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**A diagnostic profile of art understandings based on verbal
responses to works of art**

Stavropoulos, Carol Susann, Ph.D.

The Ohio State University, 1992

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**300 N. Zeeb Rd.
Ann Arbor, MI 48106**

**A DIAGNOSTIC PROFILE OF ART UNDERSTANDINGS BASED ON VERBAL
RESPONSES TO WORKS OF ART**

DISSERTATION

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

By

Carol Susann Stavropoulos, A.A., B.S., M.A.

*** * * * ***

The Ohio State University

1992

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Approved by

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Carol Susann Stavropoulos
1992

In memory of my father,
Evan Ballenger Wehunt
1919-1989

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CHAPTER I

INTRODUCTION

Assessment is an integral component of reading, math, science, English, and social studies in our educational institutions. However, there is much controversy surrounding whether there is a need for assessment in the discipline of art education. The National Endowment for the Arts (NEA), in a 1988 report on the current state of arts education, supports evaluation practices in art education. "The need to measure individual progress toward curricular goals and objectives and to evaluate the relative effectiveness of different programs in achieving these goals and objectives is as valid for the arts as for any other subject" (p. 97).

Arguments Against Assessment in the Arts

There are several arguments against assessment in the arts. First, there is the assumption that creative outcomes are too individual and unpredictable to be measured (Wilson, 1988, p. 24). It is further argued that sophisticated understanding and capacity for invention in artistic endeavors cannot be assessed through the "right or wrong"

testing methods used in schools (NEA, 1988, p. 97).

Second, there is the belief that if measurement is attempted the delicate qualities of artistic expression might be hindered or eliminated altogether (Wilson, 1988, p. 24). Extending this idea, Fowler (1988) explains, "evaluation must leave room for spontaneity in the arts, or its effect will be to stifle and cramp arts instruction. The innate nature of the arts resist straightjackets" (p. 93).

A third argument is that a teacher's critical examination and appraisal of student artworks both individually and through critiques are performed hundreds of times throughout the school day, suggesting that current assessment concerns are undue (Wilson, 1988, p. 24).

A fourth argument is that easily assessed outcomes seem to be the focus of evaluative strategies in art education. "If tests are narrow and superficial, teaching may become narrow and superficial" (NEA, 1988, p. 97). If teachers teach to tests that assess trivial knowledge and skill, the substantive qualities of the curriculum diminish (NEA, 1988).

The final and perhaps the most compelling assertions against assessment are inescapable and serve as the foundation for this program of research. According to Fowler (1988), adequate mechanisms to make evaluations public are not available (p. 94). Current views in the

field indicate a possibility that educational assessment experts do not understand the content of the arts, and arts educators do not understand assessment processes (Wilson, 1988, p. 25). According to the National Endowment for the Arts, "few arts education professionals have the expertise to develop meaningful arts tests" (NEA, 1988, p. 97).

Arguments For Assessment in the Arts

There are several persuasive arguments for the inclusion of assessment in arts programs. First, it is argued that ongoing assessment of students could indicate whether educational objectives are being met. Formative assessment, which takes place during the teaching and learning process, can provide feedback on student progress. Formative assessment provides a foundation for which teachers can determine if changes should be made in instructional strategies or the pace of learning (Hurwitz & Day, 1991, p. 546).

A second argument maintains that summative assessment, conducted after the completion of the class, can serve as a basis for teachers to judge student accomplishments and the overall success of a class (Day, 1974; Hurwitz & Day, 1991). Summative assessment is a "means to improve student learning, assess effectiveness of the curriculum, and to assist teachers to improve their instruction" (Hurwitz & Day, 1991, p. 546).

A third argument calls attention to benefits of using assessments as tools to diagnose constraints in the learner's knowledge base and knowledge seeking-strategies (Koroscik, 1990a; Koroscik, Short, Stavropoulos, & Fortin, 1992). Besides identifying learning difficulties, Wilson (1992) contends that diagnostic tools can distinguish learning attributes (p. 36).

A fourth argument asserts that assessment is a means for judging a student's qualifications for placement in an arts program. According to Wilson (1992), "selection is an important consideration for programs for the gifted" (p. 36).

A fifth argument suggests that a comprehensive assessment plan reflects the degree of orchestration among program goals, objectives, content, instructional processes, and learning outcomes (Wilson, 1988, p. 25). With this knowledge, curriculum foundations would be strengthened and instructional reform in the arts could be initiated (NEA, 1988).

A sixth argument supports assessment as a means to communicate "the results of the outcomes of educational programs" (Wilson, 1992, p. 36). Information regarding the extent to which goals of art education have been met is essential to accountability (p. 36). Accessible information of this nature promotes the advancement of student learning,

research in art education, and the overall improvement of arts programs (p. 25).

Finally, Wilson (1988) argues that a systematic evaluation program in art education could elevate the arts to the level of other disciplines. He also points out that models for a variety of assessment procedures exist and "need only to be put to use in coherent assessment programs at the district levels" (p. 25).

Current Assessment Practices

Both sides of the argument indicate a need for research and development of more appropriate assessment strategies and instruments. According to Efland (1990), examples of recall-oriented assessment strategies employed up until now in art education include standardized testing, paper and pencil tests, studio projects meeting stipulated criteria, multiple-choice tests, activities that involve matching paintings with titles, and making discriminations between works in differing styles. The following examination of current assessment practices suggests foundations on which to build new methods of student assessment.

Standardized Tests

Art educators have a valid concern about how and what we are measuring in terms of student learning in the art classroom, but the use of standardized tests for purposes of curricular reform has not been a great success (Haney,

1985). In 1970, Wilson spoke out on the status of national assessment in art, stating there was little, if any, data to demonstrate whether art educators are meeting their objectives. With optimism, Wilson (1970) stated:

National Assessment should give us some highly detailed insights, never before available, into our successes and failures. It may also show us some very useful new methods for assessing in art. Second, once we find out where we are successfully accomplishing our objectives and where we are not, we will be able to change our methods so as to accomplish our objectives if they seem completely unobtainable. (p. 6)

Fourteen years later, Hoepfner (1984) is critical of the standardized National Assessment of Educational Progress, "the product of such a task is what the student does do, not what she or he can do" (p. 254). The inadequacy of standardized tests to gauge the scope of student capability is further affected by test format.

A standardized test conceals one correct answer among several possibilities, a highly unusual circumstance in real life (Hamblen, 1987). If a student possesses the ability to darken in circles on a grid, then he/she need not know how to read in order to participate in (and pass) a standardized test. Hamblen suggests this might be the reason why high school students graduate with reading abilities at the third grade level (p. 248).

Standardized tests are not useful for assessing higher-order thinking and reasoning skills. Students must actively construct knowledge to arrive at deeper understandings

(O'Neal, 1992). Examples of higher-order thinking and reasoning include producing and explaining an answer, generating alternative answers, giving reasons for selecting answers or solutions, and/or making judgments based on the application of flexible criteria (Ennis, 1985; Quinby, 1985; Hamblen, 1987; Shepard, 1989). The assessment of learning outcomes of this nature are impossible with the standardized tests currently available.

Shepard (1989) states, "large-scale testing programs are limited by political and practical considerations that undermine their fidelity to important learning outcomes" (p. 4). Content to be measured by standardized testing procedures is negotiated between curriculum specialists, teachers, and test publishers, and many times important content is sacrificed. This problem is compounded by commercial test developers who compare test items to textbooks as a measure of content coverage. Ironically, a strategic marketing plan of textbook publishers is to advertise their textbooks as representative of content covered by standardized tests (Tyson-Bernstein, 1988). These factors can have a "homogenizing effect" on the breadth and depth of test content (Shepard, 1989).

Assessments that substantiate a student's knowledge and understanding are needed. The fact is that many of those interested in assessing outcomes in art education have placed a tremendous reliance on various standardized

multiple-choice tests and checklists that purport to measure art knowledge in terms of recall (e.g., Eisner Art Information Inventory), judgments about art (e.g., Meier Art Tests: 1), aesthetic perception (e.g., Meier Art Tests: 2), creativity (e.g., Torrance Tests of Creative Thinking), art attitude (e.g., Eisner Art Attitude Inventory), art production (e.g., Goodenough-Harris Drawing Test), gifted and talented (Hurwitz, 1983), and achievement (e.g., National Assessment in Art). Eisner (1974) asks the crucial question concerning the appropriateness of standardized tests to art education: "Are we, after all, concerned primarily with turning out standardized products--especially in the arts?" (p. 4).

Studio-Based Assessment

From a studio-based approach, Wachowiak (1985) recommends formative assessment, providing the student with "the kind of design and compositional guideposts they can understand, store, and then use over and over in succeeding art projects" (p. 49). To facilitate recall of "guideposts," Wachowiak suggests the teacher use a questioning strategy during the assessment process. Questions might focus on line drawings, elements of design, and/or color harmony such as:

- Are the lines varied from thick to thin to create interesting linear movement and subtle space-in-depth?

- Do the lines drawn complete a shape instead of floating in space?
- Are the sizes and shapes of objects (people, buildings, cars, trees, and so on) varied? Do they produce interesting negative spaces?
- Is the color scheme limited (monochromatic) to achieve a chromatic unity? (p. 49)

These questions provide only for yes or no responses.

Disregarding the expressive effects of formal qualities, most questions are directed to the formal elements and principles of design. Application and reapplication of design formulae to art projects thwarts the student's ability to construct self-appraisals of the work.

Objective Assessment

Objective point systems. A recent National Art Education Association publication dealing with current issues in secondary art education includes an article addressing accountability in art education. The author, Henry (1990), states that "subjectivity is an integral and desirable quality of art that makes possible creative and divergent expression" (pp. 61-62). While purporting to evaluate the subjective nature of art through objective means, Henry suggests a plan for effective assessment that involves the teacher and student working jointly to assess progress. Henry provides an example of her assessment plan which assigns weight to five parts of an art-making project as follows:

- 70 points - completion of the project
- 10 points - composition and detail
- 10 points - use of tints and shades
- 5 points - craftsmanship
- 5 points - originality

The focus of the Henry (1990) system is heavily weighted on the formal qualities of the student artwork. Originality rates only 5 percent of the total grade. In addition, the specific requirements for earning the points are not indicated. Essentially, these outcomes involve application of formulae and rules as opposed to student understanding. In light of current research, it is questionable that assessment in art education should focus on such outcomes.

Objective questions. Wilson (1988) endorses another form of objective assessment which he claims gives an indication of a student's "cognitive orientation." Not unlike the Wachowiak (1985) method, Wilson employs recall-oriented tasks in the form of questions. According to Wilson, these questions give an "indication of students' cognitive orientation to different dimensions of programs in the arts," for example:

- This painting is an example of what style of art? (cubism, expressionism, surrealism, fauvism, etc.)
- Who was the composer of this piece of music?
- In what century was this play written? (p. 36)

Questions designed in this format do not afford the student an opportunity to engage cognitive facilities such as explaining and defending an answer. At most, the questions

gauge the factual information students know about visual art, music, or theater through a recall response.

Behavioral objectives and testing. Chapman (1978) states that tests can be used to assess the recall of factual material in a hypothetical situation (p. 399). Chapman also points to the common practice of assessing observable behaviors. While providing a sample of behavioral objectives in art, Chapman finds several reasons to discount this approach.

Because the objectives are phrased in terms of conditions, behavior, and criteria, there is a complete separation of means from ends. In other words, the evaluation process does not account for how students learn to achieve the objective. Behavioral objectives also assume that learning is a sequential accumulation of specified knowledge, skills, and attitudes. Unexpected insights are simply not counted as part of the learning process. There is little opportunity to account for different combinations of strengths in individuals. Finally, reasons for behavior are of little interest.

As currently used, behavioral objectives provide a record of different rates of achievement but not of different kinds of achievement. If we define a single set of objectives for a school or a grade or a class, we are saying that all students within that group will meet the objectives to some degree. Students who do not measure up are judged to be behind the group in their rate of development. There is no practical way of indicating the qualitative difference in those students' performances. (pp. 400-401)

Portfolio Assessment

According to Chapman (1978), portfolios of successful, unsuccessful, completed, or incomplete work can help students realize their accomplishments. Chapman suggests

keeping a record of three-dimensional work in the form of photographs. Color or black and white pictures can record student progress at handling three-dimensional materials. Diaries or visual notebooks can be used to record written or sketched information, that is, what students see, think, feel, and accomplish in art (p. 392).

Currently, there is a revival of the portfolio as an alternative to standardized tests. Research focusing on the use of a portfolio as a means of assessment has been spearheaded by Harvard Project Zero and Arts Propel. Student performance is monitored and assessed through documentation and feedback in the form of written notes, checklists, and revisions generated by the teacher and student. Students act as their own critics and take the responsibility of self-exploration through an autobiographical point of view. Students keep their series of sketches and paintings in a portfolio which makes public the autobiography of the learner (Wolf, 1991, p. 42). The portfolio serves as a longitudinal record, and it is a source of future inspirations (Wolf, 1989).

