacher prompting the students to think back to lesson one and build a "bridge" linking those ideas and concepts to new information presented in lesson two about a different artist.

*(Show illustrative film segment #2)*

**SAY:** Did you notice that students were able to connect the following concepts/ideas?

*(Show transparency #9)*
BRIDGING PRIOR KNOWLEDGE AND NEW INFORMATION

On their own, students were able to bridge the following concepts/ideas from lesson one to lesson two:

- That Elijah Pierce and Shalom of Safed were both untrained artists
- That they both made colorful artworks
- That they both made artworks about God
- That their works are detailed
- That they both included a lot of people and animals in their works
- That their artworks tell stories

By reading the title “Exodus” from Shalom of Safed’s painting, one student could connect his prior knowledge about the story of “Exodus” from the Bible to the story depicted by Shalom of Safed.

Students, prompted by the teacher, made the assumption that since both artists included a lot of people in their artworks, they must like telling stories about people.

SAY: When teachers consider learners’ prior understandings, they also must consider what students have misunderstood from previous learning. Whether from incomplete information, misinterpretation, or immaturity, students often form misconceptions. Research tells us that misconceptions interfere with future learning, because new information will then be connected and built upon incorrect prior knowledge.

SAY: In the following example, the teacher attempts to clarify an idea that she knew could be a potential misunderstanding. This concept was not part of her original lesson plan, but her experience with pre-adolescent learners told her that the idea of love could be misunderstood if she didn’t take the time right then and there to help the young learners identify some of the levels of the word “love.”

(Show transparency #10)

CLARIFYING POSSIBLE MISCONCEPTIONS
Students came up with the following ideas regarding Aminah Robinson’s Tribute to Elijah Pierce:

- Creating an artwork as a tribute to a dead friend can be a form of showing love for that person.
- If she didn’t get to tell him she loved him before he died, that may be why she calls her love letter to Elijah Pierce “unwritten”.
- The love she had for Elijah Pierce (which she indicated in her artwork), probably wasn’t romantic love, but a love like we have for a parent or mentor.

SAY: We have just reviewed learning research about students’ prior knowledge. Now, let’s look at a second factor that promotes higher-order thinking and learning - key concepts.

SAY: Key concepts/ideas are:

(Key concepts/ideas)

Key ideas are the basic concepts that lie at the heart of a discipline and allow for a rich set of connections...

SAY: Research tells us that when instruction focuses on key ideas/concepts, learners are more likely to form connections between previously learned ideas/concepts.

SAY: Perhaps you noticed that at the beginning of the videotaped unit, the teacher provided examples, analogies, and/or metaphors to illustrate the overall unit concept that artworks can tell stories.

(Show illustrative film segment #4)

SAY: However, research cautions that teachers need to be selective about their key ideas in lesson planning.

(Show transparency #13)
"BIG" KEY CONCEPTS/IDEAS
Some ideas in a field of study are simply “bigger” ideas than other ideas.

Worthwhile concepts are measured by their meaningfulness to learners to the field of study.

Big ideas are also measured by their contribution to the connectedness of the mental structure that learners are building.

SAY: The following examples from lessons one and two show the teacher making use of a BIG idea from the field of art criticism. The BIG idea she was attempting to convey is that the placement of objects in artworks affects the meaning the viewer constructs of the work.

(Show transparency #14)

The placement of objects in an artwork affects the meaning of the work

(show illustrative film segment #5)

(show transparency #15)

BIG IDEA
The placement of objects in an artwork affects the meaning of the work

In the woodcarving “Obey God and Live”, Elijah Pierce shows the same people over and over in various parts of the work. The students determined that:

- Pierce’s placement of people is analogous to the repetition of characters in a comic strip, except without the frames.
- Elijah Pierce’s actions and repetition of people are shown in sequence.
- Viewers’ eyes follow the images in an artwork, the mind then puts the story together.

SAY: The next example is a re-use of that same Big concept:

(show transparency #16)
The placement of objects in an artwork affects the meaning of the work

(show illustrative film segment #6)

(show transparency #17)

BIG IDEA

The Placement of objects in an artwork affects the meaning of the work

After viewing a few of Shalom of Safed's paintings, the students determined that he:

Didn't use perspective or show depth by making people/objects in the foreground appear larger than people/objects in the background

Started telling his stories chronologically, placing the oldest events at the top of the painting, and the most recent events at the bottom of the painting

Told his stories in horizontal layers

SAY: So, the way teachers link concepts together, the contexts in which they present the concepts, and the learning activities structured around them determine what teachers consider to be important ideas in a field of study.

SAY: Consider the following teacher analogy defining a studio activity. The activity is structured around the concepts just mentioned about placement of images within the artwork.

(Show illustrative film segment #7)

(show transparency #18)
TEACHER ANALOGY

To explain the studio activity for the lesson on Shalom of Safed, the teacher makes the analogy that if told visually like Shalom of Safed tells his Bible stories, the story of Goldilocks and the Three Bears would be composed in the following ways:

Since events are layered horizontally from the top of the page down - Goldilocks would be shown at the top of the page as she entered the bears' house (because this is the event furthest back in time).

Breaking Baby Bear's bed would be in the bottom layers of the artwork (since this event is near the end of the story).

SAY: The purpose of this direct instruction on learning research has been:
   To clarify any misunderstandings you might have had about the notions of prior knowledge and key concepts

   To show how these theories put into practice during actual art instruction.

SAY: Again, you have my appreciation for participating in this research study.

Short Break
Time: 2 minutes

SAY: You've been sitting for some time, perhaps you'd like to stand up and stretch, or turn around for a minute or two before we finish up one more short activity.

(Pause for a short break)
Completion of Participant Questionnaire
Time: 10 minutes

Task 5

SAY: The last item for this evening is the completion of a questionnaire. Some of you that arrived early started on page one before the workshop began this afternoon. Please complete the rest of the pages. I'll be here to answer your questions individually as you are filling out the questionnaire. It will take you approximately 10 minutes.

SAY: As a token of my appreciation, I have prepared teacher resource packets for you. I look forward to seeing you again for one-on-one interviews. Thank you again and continued good luck in your teaching.

SAY: You may start the completion of the questionnaire.
APPENDIX M

PROTOCOL FOR PHASE THREE: LESSON PLAN RE-CRITIQUE
PROTOCOL FOR PHASE THREE: LESSON PLAN RE-CRITIQUE

Time: 25 minutes

SAY: As part of the dissertation study you participated in recently, there is one additional opportunity for you to describe your thinking about lesson planning.

SAY: I have xeroxed a copy of the lesson plan critique and the lesson plan you wrote about in October. When I pass these out, please review them as it’s been a few weeks since you saw them.

(Pause to distribute papers and for student teachers to review their critiques)

SAY: I will now pass out a re-critique form about that lesson. Re-critique that same lesson, even though you might rather choose a more recent lesson to critique. It’s important that this be a re-critique of the lesson you already wrote about. Notice that there is an additional question on the last page. Read the instructions silently, raise your hand if you have any questions.

(Distribute re-critique forms, then pause for questions)

SAY: You may start the re-critique.

SAY: You have 22 minutes left to write.

SAY: The time is up, please turn in all three items together - the lesson plan, critique, and re-critique. Thank you.
REFERENCES


Lawrence Erlbaum.