The renewed interest in portfolios has some promise as a medium through which a responsive interaction can occur between the teacher and student. Day (1974) finds that a "circuit of communication" between the teacher and the student ultimately provides a big payoff: "the formative role points to areas of needed remediation so that

immediately subsequent instruction and study can be made more pertinent and beneficial" (p. 5).

Wolf and Pistone (1991) discount the notion of assessing for higher-order thinking skills. They suggest that monitoring a student through the compilation of a portfolio equates with a measurement of what the student has learned (p. 53). However, the Arts Propel assessment criterion for measuring student understanding is based on the acquisition of art-making skills such as rendering recognizable imagery, using the elements and principles of design, and devising appropriate compositions (Hatch & Gardner, 1990; Wolf, 1991). Wolf and Pistone claim these methods of performance assessment answer the urgent need to look at the thinking process that occurs in the arts. This assertion raises an important question: do practiced rendering skills, and the ability to apply formulae (e.g., elements and principles of design) really demonstrate a student's ability to think and construct new understandings?

Performance-Based Assessment

Portfolio assessment now falls under the broader heading of performance assessment. Besides a physical portfolio, assessment based on performance includes many other dimensions. According to Stankiewicz (1991), performance-based assessments can look like instructional activities in which students participate throughout the

school year. Stankiewicz provides numerous examples of performance-based tasks:

exploring art concepts in depth through the studio process, developing portfolios, writing about one's own art or that of others, arguing aesthetic problems orally or in writing, preparing exhibitions, doing research into the historical or cultural context surrounding a work of art, interviewing people about their attitudes toward art, reporting the results of interviews with local artists--the list could continue. (p. 11)

Wilson (1992) directs teachers in implementing performance-based assessment by providing guidelines for the development of comprehensive tasks. These tasks allow students to demonstrate progress through: (a) the creation/performance of one of the arts; (b) understanding the relationship between the work that they create/perform and the works of artists; and (c) their ability to conduct critical analysis of their work and the work of others (p. 41). Following these guidelines, teachers within a district come to an agreement about the tasks that will be used in the assessment. Then students independently complete the designated series of tasks at the end of a grading term.

The Florida Institute for Art Education, sponsored by the Getty Center for Education in the Arts, has developed guidelines for performance-based assessment based on Wilson's prototype. The Comprehensive Holistic Assessment Task (CHAT) project encompasses an assessment strategy that supports instruction by engaging students in tasks that are important and meaningful. Co-director of The Florida

Institute for Art Education, Nancy Roucher states "We've seen tremendous results with DBAE [disciplined-based art education] changes in teaching, changes in students and teachers" (Staff, 1992, p. 4). While change can be an indicator that people have learned (Shuell, 1986), it is unclear how the CHAT pre-test and post-test assess change. What are the desired changes, and how do they account for learning? What is the learning theory guiding the CHAT project? As yet, these questions remain unanswered.

Why We Need Better Assessment

Art educators have a valid concern about how and what we are assessing about student learning in the art classroom. A call for assessment practices that focus on understanding was raised as far back as 1974, but little was done to remedy the situation. In a plea for emphasis on the cognitive domain, Strop (1974), points out that:

it is incongruous for us to expect to regard art as an area where students can "express" themselves and develop their "uniqueness" without at the same time being able to substantiate their experience as knowledge. . . . Now we are faced with the problem of making that involvement part of a total life experience which goes beyond the boundaries of "making things" and into the realm of "understanding things." (p. 21)

According to O'Neal (1992), the emphasis in current learning theory is on the importance of the learner's active role in the construction of knowledge, "constructivism holds the promise of deeper understanding and retention" (p. 4).

However, Shepard (1989) reminds us that "test developers use

multiple-choice formats to the exclusion of tasks where students would produce or explain a correct answer . . . Tests composed entirely of such items do not measure a respondent's ability to organize relevant information and present a coherent argument" (p. 5).

According to Efland, Koroscik, and Parsons (1991), "understanding is revealed in how one thinks about art and thinking is revealed in what students say and write" (pp. 1-2). However, few researchers in the field of art education have conducted studies that focus on understandings that can be revealed in writing samples. A likely reason is the scarcity of scoring procedures and/or techniques that can adequately distinguish between lower-order and higher-order understandings.

Writing-Based Assessment

Some art educators suggest that writing and speaking about art may be more important than skill development in the arts (Feldman, 1970, p. 204). Hurwitz and Day (1991) emphasize that writing about art is a natural way for students to relate language, art, and imagination. As writing is stressed in the curriculum, students should be encouraged to participate in the critical process of descriptive and interpretive writing about works of art (p. 494).

Wilson has been an advocate in the area of writing-based assessment in art education. Wilson (1988) suggests adopting assessment strategies for the arts through a version of an instrument he developed to measure aspective perception of paintings, based on his 1966 doctoral dissertation. Written statements are collected from students responding to the painting I and the Village, by Marc Chagall, 1911-1912. Using sentences as units of analysis, single words and phrases in students' written statements are classified according to a series of categories dealing with description, analysis, preference, and visual effects (pp. 39-41).

Wilson's (1988) revised set of classifications includes some useful categories that characterize levels of judgment. However, the majority of the categories in his content analysis system emphasize recall-oriented information (e.g., naming artist, the time and location in which the work was produced), and identification of elements and principles of design (e.g., color, shape line, texture, and synthetic composition). In addition, Wilson's instrument does not employ a method to distinguish an understanding from a misunderstanding, or a lower-order response from a higher-order response.

Most recently, Wilson (1992) has expanded his notion of assessment to include higher-order thinking. The CHAT system, authored by Wilson, includes performance-based

assessment of many tasks that involve writing about art (see pp. 13-15). Students might engage in writing activities such as discussing a painting like a critic, interpreting meanings, and/or making judgments about a work of art. Wilson suggests some tentative ideas for scoring the comprehensive tasks that involve a series of weighted classifications. Individual teachers and districts are also encouraged to develop their own assessment criterion based on what they consider to be of "high value."

As yet, performance-based assessment does not focus on the learner's application of strategies to acquire new knowledge or use existing knowledge. In addition, the performance-based assessment does not make discriminations between lower-order understandings, higher-order understandings, and misunderstandings.

This study was motivated by the Koroscik, Short, Stavropoulos, & Fortin (1992) investigation of the inter-relationship between context, verbal cues, and art understandings (see Appendix A for publication). Koroscik et al. call for researchers to "provide teachers with valid diagnostic tools to assess the scope of a student's existing knowledge base" (p. 164). To assess the knowledge base, an assessment instrument is needed that can account for the knowledge, skill, and experience students bring to learning situations. Koroscik et al. assert that "researchers must also develop methods for assessing a student's ability to

employ knowledge-seeking strategies at appropriate times" (p. 164). Knowledge-seeking strategies assist the learner in constructing new understandings from his/her existing knowledge base. According to Koroscik (in press), a learner must employ both the knowledge base and knowledge-seeking strategies for transfer to occur. Depending on the type of interplay between these two facets of cognition, transfer can result in lower-order understandings, higher-order understandings, or misunderstandings.

CHAPTER II

REVIEW OF LITERATURE

The Koroscik et al. (1992) study found that components of students' knowledge base and knowledge-seeking strategies can be reflected in written statements about works of art. The purpose of this review of literature is to focus on the interaction between the knowledge base and knowledge-seeking strategies employed in the process of transfer. Building upon this theoretical framework and related research, the following criteria will guide the development of categories for an assessment instrument:

1. Categories within the assessment instrument should be representative of the student's application of the knowledge base through the process of transfer.
2. Categories within the assessment instrument should encompass terminology reflective of the field of art education and be responsive to the educator with a background in the visual arts.
3. Categories within the assessment instrument should be representative of the student's application of knowledge-seeking strategies through the process of transfer.
4. Categories within the assessment instrument should make discriminations between lower-order understandings, higher-order understandings, and misunderstandings.

An oil painting entitled, The Birthday (see Plate I), painted between the years 1915 and 1923 by artist Marc

Chagall, was the primary focus of the Koroscik et al. (1992) research. Numerous criteria directed the selection of The Birthday in that study, e.g., it is highly representative of the artist's style, there is a sizable body of literature available on the work, it represents a moderate level of abstraction, and it has a theme to which many can relate (p. 156). The Birthday will be used throughout this review of literature as a convenient way of providing illustrations of knowledge base and knowledge-seeking strategies.

The Learner's Knowledge Base

The sum total of what an individual knows is referred to as prior knowledge in the learning literature (Alexander, Shallert, & Hare, 1991). The importance of prior knowledge has been examined in such fields as computer programming (Linn, 1985), mathematics (Schoenfeld, 1985), medicine (Lesgold, Robinson, Feltovich, Glaser, Klopfer, & Wang, 1988), art education (Koroscik, 1982), and reading comprehension (Alvermann, Smith, & Readence, 1985; Wilson & Anderson, 1986).

Prior knowledge has two facets: knowledge base and knowledge-seeking strategies. In accounting for learning outcomes through transfer, Koroscik (1990b) has proposed a theoretical framework highlighting the learner's knowledge base and choice of knowledge-seeking strategies (see Figure 1).

Figure 1. Koroscik's Model of Art Learning.

Koroscik (in press) defines the knowledge base as "the accumulated knowledge, skill, and experience a student currently possesses, including what the learner already knows about the material being studied." Koroscik defines knowledge-seeking strategies as "the cognitive steps a student takes to construct new understandings and to apply previously acquired knowledge, skill, and experience." According to Koroscik, "transfer is defined as engaging both facets of learning."

Emphasizing the learner's active role in this construction of knowledge, Koroscik's model of art learning (Figure 1) differentiates knowledge base from strategies students use to acquire new knowledge and make use of existing knowledge. The learner can access relevant prior knowledge or irrelevant prior knowledge from the knowledge base. Additionally, the strategies students employ in accessing knowledge in their possession range in effectiveness. Based on the interplay of the knowledge base and knowledge-seeking strategies, four conceivable learning outcomes can be isolated:

1. The learner does not possess adequate prior knowledge nor are effective knowledge-seeking strategies employed.
2. The learner possesses relevant prior knowledge but employs ineffective knowledge-seeking strategies.
3. The learner uses effective knowledge-seeking strategies but does not possess adequate prior knowledge.
4. The learner possesses relevant prior knowledge and

uses effective knowledge-seeking strategies.
(Koroscik, in press)

This learning perspective provides a foundation for developing a more comprehensive approach for assessing student understandings of artworks. An evaluative account of these outcomes can distinguish less successful learners from more successful ones (Koroscik, 1982, 1990a, 1990b).

The Function of Prior Knowledge

For meaningful learning to occur, new knowledge must be connected to prior knowledge (Vosniadou & Brewer, 1987; Prawat, 1989). Often students have difficulty accessing, or fail to transfer, their existing knowledge (Alvermann, Smith, & Readence, 1985; Bransford, J., Sherwood, R., Vye, N., & Rieser, J., 1986). The extent to which learners can activate and transfer prior knowledge influences the degree to which new information and ideas are comprehended (Dooling & Lachman, 1971; Bransford & Johnson, 1972). In support of this view, Vosniadou and Brewer (1987) state, "the acquisition of new knowledge from experience makes little sense without assuming some prior knowledge within which the new experience is interpreted; otherwise the new experience will be unintelligible" (pp. 51-52). Encounters with visual art are interpreted through a student's existing knowledge of art. For example, students would need to know something about Marc Chagall before they could understand Chagall's influences on the French poet Paul Eluard (Crespelle, 1970),

the Russian printmaker El Lissitzky (Bolliger, 1957; Jager, 1970; Alexander, 1978; Compton, 1985), and/or the Canadian choreographer Ginette Laurin, (Pontbriand, c. 1990).

Formal and Informal Knowledge

Confrontations with works of art have the potential to stimulate many sorts of knowledge within the knowledge base. The degree to which general or art-specific prior knowledge is activated determines understanding (Koroscik, 1982).

A student can accumulate general knowledge that is related to art from everyday experience, i.e., informal knowledge (Prawat, 1989). It is possible to rely on informal knowledge to identify subject matter in The Birthday. For example, a student might cite the table in a home where enjoyable meals are served each day.

Prior knowledge specific to art might encompass viewing and art-making experiences that can be gained as a result of formal education. A student can also accumulate a knowledge base as a consequence of formal education, i.e., instructed or formal knowledge (Prawat, 1989). For instance, the art teacher could instruct students that the interior space of The Birthday includes a bed. While students possess informal descriptive knowledge regarding beds, a bed cannot easily be identified in The Birthday. The bed is cut off at the right of the composition, slightly tilted in perspective, and covered with scarves and what may

be a pillow. As such, identification of the bed is difficult. Without instructed knowledge of the subject matter, the student might miss noting details that suggest the interior space is actually Chagall's living quarters.

Informal and instructed knowledge can co-exist in the student's knowledge base. For example, a student might draw upon informal knowledge of a birthday cake after the teacher has provided instructed knowledge of the birthday cake.

A question explored in this study is what aspects of the knowledge base should be the focus of an assessment instrument? In terms of evaluation, this is an important question because there are direct relationships between content taught in the classroom, learning outcomes or understandings that result, and existing assessment tools (Hamblen, 1988). If an assessment instrument is to measure outcomes that are reflective of student understandings, its dimensions should be representative of content that can bring about those understandings. However, there is still much debate over what constitutes valid content in the classroom, and what learning outcomes are considered desirable.

Dimensions of Art Understanding

While terminology may vary somewhat, in analyzing works of art, art educators often use language that can be characterized as follows:

- formal - elements or principles of design, media, technique
- descriptive - objects, subject matter
- interpretive - meaning, emotion, feeling, expression
- historical - names, dates, information regarding the artist, and the artist's background

Recent college texts for the teaching of methods to prospective art teachers align curricular objectives in responding to works of art along formal, descriptive, interpretive, and historical dimensions of art understanding (Barnes, 1989; Herberholz & Hanson, 1990; Herberholz & Herberholz, 1990; Linderman, 1990; Hurwitz & Day, 1991). Art education textbook series, teacher guides, and curricula at the primary, elementary, and high school levels incorporate formal, descriptive, interpretive, and historical dimensions of art understanding in suggested classroom lessons and topics of study (Hubbard & Rouse, 1981; Brommer, 1982; Fichner-Rathus, 1986; Mittler, 1986; Chapman, 1987; Hubbard, 1987). Even the National Teacher Examination (NTE) speciality area in art education and NTE core battery tests on general knowledge contain standardized assessment of formal, descriptive, interpretive, and historical dimensions of the prospective teacher's knowledge base (NTE, 1987; DeMauro, 1989).

Current theories in art education incorporate perspectives based on formal, descriptive, interpretive, and historical foundations (Clark, Day, & Greer, 1987; Smith,

1989; Efland, 1990; Hurwitz & Day, 1991). Cognitive theorists and researchers in the field of art education use similar distinctions to describe responses to work of art (Koroscik, 1982, 1984, 1988, 1990a, 1990b; Parsons, 1987; Koroscik, Osman, & DeSouza, 1988; Efland, 1990; Koroscik et al., 1992). The underlying assumption is that each dimension of art facilitates art understanding in particular ways. Therefore, a potential assessment instrument for art education might reflect the degree to which formal, descriptive, interpretive, and historical concepts and strategies are contained within the student's knowledge base.

Knowledge-Seeking Strategies

According to Prawat (1989), strategy refers to a spectrum of methods that assist knowledge acquisition and utilization (p. 2). According to Alexander, Schallert, & Hare (1991), "the learner builds a meaningful framework from existing knowledge that will facilitate the interchange between what is already known and what is to be understood" (p. 331). An instrument that assesses art understandings should be representative of the student's application of knowledge-seeking strategies through the process of transfer. Koroscik (in press) defines knowledge-seeking strategies employed in art learning situations as "the cognitive steps a student takes to construct new

understandings and to apply previously acquired knowledge, skill, and experience." Efland (1990) contends that assessment of art understandings should focus on strategies used to organize knowledge.

As students construct new understandings, it is important that knowledge-seeking strategies are adopted to make efficient use of the knowledge base. However, relevant knowledge that could prove useful in learning situations often remains inactive (Bransford, Sherwood, Vye, & Rieser, 1986; Schoenfeld, 1985). Failure to access relevant knowledge might be due to gaps in the learner's knowledge of certain routines, processes, and strategies. According to Koroscik et al. (1992), "if a student chooses a search strategy that is inappropriate, there is little chance relevant knowledge will be transferred even if the student possesses it. And if effective search strategies are employed but the student's knowledge base is lacking, understanding will be impaired or misguided" (p. 164).

Efland (1990) states, "the naive learner may have knowledge but not know how to apply it to new situations" (p. 52). More experienced art viewers "need to acquire procedures for using what they already know in order to identify what they don't know, thus organizing the search for new information" (Koroscik, 1988, p. 11).

The concerns identified by Koroscik (1988) and Efland (1990) indicate a need for assessment tools that

differentiate between the types of prior knowledge that are brought to bear on understanding a work of art. A model of learning and assessment should also include an inventory of learning strategies and outcomes. This approach is superior to classical models that tend to only focus on the student's knowledge base (Efland, 1990). What follows is a discussion of how knowledge-seeking strategies might be incorporated in an assessment instrument.

Transfer

Transfer is the result of employing knowledge-seeking strategies to make connections between the characteristics of the artworks and the student's accumulated knowledge or knowledge base (Koroscik et al., 1992, Koroscik, in press). The connections a student may make might be referred to as "building bridges" (Nickerson, 1985). The "bridges" students build when viewing works of art can determine whether they arrive at lower-order understandings, higher-order understandings, and/or misunderstandings. According to Parsons (1990), a student may make connections

between the various aspects of the work itself (internal connections), and of any of those with the artist, with the history and culture within which the work was created, and/or the present art world and social setting in which it is viewed, including the emotional and intellectual state of the viewer. (p. 42)

Both instructed knowledge of formal, descriptive, interpretive, and/or historical dimensions of art; and/or informal knowledge can be involved in transfer. Just as

prior knowledge (both formal and informal) are unique to individuals, so too are the connections one brings to a work of art.

According to Prawat (1989), "the breadth and depth of a concept's connectedness--that is, how many other ideas it is connected to--is a good measure not only of its meaningfulness but also of its potential contribution to the coherence of a cognitive structure" (p. 8). Therefore, the organization of connections between the learner's knowledge base and the characteristics of the work of art can range from simple to more complex in structure.

Efland (1990) suggests that deeper understandings are evidenced when concepts are integrated, (e.g., concepts acquired in the studio surface in critical and/or historical discussions about works of art). The literature on the phenomenon of transfer supports the view that deeper understandings happen when previously synthesized material from one learning situation aids in the successful understanding of another.

Low Road Transfer and Lower-Order Understandings

Perkins and Salomon (1987), characterize the most common form of transfer as low road transfer. The process of low-road transfer can involve lower-order knowledge-seeking strategies such as application of familiar vocabulary, recall of facts, correct description of

instances, and/or memorization. These knowledge-seeking strategies tend to occur as the automatic consequence of varied practice and are familiar operations performed intuitively and automatically (Perkins & Salomon, 1987; Salomon & Perkins, 1989).

For example, The Birthday depicts an interior space. This deduction might be based on the identification of furnishings such as a table, floor, and walls. Since the idea of these items within an interior space is not new, the need to think deeply about this aspect of the work is lessened. Understanding the concept of interior space represented in The Birthday, through low road transfer, requires almost automatic recall-oriented associations rather than reflective thinking.

High Road Transfer and Higher-Order Understanding

High road transfer is defined by Perkins and Salomon as "deliberate mindful efforts to represent principles at a high level of generality, so that they subsume a wide range of cases" (p. 288). High-road transfer is a controlled and non-automated process which demands greater mental effort (Perkins & Salomon, 1987; Salomon, 1983; Salomon and Perkins, 1989). According to Salomon and Perkins (1989), when mindful processes are evoked, an obvious response might be withheld in favor of a closer examination of the underlying meaning. Looking closer at the problem

facilitates alternative strategies, choices, and connections, which lead to construction of new structures of understanding. Perkins and Salomon (1987) claim that high road transfer is brought about by an ability to abstract and apply principles under proper conditions (pp. 290-291).

The relationship of levitation to the notion of love is cited frequently in the historical literature on The Birthday. The sensation brought about by love does not literally cause lovers to defy the laws of gravity and hover above the ground. It is an abstraction to reference the principle of gravity from the context of science and apply it to the context of The Birthday. For high-road transfer to occur, a richer set of connections must be made as in the following example:

The lighthearted, weightless sensation of love is symbolized by the two floating figures.

As illustrated, the process of high-road transfer involves the construction of meaning through a meshing of concepts. Meshing of concepts requires more than simply identifying that the couple in The Birthday are kissing. Constructing meaning in high-road transfer is a higher-order skill which promises deeper understandings and greater retention (Perkins & Salomon, 1987; Salomon & Perkins, 1989; Efland, 1990; O'Neal, 1992).

Understandings may therefore be said to vary in degrees of cognitive complexity (Nickerson, 1985; Parsons, 1987,

1990; Efland, 1990). According to Nickerson, "the richer the conceptual context in which one can imbed a new fact, the more one can be said to understand the fact" (p. 235-236).

Misunderstandings

Misunderstandings about works of art can impede meaningful learning (Efland, 1990; Koroscik, 1990a; Parsons, 1990; Efland, Koroscik, & Parsons 1991). According to Feltovich, Spiro, and Coulson (1988), some misunderstandings are more entrenched than others. An assessment instrument should be able to distinguish misunderstandings a student brings to potential learning situations in art. To assess misunderstandings, a knowledge of the kinds of mistakes students make and their causes is required (Thyne, 1954; Perkins & Simmons, 1988).

One reason students do not fully understand works of art is because prior knowledge and/or the employment of a particular knowledge-seeking strategy prevents learning. When one learning encounter impairs another, negative transfer has occurred (Perkins and Salomon, 1987, p. 287). Some misunderstandings are equivalent to negative transfer. For example, prior knowledge in reference to Marc and Bella Chagall's married life could inhibit an understanding of The Birthday. In this instance, a student might mistake the flowers Bella holds in her hand for a bridal bouquet. Based

on this finding, the student might interpret the painting as a commemoration of Marc and Bella's wedding day. Actually, Bella brought the flowers to decorate Marc's apartment for his birthday celebration before the couple was married.

Another reason students do not fully understand works of art is because they do not have an adequate knowledge base and/or their knowledge-seeking strategies are limited. In this case, terms like misunderstandings can be misleading because there is the implication an error has been made "when the only error might be a limited frame of reference beyond which the student has no experience" (Confrey, 1987, p. 97). Supporting this stance, Parsons (1990) states "a child's present conceptions represent not a false, but a partial and incomplete understanding" (p. 41). What young child would not understand the birthday celebration depicted in The Birthday? However, a young child would not be expected to understand the metaphysical connotations attached to the imagery of Marc Chagall. While a young child may relate to the imagery, he/she may actually have an incomplete understanding of Chagall's paintings.

Multiple Interpretations

People generate many different interpretations of a work of art. If we are to assess a person's understanding of a work of art, we must first determine, at least to some extent, what understandings are desirable. According to

Parsons (1990), desirable understandings are more easily identified in math and science because "a mis-conception contrasts naturally with a correct conception. It is much clearer in math and science which are the correct conceptions" (p. 40). Parsons (1990) calls for a middle ground: "it can be agreed perhaps that there is less certainty to interpretation in the arts than in math and science, and still hold that one can reasonably say that some interpretations are better than others" (p. 40). The field of medicine can lend a clue to this dilemma.

In medicine, assessment of a patient's symptoms and treatment plans are sequential diagnostic processes. Once a patient's symptoms have been assessed, the doctor arrives at a diagnosis, and the treatment plan is elected (Miller & Keane, 1972). For instance, multiple treatment plans exist for migraine headache sufferers. The treatment of choice may have as much to do with the particular doctor, his or her training, experience, and philosophies, as it does with the patient. For instance, after ruling out the presence of a brain tumor or other such brain disorders, one general practitioner might prescribe narcotic pain medication to ease a migraine, while another might prescribe a high dose of aspirin. A university physician, because of campus drug problems, might be cautious about prescribing strong drugs for headaches. As an alternative, exercise and over-the-counter medications such as Tylenol, may be recommended.

One neurologist might suggest bio-feedback while another may suggest a change in diet. A doctor of holistic medicine might suggest a stress management program, while still another might prescribe allergy tests or an optometry exam.

Hypothetically speaking, all of these treatment plans would seem to be legitimate and logical courses of action, even though they drastically differ. In the same vein, interpretations of art may vary, but still be legitimate and logical. For example, one critic may view a photograph by Mapplethorpe through the lens of technique and conclude that Mapplethorpe possesses notable mastery skills in photography. While another critic may view the same work through a descriptive lens and determine that the artist uses subject matter that some would consider offensive.

Parsons (1990) states a key question in this debate: "by whose standards are some interpretations to be judged less acceptable?" (p. 40). The answer to Parsons' question is suggested through the previous medical example. Like doctors, students come to art learning situations equipped with differing backgrounds, experiences, and understandings. Naturally, students will understand works of art differently. To gauge the scope of the extensiveness of students' prior knowledge, learning outcomes in relation to art must be looked at with some flexibility.

Learning Outcomes

Efland (1990) points out that classical approaches to assessment in art education tend to focus on lower-order outcomes involving recall of vocabulary, definitions, and facts. Knowing to recall, define, and use specific vocabulary are knowledge-seeking strategies that can result in lower-order outcomes. The following framework has been constructed to assess degrees of understanding in relation to formal, descriptive, interpretive, and historical dimensions of art. Each dimension of the learner's knowledge base will be illustrated in the sections that follow.

Formal Dimensions of the Learner's Knowledge Base

Formal qualities of artworks can be identified and discussed in reference to all periods and movements in the history of art. Barrett (1990) describes form as an artwork's structure, arrangement, and organization of the composition, construction, and elements and principles of design (p. 24). Barrett's description of medium: the material from which the art object is made (p. 26), is also related to the formal dimensions.

In comparing The Birthday to a preparatory sketch, Compton (1985) discusses formal qualities:

Whereas the drawing establishes the magical relationship of the hovering figures and indicates the detailed elements of the still-life on the table, the role of the table itself has become less important in

the oil. For instead of being based purely on a triangle, the final composition depends on the balancing of the diagonals on the left by additions on the right, where the bed and shawl above it have been added. Likewise, the area above the table has been enlivened by a window. (p. 191)

Compton has identified the media employed by Chagall as oil paint. It is important for any art historian to identify media for the reader. However, if a student identifies the oil painting media based on recall of a teacher's lecture, this would be evidence of a low-road transfer. Knowledge-seeking strategies did not access reasons or explanations to support the finding.

If a student simply identified The Birthday as a painting, this would be considered a low-road transfer resulting in lower-order understanding. Simply naming a medium requires shallow knowledge-seeking strategies as there are numerous formal qualities a student could note, as follows:

- compressed space
- strong diagonals
- multiple points of view
- defiance of normal proportion
- asymmetrical balance
- saturated hues

Knowledge that The Birthday is a painting is obvious and it is based on the practice of looking at other paintings.

When knowledge is the consequence of varied practice, (e.g., a great deal of experience looking at paintings) low-road transfer has occurred (Salomon & Perkins, 1989).

Compton's (1985) discussion of compositional devices employed by Chagall reflects a higher-order understanding. This analysis of the underlying structure of The Birthday is mastered by looking closely at balanced diagonals defined by different images in the work. A student might arrive at a higher-order understanding of The Birthday by looking closely at its formal qualities. For example, a student might respond as follows:

Red/orange draws attention to the floor area, while the color black is important in shading and defining images in the work.

In this example, the student has employed knowledge-seeking strategies to access relevant prior knowledge of the effects and functions of color. The student has then applied this knowledge to The Birthday. The student is able to describe the impact of the color in The Birthday and its tendency to draw the viewer's attention. The student has also determined that the use of black functions in modeling images in the work. This is high-road transfer because the student expended "greater mental effort" in performing an analysis of the formal qualities in The Birthday based on the effects and function of the color. This analysis was facilitated by a "closer examination" of the underlying effects of the elements of design (Perkins & Salomon, 1987; Salomon, 1983; Salomon and Perkins, 1989).

A close examination of the work does not guarantee a high-road transfer, however, as evidenced in the

misunderstanding revealed in this student's statement about The Birthday:

The colors Chagall selected to paint The Birthday represent the primary color scheme.

While there may be subtle traces of shades, tints or tones of primary colors, the overall color scheme of The Birthday is not based on this triadic group of colors. No particular color scheme can be discerned in The Birthday, only a brilliant vermillion dominates within a polychromatic family of colors. In this example, meaningful learning is impeded because the student has inaccurate knowledge of what constitutes a primary color scheme.

To assess levels of understanding, instruments need to focus on the formal dimensions of the learner's knowledge base. The learner's formal knowledge base might be verified in statements regarding the elements of art, organizational principles of design, surface characteristics, compositional devices, abstract, real and non-objective qualities, technique, and materials.

Descriptive Dimensions of the Learner's Knowledge Base

In Compton's (1985) formal analysis of the composition of The Birthday, she also identifies figures, a still-life, table, bed, shawl, and window within the interior space. According to Barrett (1990), "descriptive statements are verifiable by observation and an appeal to factual evidence" (p. 12). Barrett explains that critics can obtain

descriptive evidence by looking directly at what is seen in the work, that is, internal description. Barrett goes on to explain that "describing is a logical place to start when viewing an exhibition or a particular photograph because it is a means of gathering basic information upon which understanding is built" (pp. 12-13). Compton's use of description is generally confined to subject matter. However, Barrett states, "descriptive statements about subject matter identify and typify persons, objects, places, or events in a photograph. When describing subject matter, critics name what they see and also characterize it" (p. 17). Following is another historian's descriptive characterization:

Chagall rented a room from a policeman, and that is what we see, faithfully reproduced: Bella's scarves hung up on the wall, the Ilitch church through the window (it also figured in Over Vitebsk), the fortochka, a small opening in the top of the window that is a typical feature of Russian houses, even the birthday cake on the table. (Makarius, 1988, p. 74)

A student may also describe subject matter of The Birthday as follows:

This is a picture of a man and a woman in a room kissing.

In this description, the student identifies subject matter in the painting, including a man, woman, and room. The student has also mentioned the action of kissing. Describing familiar images and actions requires a shallow, recall-oriented knowledge-seeking strategy. This is an

example of low-road transfer because the knowledge-seeking strategy employed by the student does not lead to the construction of new structures of understanding.

In the statement that follows, the student has also identified the subject matter and the act of kissing:

There is a woman kissing a man who is suspended above her. She is also hovering above the ground. Perhaps it was the kiss that caused the couple to float.

Yet in this statement the student has searched for additional descriptive information. The search has prompted the student to provide a reason why the figures are shown floating. This statement is an example of high-road transfer because the student has made a controlled mental effort to explain the floating figures. The resulting higher-order understanding is supported by the scholarly literature on The Birthday which describes the painting in much the same way.

Sometimes students make statements that are clearly contradictory to scholarly interpretations such as:

It appears the woman is kissing a ghost since he is floating in the air.

The student uses descriptive language in identifying the male figure in The Birthday as a ghost. Actually, Marc Chagall is portrayed as a man, not a ghost. The statement reveals a misunderstanding based on the subject matter. In this case, informal knowledge that ghosts float has impaired potential learning. Perkins and Salomon (1987) might say

this as an instance of negative transfer. The student employed knowledge-seeking strategies that caused irrelevant information to be applied from his or her knowledge base.

Interpretive Dimensions of the Learner's Knowledge Base

According to Barrett (1990), "interpretation occurs whenever attention and discussion move beyond offering information to matters of meaning" (p. 34). There is fairly consistent agreement across the art history literature as to meanings of The Birthday. Note the interpretive similarities in the following statements spanning 39 years:

In 1915 he [Chagall] had painted the first of what was to become a long series of paintings of lovers, each celebrating an anniversary of his marriage with Bella, her birthday, or his or their daughter, Ida's. (Sweeney, 1946, pp. 36-37)

Love as romantic transcendence is most popularly expressed in the work of Marc Chagall (born 1887), as in The Birthday, which is so much in the spirit of our notions of perpetual courtship: the exchange of gifts on anniversaries; the perpetuation of courtesies and gallantries practiced before marriage. The charm and popularity of Chagall are in good measure traceable to our belief that the substance of love consists of just such rituals as the one celebrated in The Birthday. (Feldman, 1967, p. 24)

. . . this celebration by the lovers is equally fantastic, for their joy has levitated them from the ground. (Compton, 1985, p. 15)

The Birthday celebrates Chagall's reunion with Bella, whom he married in Vitebsk on 25 July 1915. It is the first of the famous motif of lovers floating in the air - to which Chagall would return again and again. This highly improbable stance adopted by the figures illustrates, both literally and metaphorically, the transports of love, but the interior is teeming with realistic detail. (Makarius, 1988, p. 74)

Each statement suggests The Birthday is about the ritual of a birthday. Each statement interprets the subjects as lovers. Since the theme of couples is easy for young people to relate to, it would not be unusual for a student to arrive at an accurate interpretation of The Birthday as follows:

The couple shown kissing in the picture are truly head over heels in love . . . floating on air.

The student has closely examined of the physical positioning of the figures in The Birthday. This knowledge-seeking strategy has facilitated access to relevant prior knowledge. First, the man and the woman are kissing and the student knows to classify them as a couple. Second, the student determines the couple must be in love because they are represented as floating in air. Finally, the student associates the couple's incredible stance as reflecting two people that are "head over heels in love." High-road transfer is reflected in this statement because the student has constructed several new structures of understanding about the painting.

Sometimes ideas are not interrelated and result in lower-order understanding of The Birthday as follows:

The painting transmits a joyous, happy mood.

In this case, the student uses obvious adjectives to refer to the work of art. While the painting does transmit a joyous and happy mood, the student has not given any reasons

to support that interpretation. This statement is an example of low-road transfer because a quick summation about mood is usually arrived at "intuitively and automatically" (Perkins & Salomon, 1987).

When a student attempts to interpret meanings of The Birthday, it is possible to form a misunderstanding of the work as follows:

The work has a violent theme, a young couple in troubled times do not know how to release their aggression, so they take it out on each other.

The student has employed appropriate and useful knowledge-seeking strategies, however, the interpretation of a "violent theme" is diametrically opposed to the prevalent interpretation of the painting. The student has misinterpreted the painting by drawing upon incongruent information from his or her knowledge base. Perkins and Salomon (1987) might call this a negative transfer.

Historical Dimensions of the Learner's Knowledge Base

Historical knowledge might include factual information such as the name of the artist; personal data, such as age, sex, race; title and/or date of the work; historical period/movement; information regarding where the artist lived and worked. Many sources on Chagall verify factual information of that nature (Arnason, 1976; de la Croix & Tansey, 1980; Compton, 1985). It is necessary for historians to provide dates, titles, and information about

artists, and these facts can also be useful in the classroom. However, when a student merely recites historical facts about a work of art, a lower-order understanding is the result. In responding to The Birthday, a student may recall factual information as follows:

The painting is called The Birthday. It was painted by the artist Marc Chagall in 1915-1923.

The student has given the title of the work of art, the artist name, and the date the work was created. Yet the student has not used this factual information to learn anything new - even though the title gives a strong clue as to meanings of the work. Ineffective knowledge-seeking strategies used to access memorized information from the knowledge base prevented the construction of new structures of understanding in this example.

However, facts in the learner's knowledge base can be useful in the construction of new understandings, as shown in the following example:

The woman in The Birthday looks a lot like the woman depicted in a portrait called Bella with a White Collar, also by Marc Chagall. Chagall used the same woman as a model for other paintings. Bella is probably his wife.

In this example, the student has employed knowledge-seeking strategies to access relevant factual knowledge about another work by Chagall. Art historians explain that Chagall is well known for the series of paintings depicting his love for his wife, Bella. The student has expended

"greater mental effort" to recall another one of these works by name. This is an example of high-road transfer because the "closer examination" resulted in construction of new structures of understanding. The comparison of the two works stimulated the student to correctly hypothesize an underlying theme present in many of Chagall's artworks.

Using knowledge-seeking strategies to access information regarding other works of art does not guarantee a higher-order understanding of The Birthday as shown in the following example:

Salvador Dali, the surrealist, has done many paintings that show human figures and other objects suspended in space: The Madonna of Port Lligat, The Disintegration of the Persistence of Memory, and The Sacrament of the Last Supper, to name a few. Since figures are suspended above the ground in The Birthday, this work by Chagall must be an example of Surrealism.

While mental energy is expended in making an interesting association between Dali and Chagall, the final conclusion reached in this example is a reflection of a misunderstanding. This misunderstanding might be due to a limited frame of reference (Confrey, 1987, p. 97). The Surrealists concern with the "omnipotence of the unconscious mind" (Preble & Preble, 1985) was not considered in the statement. While aspects of Chagall's work are irrational, the unconscious is not a characteristic associated with The Birthday. Thus, the original misunderstanding has been compounded because of the attempt to compartmentalize the

work of Chagall into one particular movement or style (Feltovich et al., 1988; Perkins & Simmons, 1988).

When students learn about the history of art, they commonly associate artists with a particular period, movement, or style. There is not always consistent agreement in the art history literature on the stylistic categorization of Chagall's paintings. For example, in specifying stylistic influences on Chagall's work, Arnason (1976) discusses Chagall as follows:

From his background he acquired a wonderful repertoire of Russian-Jewish folk tales and a deep and sentimental attachment to the Jewish religion and traditions. There was also inbred in him a fairytale sense of fantasy. Out of these elements emerged his personal and poetic painting. . . . In Paris, Chagall entered the orbit of Apollinaire and the leaders of the new Cubism, as well as that of Modigliani, Soutine, and Jules Pascin. Chagall's Russian paintings had largely been intimate genre scenes, often brightened by elements of Russian or Jewish folklore. Bakst's school caused him to make bold efforts using fauve colors and constricted space. His intoxication with Paris opened a floodgate of experiments in fauve color and cubist space, and above all of subjects filled with lyric fantasy. Within two years of his arrival, Chagall was producing mature and weirdly poetic paintings. (p. 282)

The literature offers several viewpoints as to the historical period in which Chagall's work best fits. According to de la Croix and Tansey (1980), Chagall "accepted many aspects of the most sophisticated theories and practices of the times - Expressionism, Cubism, Fauvist color" (p. 832).

Purpose of the Study

The quality of assessment instruments used in education is critical because researchers and evaluators come to conclusions and base important decisions on the results produced by such instruments (Fraenkel & Wallen, 1990, p. 126). The purpose of this study is to develop an assessment instrument for art education which is grounded in current conceptions of learning. Categories within the assessment instrument will: (a) represent students' knowledge base and knowledge-seeking strategies, and the process of transfer; (b) encompass terminology reflective of the field of art education; (c) be responsive to the educator with a background in the arts; and (d) be diagnostic in discriminating among lower-order understandings, higher-order understandings, and misunderstandings. The quality of the assessment instrument will be established through several validity and reliability studies.

CHAPTER III

METHODOLOGY

This chapter outlines methodologies employed to develop the diagnostic assessment profile. Triangulation was used to maximize instrument quality. According to Denzin (1978) methodological triangulation can involve both qualitative and quantitative approaches in studying a problem. The qualitative component follows Guba's (1978) naturalistic inquiry method. The quantitative component encompasses traditional test and measurement procedures to determine validity and reliability of the diagnostic categories.

Instrument Development

The development of this instrument builds on the Koroscik et al. research (see Appendix A), hereafter referred to as the Chagall Study. The Chagall Study generated written qualitative data that guided category development for the diagnostic assessment profile. This section will focus on two areas: (a) data collection and analysis methods used in the Chagall Study; and (b) development of diagnostic categories representing learning outcomes from the Chagall data.

Summary of Chagall Study Methods

The purpose of the Chagall Study was two-fold: (a) to determine the effects of a comparative art context on student understanding of a work of art, and (b) to determine the effects of verbal cues that explicitly reveal relationships among artworks within a comparative context.

Undergraduate students enrolled in an introductory contemporary arts course volunteered to participate in the Chagall Study (N = 120). These students were presented an artwork within one of three comparative art context conditions: an interdisciplinary context, a same-artist context, and a same-theme context. The Birthday (1915-1923) by Marc Chagall, was shown in each context condition and is therefore referred to as the key artwork. Students were randomly assigned to verbal-cued and non-cued conditions within each comparative context.

In the interdisciplinary context, The Birthday was shown together with works of art in different media that were inspired by Chagall's body of work. This included a 6.5 minute video tape excerpt of a modern dance performance, a poetic verse consisting of 14 lines, and a reproduction of a lithograph print:

- Chagall, a dance choreography by Ginette Laurin, 1988.
- To Marc Chagall, a poem by Paul Eluard, 1911-1915.
- And Came the Dog and Ate the Cat, a lithograph by El Lissitzky, 1919.

The same-artist context was composed of three other paintings by Marc Chagall. All the works were produced by Chagall within four years of one another:

- The Holy Coachman, a painting by Marc Chagall, 1911-1912.
- I and the Village, a painting by Marc Chagall, 1911-1912.
- The Fiddler, a painting by Marc Chagall, 1912-1913.

The same-theme context included paintings with subject matter that depicts relationships between men and women:

- Jawlensky and Werefkin in a Meadow, a painting by Gabriele Muntz, 1908-1909.
- Untitled #2, a painting by Richard Lindner, 1962.
- The Dance of Life, a painting by Edvard Munch, 1899-1900.

All students responded in a two-part written assessment task. In the first task, students recorded their observations of the artworks without explicit prompting in an open-ended manner. The second task provided another chance to make written observations. It occurred after selected students were cued about the nature of relationships among works of art within a particular comparative context.

An analysis was then performed on the written data. This involved identification of formal, descriptive, and/or interpretive dimensions of art from the written statements. For example, the statements "realistic colors" and "abstract work" were categorized as formal dimensions because they referred to elements of art and artistic styles. The

statements "a man and a woman" and "faces, animals, people" were categorized as descriptive dimensions because they referred to the artworks' subject matter. The statements "gives an enchanting feeling" and "calm, romantic, peaceful" were categorized as interpretive dimensions because they referred to the artworks' expressive qualities.

This data analysis method was sufficient to answer research questions posed by the Chagall Study. Results suggest meaningful connections can be facilitated by presenting artworks within comparative contexts containing themes familiar to students; and as expected, the verbal cues prompted understanding. This study also provided evidence on the independent functioning of student's knowledge base and his or her employment of knowledge-seeking strategies (Koroscik, in press). The implications of these findings are that a diagnostic assessment of art learning must encompass both facets of learning. It seemed most appropriate, therefore, to use data from the Chagall Study as a springboard for developing diagnostic categories for the assessment instrument.

Development of Categories

Further analysis of the data from the Chagall Study revealed a continuum of learning outcomes in the formal, descriptive, and interpretive dimensions. An historical dimension of understanding was added to account for learning

outcomes related to information about the history of art. Through a series of steps, every learning outcome conveyed by students within the formal, descriptive, interpretive, and historical dimensions was translated into a diagnostic category.

The written statements were reduced and organized into categories by adopting Guba's (1978) naturalistic inquiry methodology. According to Guba (1978), developing category systems first requires overcoming the problems of convergence and divergence. The first problem, convergence, arises "because the naturalistic inquirer must derive a set of units or categories within which he will classify and interpret observed outputs" (p. 50). Initially, when sorting data into categories, the researcher might ask "do the same kinds of observations or comments recur at different times, from different informants or documents, in somewhat different contexts?" (p. 53).

In developing the diagnostic profile, convergence was addressed by seeking out these "recurring regularities." The rules of internal homogeneity and external heterogeneity were applied as recurring regularities were identified. Internal homogeneity refers to the extent to which the data holds together in a meaningful way (Guba, 1978, p. 53). External heterogeneity refers to the extent to which the categories differ from one another, i.e., the difference should be "bold and clear" (p. 53).

The problem of divergence as identified by Guba (1978), involves "the 'fleshing out' of categories with whatever additional information is required for completeness and thoroughness" (p. 49). A three-step process assisted the development of categories: extension, bridging, and surfacing. First, extension was employed by building on items of information already known. In the case of the Chagall Study, student responses had already been identified as formal, descriptive, or interpretive in nature. These dimensions served as bases for more detailed categories. According to Guba, the evaluator "uses these items as bases for other questions or as guides in his examination of documents. Amoeba-like, he inches his way from the known to the unknown" (p. 70).

The second step in devising categories involved bridging, i.e., making connections among different items. According to Guba (1978):

the inquirer begins with several known, but apparently disconnected, items of information. The term "disconnected" simply means that their relationships are not understood. That there are relationships is a premise of high probability because the items have been placed into the same category. The evaluator now uses these two points of reference for further inquiry in an effort to identify the connections and understand them. (p. 59)

Categories derived from the Chagall data, and data representing each category facilitated the bridging process. First, the relationship of categories within the formal, descriptive, interpretive, and historical dimensions were

studied for their connectedness. Also, the relationship of data representing individual categories were studied for their connectedness. Once the connections were identified, the third step of surfacing was carried out.

According to Guba (1978) surfacing involves proposing and verifying new categories or information that should fit into the evaluation system (p. 59). The procedure of surfacing validated the appropriateness of examining supplemental data for "information that ought to be found in the field and then verifying its existence" (p. 59). A broad range of data was gathered from student populations representing a range of ages and abilities. These diverse and varied data sources aided in the expansion, refinement, and applicability of the diagnostic categories.

Koroscik's art learning model was also selected as a surfacing directive (see Figure 1). Grounded in cognitive learning theory, Koroscik's model represents facets that can be assessed in art education, including knowledge base and knowledge-seeking strategies. Learning outcomes reflective of this model were easily identified in the Chagall data, and they meshed with categories previously established through extension and bridging. The overall structural format for the diagnostic profile was thereafter tied directly to Koroscik's art learning model.

Establishing Instrument Quality

Once the diagnostic assessment profile was developed in a preliminary form, quality was ascertained through traditional test and measurement procedures. These procedures are of two basic types: (a) studies of validity, and (b) studies of reliability. Generally, validity refers to the extent to which the instrument provides an accurate picture of the phenomena examined; and reliability refers to the extent to which the measurement procedure yields the same answer however and whenever it is used (Kirk & Miller, 1990). Validity and reliability studies enhance the likelihood that appropriate inferences will be drawn from data the instrument provides (APA, 1985; Messick, 1985; Krathwohl, 1988; Leedy, 1989; Fraenkel & Wallen, 1990). Overall, these validity and reliability procedures apply equally well to qualitative and quantitative data (Kirk & Miller, 1990, p. 19). However, in selected instances the procedures were redefined "to fit the realities of qualitative research, and the complexities of social phenomena" (Strauss & Corbin, 1990, p. 249-250).

Validity

According to Fraenkel and Wallen (1990), validity refers to the meaningfulness and usefulness of inferences researchers make based on the data they collect. Validation

of an instrument is the process of collecting evidence to support inferences (p. 127).

Since the early 1950s, validity has taken three basic forms: (a) content validity, (b) criterion-related validity, and (c) construct validity. According to Fraenkel and Wallen (1990), it is useful for a researcher to gather evidence in each of these forms (p. 128). For the purpose of establishing the quality of the diagnostic profile, validity was estimated through several studies representing each category. Operational definitions of content validity, criterion-related validity, and construct validity will be introduced in the following sections.

Content Validity

In education "the content domain refers to the content of the curriculum, the actual instruction, or the objectives of the instruction" (APA, 1985, p. 90). Fraenkel and Wallen (1990) state content-related evidence of validity "refers to the nature of the content included within the instrument and the specifications the researcher used to formulate the content" (p. 128). An expert in the subject area can serve as a competent judge of content (p. 129).

Two content validity studies were designed to focus on content within the diagnostic profile. The first study involved an independent judge representing the field of evaluation in art education; the second study involved an

independent judge representing the field of art history in art education.

Pertaining to two individual content validity studies, methodological components are described below in terms of: (a) research questions guiding the inquiry, (b) background of the participants who served as independent judges, (c) methods of data collection, and (d) methods of data analysis.

Content Validity Study I: Evaluation Specialist/Art Educator

An evaluation specialist in art education was recruited to independently judge the content of the diagnostic profile. Besides mastery of the content of art education, this evaluation specialist offered a unique perspective: (a) knowledge of assessment instruments used in art education, and (b) knowledge of evaluation terminology and procedures. Therefore, the following research question was addressed in relation to content validity:

Can the content of the diagnostic profile be validated by an evaluation specialist in the field of art education?

Independent judge. Evaluation specialist in art education, Dr. Andra Johnson of the University of Georgia, provided her professional opinion on the content validity of the diagnostic profile. Dr. Johnson has published and is well known in the field of art education for her research on teacher assessment practices (see Appendix B).

Methods of data collection. Dr. Johnson responded to quantitative (i.e., Lickert scale, multiple-choice) and qualitative (i.e., short written) response items as shown in Appendix C. To perform content validity with the data collection instrument, Dr. Johnson analyzed the diagnostic profile for:

- the appropriateness and importance of content of each category in the formal, descriptive, interpretive, and historical dimensions of the diagnostic profile (reported as multiple-choice ratings)
- the arrangement of the categories within the formal, descriptive, interpretive, and historical dimensions of the diagnostic profile (reported as Lickert scale ratings)
- accuracy with which the categories in the diagnostic profile measured art understanding according to a theoretical framework from which it was derived (reported as multiple choice ratings)
- the length, feasibility, suitability, and potential utilization of the diagnostic profile (reported as short written responses)
- ability to diagnose weakness in students' knowledge base and knowledge-seeking strategies (reported as short written responses)
- ability to determine a student's formal, descriptive, interpretive, and historical understanding of a work of art (reported as Lickert scale ratings)
- ability to discriminate among lower-order understandings, higher-order understandings, and misunderstandings (reported as Lickert scale ratings)
- possible prevention of art understandings (reported as short written responses and as multiple-choice ratings)
- methods of reporting findings, e.g., knowledge-seeking frequency bar graph, knowledge-seeking pie chart, degree of cognitive complexity of transfer, bar graph, knowledge base accuracy bar graph (reported as short written responses)

- the grade levels the diagnostic profile could be applied to in assessing understandings (reported as multiple-choice ratings)
- length of training sessions necessary to learn the basic components of the diagnostic profile (reported as short written responses)

Methods of data analysis. Responses to the above criteria by the evaluation specialist served as the data analysis component of this content validity study. The purpose of the analysis was to allow recommendations for changes in the categories of the diagnostic profile.

Content Validity Study II: Art Historian/Art Educator

An art historian practicing in the field of art education was recruited as an independent judge of the content within the diagnostic profile. In addition to possessing a mastery of the content of art education, this expert was knowledgeable about: (a) assessment instruments used in art history, (b) Western and Non-Western art history, and (c) methods of writing about works of art. As such, the following research question was addressed in this content validity study:

- To what degree can the content of the diagnostic profile be validated by an art historian in the field of art education?

Independent judge. Art historian in art education, Dr. Jacqueline Chanda, of The Ohio State University, rendered professional opinion regarding content validity of the diagnostic profile. Dr. Chanda is well known in the field

of art education for her Non-Western art history teaching models that provide investigative strategies for understanding content (see Appendix D).

Methods of data collection. Dr. Chanda was asked to respond to quantitative (i.e., Lickert scale, multiple-choice items) and qualitative (i.e., short written) response items as shown in Appendix E. The focus of her analysis was different from the first content validity study in that Dr. Chanda focused her analysis on the diagnostic profiles applicability to assessing a variety of artforms (e.g., Non-Western art, popular arts, folk arts).

Methods of data analysis. Validation of content in the diagnostic profile was based on Dr. Chanda's qualitative and quantitative ratings. The purpose of the analysis was to recommend changes in the categories of the diagnostic profile.

Criterion-Related Validity

A criterion is an indicator of accepted performance and is usually a standard against which a measure is evaluated (APA, 1985, p. 90). Fraenkel and Wallen (1990), state criterion-related evidence of validity "refers to the relationship between scores obtained using the instrument and scores obtained using one or more other instruments or measures" (p. 128). Other than the diagnostic profile, there are no instruments available that differentiate

lower-order understandings from higher-order understandings, and/or misunderstandings of art. It was impossible to conduct the criterion-related study with two parallel instruments. Therefore, informal interviews and observations served as an alternative criterion.

Criterion-related evidence of validity is data that "shows the extent to which scores on a test are related to a criterion measure" (APA, 1985, p. 90). Criterion-related studies were performed on both a split 3rd-grade and 4th-grade class, and an 8th-grade class. The point of conducting two studies was to collect criterion-related evidence of validity to ensure that the diagnostic profile differentiated lower-order learning outcomes and higher-order learning outcomes.

Informal interviews with teachers and students were conducted. In addition, class sessions were observed. Writing samples were collected from students and scored with the diagnostic profile. Student functioning based on the interviews and observations were then compared to conclusions reached with the diagnostic profile. These comparisons provided evidence demonstrating the extent to which scores on the diagnostic profile were predicted by an external criterion.

Criterion-Related Validity Study I: 3rd/4th-Grade

Information about learning that occurs in a split

3rd/4th-grade art class can be gained in several ways. A researcher might ask the teacher about learning outcomes. Other approaches involve researchers in observing classes, conducting informal interviews, or soliciting responses to questionnaires. In this criterion-related study, such evidence is referred to as part of the external criterion.

The research question is as follows:

Can an external criterion predict how written statements from a split 3rd/4th-grade art class will be scored with the diagnostic profile?

Location of research. The study was held at Maize Elementary School, one of 89 elementary schools in the Columbus Public Schools, Columbus, Ohio.

Participants. The art teacher selected for this validity study possesses a bachelor degree in art education and has 10 years experience teaching art to kindergarten through 12th-grade students in the Columbus Public Schools. For the most part, her classes have been studio-based until 1988 when she was introduced to disciplined-based art education (e.g., criticism, aesthetics, art history, studio). Experience in disciplined-based art education workshops made the teacher aware of curricular options other than making studio projects. The teacher began to incorporate the components of disciplined-based art education into her curriculum. She engaged students in looking, talking, and writing about works of art. Several pre-study observations indicated the teacher, new at this

method of teaching, was employing recall-oriented teaching strategies. Consequently, her students were selected for this criterion-related study to gauge lower-order learning outcomes.

The decision to involve a particular class of 3rd/4th-graders in the study was made by the art teacher. These students were provided one hour of art instruction per week throughout the school year. Of 21 students, 13 were female and eight were male. The class was comprised of 16 students in the 3rd-grade, and five students in the 4th-grade. There were five African-American students, 15 Caucasian students, and one Asian-American student.

Methods of data collection. The external criterion was based on several factors. Weekly observations of the 3rd/4th-grade class were held during 9 one-hour art classes. The art teacher was asked to conduct a typical lesson unit in the usual manner during the nine-week period. Besides classroom observation, the researcher held informal discussions and interviews with the students and the teacher. Written assignments given by the art and classroom teachers and artworks the students completed during the unit were also of interest to the researcher. In addition, students were asked to complete a questionnaire about writing in art class. The questionnaires requested the following information: (a) whether or not the students favored writing about works of art, (b) judgments of the

students' own writing abilities, and (c) a list of things that are important to write about in art. Results of these activities served as a predictor of criterion performance. Based on this external criterion, generalizations were made about lower-order understandings, higher-order understandings, and misunderstandings.

On the last day of observation, the teacher was asked to select one or more works of art for students to write about. There was no effort to control methods or materials the teacher used to gather these written statements. The written statements were then scored with the diagnostic profile. The scores obtained with the diagnostic profile served as the criterion, an indicator of the accepted value of performance (APA, 1985, p. 90). Generalizations based on the resulting scores were described as lower-order understandings, higher-order understandings, and misunderstandings.

Methods of data analysis. Qualitative methods were used by the principal investigator to analyze the findings. Results related to the external criterion (informal interviews and observations) and the criterion (writing samples scored with the diagnostic profile) were described as lower-order understandings, higher-order understandings, and misunderstandings. In addition, these results were characterized as formal, descriptive, interpretive, and/or historical in nature.

Findings based on the external criterion and the criterion were compared. The comparison demonstrated how closely the external criterion predicted the criterion. The strength of relationship between the external criterion and criterion results indicated the magnitude of criterion-related evidence of validity.

Criterion-Related Validity Study II: 8th-Grade

Information about learning that occurs in an 8th-grade art class can be gained in several ways. Teachers can be questioned about student learning outcomes, students can be questioned directly through informal interviews or questionnaires, or classroom activities can be observed and recorded by the researcher. This evidence is referred to as part of the external criterion. The research question is as follows:

Can an external criterion predict how written statements from a 8th-grade art class will be scored with the diagnostic profile?

Location of research. The study was held at Sherwood Alternative Middle School, one of 89 elementary schools in the Columbus Public Schools, Columbus, Ohio.

Participants. The art teacher selected as a participant in the study earned a bachelor of arts degree, a masters of science degree in teaching, and a doctorate in art education. The art teacher had one year of experience teaching art to 6th-grade through 8th-grade students in the

Columbus Public Schools; and six years experience teaching 1st-grade through 8th-grade students in the Bethel School district of Miami County, Ohio. She also had experience working with college students. While attending The Ohio State University, the art teacher supervised student teachers and taught college level courses to elementary education majors.

In addition, professionally, the art teacher had participated in establishing, observing, and evaluating sites of disciplined-based art education. She also coordinated educational workshops for teachers and administrators at these sites.

Possession of advanced degrees and professional experience were initial indicators of the art teachers disposition to teach for higher-order learning outcomes. Several pre-observations confirmed that this art teacher was employing higher-order teaching strategies. For example, students in her art class were required to not only look at and talk about works of art, but also defend claims they made about works of art in writing. Therefore, a class under the direction of this art teacher was appropriate for the criterion-related study associated with higher-order learning outcomes.

A decision regarding the particular 8th-grade class to be involved in the study were made by the art teacher. The students were provided one and a half hours of disciplined-

based art education per week for a nine week cycle. The class was comprised of students with majors in music and physical education. Of 11 students, three were female and eight were male. There were seven African-American students and four Caucasian students.

Methods of data collection. The external criterion was based on several factors. Six observations of the 8th-grade art class, lasting an hour and a half, were held during the weekly art class. The art teacher was asked to conduct a typical lesson unit in a usual manner during the six-week observational period. Besides classroom observation, the researcher held informal discussions and interviews with the students and the teacher. Written assignments given by the art teacher and artworks the students completed during the unit were also of interest to the researcher. In addition, students were asked to complete a questionnaire about writing in art class. Students explained whether or not they favored writing about works of art. In addition, students were asked to judge their own writing abilities, and list what things are important to write about in art. Results of these activities served as predictors of criterion performance. Based on this external criterion, generalizations were described as lower-order understandings, higher-order understandings, and misunderstandings.

On the last day of observation, the teacher was asked to select one or more artworks as stimuli for written statements. No effort was made to control the collection of written statements. The diagnostic profile was then applied to these statements. Profile scores for the class served as the criterion, an indicator of the accepted value of outcome performance (APA, 1985, p. 90). Generalizations based on the resulting scores were described as lower-order understandings, higher-order understandings, and misunderstandings.

Methods of data analysis. Methods used were precisely the same as in criterion-related validity study I - 3rd/4th-grade.

Construct Validity

Construct validity refers to the "quality of the relationship between the observation and the elements of a model that represents it" (Kirk & Miller, 1986, p. 80). According to the Standards for Educational and Psychological Testing (APA, 1985), construct validity provides "evidence that supports a proposed construct interpretation of scores on a test based on theoretical implications associated with the construct label" (p. 90).

Construct Validity Study

The objective of the construct validity study was to determine whether constructs in the diagnostic profile could

be supported. One way to support constructs in the diagnostic profile is to locate written statements that fit the categories. Categories supported by written statements demonstrated whether interpretations based on the constructs could be validated.

Methods of data collection. The novice to expert continuum captures a range of constructs that account for art learning. The categories in the diagnostic profile correspond to this range reflecting lower-order and higher-order understandings, and misunderstandings. For this reason, a comprehensive data base was needed to support the constructs within the diagnostic profile.

Employing data triangulation (Denzin, 1978), a variety of data obtained from several sources were combined. Written data obtained from the Chagall Study (previously discussed under instrument development) provided the majority of data for this construct validity study. Additional data was taken from the data pool used in the reliability studies. From this data written statements were located that exemplified each category of the diagnostic profile.

Methods of data analysis. Construct validity is evaluated by exploring what qualities a test measures. These qualities determine the degree constructs account for performance on a given measure (Messick, 1989). This examination focuses on the degree to which diagnostic

categories are supported by the written responses to selected artworks. Analysis of data demonstrates (a) the learning outcomes the diagnostic profile is assessing, and (b) how closely constructs within the diagnostic profile account for art learning.

The diagnostic profile encompasses both knowledge base and knowledge-seeking facets of learning. The diagnostic categories furthermore reflect formal, descriptive, interpretive, and historical dimensions of art understanding. Each dimension is scaled along a novice to expert continuum of cognitive complexity. The scales are intended to reflect lower-order understandings, higher-order understandings, and misunderstandings. The capability of the diagnostic profile to make these discriminations provides evidence of construct validity.

Reliability

According to Standards for Educational and Psychological Testing (APA, 1985), reliability is defined as "the degree to which test scores are consistent, dependable, or repeatable, that is, the degree to which they are free of errors of measurement" (p. 93). Fraenkel and Wallen (1990) suggest several ways to estimate reliability of an instrument: (a) the test-retest method involves administering the same instrument to the same individuals after a period of time has elapsed; (b) the equivalent-forms

method involves giving two different forms of a test to the same group at the same time; and (c) the internal consistency method involves a comparison of scores obtained between sets of items within the same test (p. 139). Test-retest, equivalent-forms, internal consistency methods of reliability rely on the scores produced by the test-taker. However, the diagnostic profile is not used by the test-taker. It does not function as a test or as a data collection instrument.

According to Scriven (1991), "it is useful to distinguish test-retest reliability from 'interjudge' reliability (which would be exhibited if several thermometers gave the same reading)" (p. 309). The diagnostic profile is used to assess data already collected. Therefore, the reliability of the diagnostic profile depends on how consistently it is applied to written statements about works of art. Since the application of the diagnostic profile is performed by raters, studies of 'interjudge' reliability were employed.

For the purpose of establishing the quality of the diagnostic profile, reliability tests focused on the relationship of scores produced by different raters (inter-rater consistency) and the relationship of scores produced by the same rater at different times (intra-rater consistency). The following sections provide operational definitions of inter-rater consistency and intra-rater

consistency, as well as research questions driving the reliability studies.

Rater Reliability

Standards for Educational and Psychological Testing (APA, 1985) defines inter-rater reliability as "consistency of judgments made about people or objects among raters or sets of raters" (p. 92). Raters can use the diagnostic profile to assess students' written statement about works of art. The assessment of the written statement implies a judgment about a student's knowledge base and use of knowledge-seeking strategies.

Raters

Since written statements about works of art are generated in art classrooms, it made sense for art teachers to serve as raters. While the scores of two teacher raters can be compared to each another, a comparison can also be made to scores produced by an expert rater.

A criterion is an indicator of accepted outcome performance and in this study serves as a standard of success (Scriven, 1991, p. 111). The principal investigator, an expert at using the diagnostic profile, served as the criterion rater. In order to test the degree of agreement between different raters, samples of written statements were needed.

Selection of Samples

The diagnostic profile is designed to be applied to written or transcribed verbal statements about works of art, however, tremendous variation can occur in individual responses to artwork. The potential usefulness of the diagnostic profile is affected by how reliably it can be applied to diverse and varied sources of written and transcribed data. For this reason, a range of samples was sought for the rater-reliability studies.

Variation of sample selection represented the many ways students make statements about art. Since the source of the statements was not at issue, selection of samples was entirely random and no effort was made to statistically control numbers of samples from populations.

Columbus Public Schools. Samples were selected from various populations within the Columbus Public School District. Schools in lower to upper-middle class neighborhoods served as data collection sites. The range of students from these different schools represented 3rd-grade through 12th-grade. African-American, Caucasian, Hispanic, and Asian-American students were represented in the sample selection. The comprehensiveness of the data was reflected in several areas: size of class, age, sex, ethnicity, grade level, economic standard, cultural background, and academic abilities. Written statements were gathered before, during, and/or after instruction.

College students. Written samples were obtained from college students enrolled in an introductory course in the contemporary arts. This undergraduate course attracts students from all ranks and disciplines many of whom are seeking to fulfill a humanities requirement. The students had little, if any, instructional background and/or experience responding critically to the arts.

Expert statements. Expert statements about works of art were part of the sample selection. These statements were appropriated from two sources. Some expert statements came directly from books on art history and art techniques. Other statements were solicited from persons with advanced knowledge in visual art, art education, and/or art history.

Art stimuli. The diagnostic profile can be applied to written statements about one artwork or several works of art. For this reason, tests of reliability were performed on written statements stimulated by different works of art, viewed alone and/or with other works of art.

The following artworks were viewed individually to stimulate written statements used in the reliability study:

- Los Mismos, aquatint print from the Disasters of War series, by Francisco Goya, 1919;
- The Parade, egg tempera, by Jacob Lawrence, 1960;
- Shoemaker, tempera, Jacob Lawrence, 1945;
- The Legend of John Brown, a serigraph print based on the 1941 painting by Jacob Lawrence, c. 1978;
- The Birthday, a painting by Marc Chagall, 1915-23;
- Elijah Escapes the Mob, relief, Elijah Pierce, 1972;
- The Three Wise Men, relief, Elijah Pierce, 1936.

Written statements were also stimulated by the comparative contexts in the Chagall Study (see pp. 52-54). In addition to the Chagall Study data, the following artworks were grouped to stimulate written statements used in the reliability study:

- The Parade, egg tempera, by Jacob Lawrence, 1960;
- Pool Parlor, gouache on paper, by Jacob Lawrence, 1945.

Alone or grouped, written statements stimulated by various works of art can reflect differing levels of cognitive complexity.

Cognitive complexity of writing samples. Writing samples selected from the student populations reflected variance in terms of knowledge base and use of knowledge-seeking strategies. For instance, in responding to The Birthday, a 4th-grade student might write "there are two people floating in the air," while an art historian might write "love has caused the couple to defy the laws of gravity." Variance in knowledge base and knowledge-seeking strategies is apparent when the two statements are compared. The 4th-grader has only described subject matter which amounts to a lower-order understanding of The Birthday. The art historian, however, has drawn on an interpretive knowledge base to reach a higher-order understanding of The Birthday.

An evaluator's prior knowledge is an important consideration in reliability. Accurate scoring of written

statements and consistency between raters, depends on this prior knowledge.

The Rater's Prior Knowledge

One rater might know more than another about a particular work of art. If the raters have unmatched prior knowledge of the artwork, inconsistencies will be reflected in scoring results. For example, one source on Chagall discusses his work in terms of Surrealism, while another notes that Chagall's work was referred to as "surreal" before the term was in vogue (Tobien, 1988). If some raters were unaware of this information, then differing scores would appear in the historical dimension of the diagnostic profile.

Literature review. In scoring written responses with the diagnostic profile, raters need an adequate knowledge base about the works of art used as a stimuli. An extensive literature review was provided for the raters consisting of expert interpretations, descriptions, and judgments about the artworks. The literature served as a base from which student responses could be compared and validated.

Literature reviews were extracted from four types of materials. Technical source manuals yielded specific information regarding formal aspects of the work. Art history citations on the artist, the artist's background, and the artwork in general aided in historical

understanding. Public school textbooks provided insight into expected levels of student responses.

Methodological components pertaining to two reliability studies will be described in the following sections: (a) research questions guiding the inquiry, (b) participants in the study, (c) methods of data collection, and (d) methods of data analysis.

Rater Consistency Study I - Inter-Rater Reliability

This study compared: (a) scores generated between two art teachers and a criterion rater, and (b) the degree of consistency between the pairs of raters. Therefore, the following research questions were addressed in relation to comparisons made among three raters:

What is the degree of agreement between the scores produced by teacher A and teacher B?

What is the degree of agreement between the scores produced by teacher A and the criterion?

What is the degree of agreement between the scores produced by teacher B and the criterion?

Participants. Two elementary school art teachers were participants in the inter-rater and intra-rater reliability study. The teachers were selected on the basis of their commitment to assessment in art education. Commitment of the teachers was judged by willingness to embark on a master's degree proposal and/or thesis involving a pilot study with the diagnostic profile. Therefore, the teachers had a stake in seeing whether assessment of student writing

with the diagnostic profile could be carried out consistently. In addition, each teacher was compensated \$300 for participating in the study. This monetary award was meant to force teachers to expend their best efforts in the inter-rater consistency study and the intra-rater consistency study which will be described in the next section.

Methods of data collection. Two elementary teachers were instructed on the procedures for administering the diagnostic profile. After some practice, both teachers used the diagnostic profile to independently score 109 student responses. The criterion rater also scored the same 109 student responses with the diagnostic profile.

Methods of data analysis. A series of scores can be assigned to a written statement by raters using the diagnostic profile. The degree of consistency to which raters assigned scores was the focus of the inter-rater reliability study. The most common technique for estimating reliability, percent of agreement, was employed in the data analysis.

A rich and varied sample of 109 written statements was selected for the inter-rater reliability study. Teacher A, teacher B, and the criterion rater individually assigned the scores to the same 109 written statements with the diagnostic profile. Scores assigned to each written statement by the raters were paired in three ways: (a)

teacher A and teacher B, (b) teacher A and the criterion, and (c) teacher B and the criterion.

The percent of agreement between pairs of raters was totaled. The total number of agreements were then divided by the total number of agreements and disagreements. These reliabilities were reported as coefficients of correlation (r) (Huck, Cormier, & Bounds, 1974, p. 335). The Davis (1971) conventions for measures of association were used to judge the degree of agreement reached between each pair of raters.

Rater Consistency Study II - Intra-Rater Reliability

The second study involved the comparison of scores assigned to identical written statements at different points in time. The focus of this intra-rater reliability study was on the degree of consistency between two sets of scores from each of 3 different raters: teacher A, teacher B, and the criterion rater. Therefore, the following research questions were addressed in relation to the raters' ability to consistently score written statements with the assessment instrument over time:

What is the degree of agreement between the scores produced four weeks apart by teacher A?

What is the degree of agreement between the scores produced four weeks apart by teacher B?

What is the degree of agreement between the scores produced four weeks apart by the criterion?

Methods of data collection. Two elementary teachers were instructed on the procedures for administering the diagnostic profile. After some practice, both teachers used the diagnostic profile to independently score 42 student responses. The criterion rater also scored the same 42 student responses with the diagnostic profile. Four weeks later, both teachers and the criterion scored the same 42 student responses a second time.

Methods of data analysis. A series of scores can be assigned to a written statement by raters using the diagnostic profile. How consistently raters assigned these scores at different times was the focus of the intra-rater reliability study. Percent of agreement was employed in the data analysis because it is the most common technique for estimating reliability.

A rich and varied sample of 42 written statements were selected for the intra-rater reliability study. Teacher A, teacher B, and the criterion rater individually scored the 42 written statements. A second set of scores was obtained four weeks later.

The percent of agreement among the sets of scores was totaled. The total number of agreements were then divided by the total number of agreements and disagreements. Reported as coefficients of correlation (r), the calculations indicated the degree of agreement among scores obtained four weeks apart. The Davis (1971) conventions for

measures of association were applied to describe the degree of agreement among the sets of scores.

CHAPTER IV

RESULTS AND DISCUSSION

This research contains two major components: (a) a qualitative component following Guba's (1978) naturalistic inquiry method, which allows for the development and refinement of diagnostic categories, and (b) a quantitative component involving traditional test and measurement procedures used to determine validity and reliability of diagnostic categories.

Seven individual validity and reliability studies were conducted to establish the quality of the diagnostic profile. For clarity and convenience to the reader, the results of each study will be followed by a related discussion.

Instrument Development: Diagnostic Categories

The development of this assessment instrument was based on an analysis of written data generated from the Chagall Study (see Appendix A). Analyses revealed a continuum of learning outcomes in the formal, descriptive, interpretive, and historical dimensions of art understanding. Guba's (1978) naturalistic inquiry method was used to create

diagnostic categories representative of these learning outcomes within each dimension. Categories developed from the Chagall Study data were then refined through analysis of other written data.

Populations providing additional data represented a broad range of ages and abilities. By examining these diverse and varied data samples, applicability of the diagnostic categories was expanded. In addition, new categories were proposed and verified.

Learning outcomes have been translated into diagnostic categories, as shown in Appendix F. Lower-order and higher-order outcomes, and misunderstandings within each dimensions of art understanding are coded, as shown in Table 1. Specific student responses supporting each category of the diagnostic profile are contained in Appendix G.

Table 1
Coding of Diagnostic Categories

	Outcomes			Total
	Lower-Order	Higher-Order	Misunderstandings	
Dimension				
Formal	F0 to F4	F5 to F11	-F1 to -F3	15
Descriptive	D0 to D4	D5 to D9	-D1 to -D3	13
Interpretive	I0 to I4	I5 to I12	-I1 to -I3	16
Historical	H0 to H4	H5 to H12	-H1 to -H3	16

Dimensions of Art Understandings

Formal dimension. Categories within the formal dimension represent a range of learning outcomes as follows:

- elements of design (e.g., line, shape, color, texture)
- organizational principles of design (e.g., repetition, variation, transition, balance, unity)
- technical processes or media (e.g., impasto, printmaking, drawing, ink)
- art styles (e.g., abstract, non-objective, realistic)

Descriptive dimension. Descriptive dimension categories included learning outcomes related to the subject matter of artworks including the following:

- objects or figures (e.g., images, symbols)
- artforms (e.g., landscape, still-life)
- activities or actions

Interpretive dimension. The categories within the interpretive dimension provided a broad spectrum of learning outcomes related to the following:

- expressive qualities of artworks
- personal meaning and interpretations
- interpretive perspectives

Historical dimension. The learning outcomes within the historical dimension categories focused on such things as:

- personal data about the artist (e.g., name, race, birthplace)
- historical data about the work (e.g., title, date)
- classifications (e.g., Impressionism, Surrealism)
- stories, inspirations, mythology regarding the artwork
- purpose, function, use of the artwork
- significance

Lower-Order Outcomes

Lower-order outcomes associated with formal qualities, subject matter, expressive content, and historical

information were evident in the written data examined. These lower-order outcomes were translated into categories, as shown in Figure 2.

Lower-Order Outcomes	
Formal Dimension:	
F0	Immature judgment, nebulous or unclear formal statement.
F1	General recognition/identification/definition of elements, principles, marks, graphic details, grounds and/or perspective.
F2	Identifies abstract, real, or nonobjective qualities.
F3	Points out style or personal method used by the artist or ethnic group.
F4	Correctly classifies work in terms of technique processes, media and/or materials used.
Descriptive Dimension:	
D0	Immature judgment, nebulous or unclear descriptive statement.
D1	Identifies, lists, and demonstrates a general recognition of images, scenes, and/or symbols.
D2	Student lists and/or explains activities (verb/and at least one noun).
D3	Identification of artforms (e.g., landscape, portraiture, caricature, still-life, street scene).
D4	Examines and describes surface details of images.
Interpretive Dimension:	
I0	Immature judgment, nebulous or unclear interpretive statement.
I1	General interpretive language.
I2	Uncustomary/unexpected impression (viz., personal).
I3	Relates work to "popular culture" (e.g., names pop culture).
I4	Correctly relates work to a culture or religious belief system.
Historical Dimension:	
H0	Immature judgment, nebulous or unclear historical statement.
H1	Artist's name(s), or ethnic group.
H2	Personal data or background about artist (e.g., age, sex, race, culture, where artist was born, lived, worked and/or "stories" about artist's life) or ethnic group (e.g., culture, county, sex of artist).
H3	Title or date of work(s), the place or person(s) the work might depict.
H4	Identifies, sorts, or classifies work(s) according to culture, period, movement, societies and associations; and/or form(s).

Figure 2. Lower-order outcomes in the formal, descriptive, interpretive, and historical dimensions.

Nebulous responses. Sometimes lower-order outcomes reflected "immature judgments" based on formal qualities. For instance, students stated "good use of color" and "visually eye catching." These judgments were considered immature because the students did not substantiate them with reasons. Nebulous responses also occurred in the descriptive, interpretive, and historical dimensions.

General recognition and recall. Very often, students demonstrated a general recognition or recall of formal qualities, subject matter, interpretive qualities, or historical information. In the formal dimension, students simply named the elements of design they recognized in the artworks. For example, students identified colors, or listed different shapes. Sometimes, students recalled other formal vocabulary terms such as: "perspective used," or "both primary and secondary colors." In these cases, recall of vocabulary words did not facilitate new understandings about the works of art being viewed.

Some students were able to recognize certain styles in the works of art, as in the statement, "none are realistic, again abstract." In addition, several students correctly classified works of art in terms of technical processes, media, and/or materials that were used. However, students did not use knowledge-seeking strategies to construct new understandings from this prior knowledge. For this reason, outcomes involving recognition of art styles and

classification of technical processes were considered lower-order.

In the descriptive dimension, students demonstrated a general recognition of subject matter depicted in the artwork. Often recall of this nature was evidenced when students simply listed the subject matter they could identify such as: "body, face, village, church, cabins." Students also recalled terms like "landscape," "portrait," "still-life" to describe the artforms. Sometimes the actions or activities illustrated in the artworks were identified and explained by students. An argument can be made that a student has not learned anything new by merely identifying subject matter in a work of art.

Periodically students would give a descriptive account of the surface details of images they had identified in the artwork. For instance, in the statement, "the faces look like skeletons," the student has focused attention on the surface qualities of the face. Yet, the student has failed to employ knowledge-seeking strategies that would allow an investigation into the significance of the skeletal features.

In the interpretive dimension, students often used general interpretive language when referring to emotion, feeling, and/or expression. For instance, general use of interpretive language was listed such as: "vulgar, disgusting," or "feelings of tension." In both cases,

students failed to make necessary connections for the construction of new understandings. They simply associated interpretive language with what they were viewing.

Sometimes students made associations with the work of art. Some of these associations were based on interpretations rooted in popular culture. For instance, a student associated "Casper the ghost" with the floating figures in The Birthday. Students also made interpretive associations with cultures such as: "a wooden Appalachian toy;" or with religious belief systems such as: "a Christian theme." Each of these associations involves only identification and therefore, are judged to be lower-order outcomes.

In the historical dimension of understanding, students provided many lower-order outcomes. Lower-order outcomes include recalling historical facts about a work of art. This might include recalling the title or date of work, and/or the place or person the work might depict. Lower-order outcomes also included recall of historical information related to the artist. For instance, students recited the artist's name, age, sex, and/or race. In addition, some students were able to name the artist's birthplace and where the artist lived and worked.

In the history of art, works of art and artforms are frequently classified according to certain periods, movements, societies, and associations. Sometimes students

employ recall to classify works of art such as: "this painting represents the Impressionist period." When a student classifies a work of art according to a particular period, there is no evidence that the student understands the work or the classification. Therefore, works of art classified by recall were judged to represent lower-order outcomes.

Uncustomary interpretations. Occasionally, unusual interpretations are stimulated by works of art. These uncustomary responses can often be influenced by teen idols and musicians that appear to relish the idea of blood, guts, and violence (e.g., Ozzi Osborne). For instance, in responding to Goya's Los Mismos, a young student stated, "murder, hate, killings - things I like." This anti-social response provides interpretive language related to the print from Disasters of War. Yet, the student has failed to implement knowledge-seeking strategies that enable an understanding of this work. Instead, the student's attention is directed at making a shocking statement.

Higher-Order Outcomes

The written data also showed evidence of higher-order outcomes associated with formal qualities, subject matter, expressive content, and the history related to artworks. These higher-order outcomes were translated into categories, as shown Figure 3.

Higher-Order Outcomes	
Formal Dimension:	
F5	Student actively searches work for formal understanding (e.g., compound sentences, complex thought structures, connection-making, comparisons, speculation, hypotheses, and/or conclusions).
F6	Analyzes work in terms of the elements of design (e.g., line, shape, color, texture).
F7	Analyzes work in terms of the principles of design (e.g., repetition, variation, action/movement, balance, unity, dominance, contrast).
F8	Formal agreement with literature review.
F9	Supported judgment and/or aesthetic reasoning (formal).
F10	Formal questioning.
F11	Extends and/or challenges technicians' appraisal regarding the technical process/medium utilized to make the work, through convincing argument which includes supportive examples or evidence. Extends and/or challenges an historians' or critics analysis of the work in reference to the elements and principles of design, through convincing argument which includes supportive examples or evidence.
Descriptive Dimension:	
D5	Student actively searches work for descriptive understanding (e.g., compound sentences, complex thought structures, connection-making, comparisons, speculation, hypotheses, and/or conclusions).
D6	Descriptive agreement with literature review.
D7	Supported judgment and/or aesthetic reasoning (descriptive).
D8	Descriptive questioning.
D9	Extends and/or challenges historians' and/or critics' description of the work through convincing argument which includes supportive examples or evidence.
Interpretive Dimension:	
I5	Student actively searches work for interpretive understanding (e.g., compound sentences, complex thought structures, connection-making, comparisons, speculation, hypotheses, and/or conclusions).
I6	Personal interpretation based on description of images, scene, and/or symbols.
I7	Personal interpretation based on analysis of elements of design (e.g., line, shape, color, texture).
I8	Personal interpretation based on analysis of principles of design (e.g., repetition, variation, dominance, balance, transition, unity, contrast, movement, action).
I9	Interpretation agreement with literature review (e.g., cites conventional, feminist, psychoanalytic, Marxist interpretive perspectives).
I10	Supported judgment and/or aesthetic reasoning (interpretive).
I11	Interpretive questioning.
I12	Extends and/or challenges historians' and/or critics' interpretation of the work through convincing argument which includes supportive examples or evidence.
Historical Dimension:	
H5	Student actively searches work for historical understanding (e.g., compound sentences, complex thought structures, connection-making, comparisons, speculation, hypotheses, and/or conclusions).
H6	Discusses the artist's inspiration or mythology about the origin of the form in a supportive explanation of the work.
H7	Provides a supportive explanation of the work in reference to its purpose, function, or use.
H8	Makes comparison(s) of other works by same artist or ethnic group(s) or different artist(s) and/or ethnic group(s).
H9	Historical agreement with literature review (e.g., cites cultural significance of work in reference to artist, context, movement, ethnic group and/or society).
H10	Supported judgment and/or aesthetic reasoning (historical).
H11	Historical questioning.
H12	Extends and/or challenges historians' and/or critics' appraisal, analysis, and/or theories applied to the work of art or artist through convincing argument which includes supportive examples and evidence.

Figure 3. Higher-order outcomes in the formal, descriptive, interpretive, and historical dimensions.

When students actively searched the works of art for deeper understandings, they engaged knowledge-seeking strategies involving: analysis, comparisons, questions, judgments, interpretations, explanations, and extensions and/or challenges of authorities' ideas. In many cases these knowledge-seeking strategies led students to speculate or form hypotheses about works of art. Sometimes knowledge-seeking strategies led students to higher-order understandings corresponding to scholarly literature on the artworks.

Analysis. The analyses performed by students took several forms and was reflected in all dimensions of art understanding. Analysis was facilitated by: (a) applying prior art knowledge, (b) making comparisons, and (c) posing questions.

Some students analyzed artworks in terms of their formal elements of design (e.g., line, shape, color, texture). For example, one student notes: "no details or defined lines, one color fades into the next." Students also analyzed works according to the organizational principles of design (e.g., repetition, variation, action/movement, balance, unity, dominance, contrast). For instance, a student remarked: "black and white suggests opposition and contrast in the painting." In both examples, students have applied prior knowledge about elements and

principles of design in forming new understandings about the formal qualities in the artworks.

When viewing more than one work of art, students often employed knowledge-seeking strategies in the form of comparisons. These comparisons were based on an analysis of the relationships between the works. In one such case, a student responded: "they all show relationships between men and women - good and bad." Here, the student focused an analysis on the theme relating to all the artworks.

Responding to a group of paintings by Chagall, a student remarked as follows:

The thing I found most common in all the works of art was their style of drawing (almost cartoonish or childlike).

Making comparisons between several artworks painted by the same artist prompted the student to focus analysis on formal qualities of Chagall's style (see Appendix A for additional information on these comparative contexts).

Sometimes the process of analysis was evident in questions posed by students. Higher-order learning outcomes in the form of questions were raised in each dimension. For example, a question was posed in the descriptive dimension as follows:

A robot man's knee is showing, why?

In this example, it was evident that the subject matter had been closely analyzed by the student. Based on this

analysis, formation of a question stimulated a search for understanding.

Many times other questions were raised by students. For example, prior knowledge about art movements prompted the following inquiry:

The work of Chagall seems to have elements of several different styles and movements (e.g., Expressionism, Fauvism, Fantasy, Surrealism). In what period of art history is Chagall's work most associated?

It is apparent the student closely analyzed the work according to historical classifications before posing the question. This knowledge-seeking strategy permitted the student to access relevant prior knowledge about art styles and movements and to conclude that Chagall's work cannot be attributed to one particular art movement.

Supported judgments. Students employed knowledge-seeking strategies that involved making judgments about the works of art in each dimension of understanding. Judgments were considered higher-order when the student provided reasons and gave supportive explanations.

Some judgments made by students reflected their personal preferences. For example, one student preferred an artwork because of its expressive content, stating:

Looks romantic - I like it - the love between the man and woman reminds me of happy moments.

Students also made judgments related to the relative success of the work of art. For example, one student judged the

success of the work of Chagall based on information recorded in art history as follows:

This is a successful work of art because it can touch people of different ages. Children can relate to the child-like quality of the execution . . . the work can remind the adult of happy childhood dreams and fantasies.

Whether judgments were related to preference or the success of the artwork, supportive reasons and explanations were offered in both of these examples.

Interpretations. Higher-order interpretations are based on evidence of some sort. For instance, some interpretations were based on subject matter such as:

The dangerous leopard symbolizes power and aggression. In this example, the "dangerous" qualities suggested by the leopard are the foundation for an interpretation of symbolism. Sometimes, interpretations based on subject matter were more subjective or personal such as:

Man bending over woman - to me this signifies that a man bends over backwards to make a woman happy.

In this example, the student draws upon informal prior knowledge in searching for the meaning of the work of art.

Students used prior knowledge of the formal elements of design as a basis for making interpretations such as:

Almost wicked because of the dark colors.

Interpretations also were drawn from the effects of the organizational principles of design. For example, the principle of movement spurred the following interpretations:

A light and joyous feeling caused by the delicate motion of the dancers - graceful movement.

Creates a sense of anxiety because there appears to be haphazard movement within each scene.

In each of these examples, the student employed strategies to assist in the search for descriptive meanings and expressive content. In addition, the students provided a basis for their interpretations which constitutes higher-order outcomes.

Supportive explanations. Sometimes students used knowledge-seeking strategies to call upon relevant prior knowledge that assisted in an explanation of an artwork. For example, students cited "stories" about the artist's life, or the artist's inspirations in a supportive explanation of the work.

Explanations about works of art were also facilitated by the application of relevant prior knowledge concerning purpose, function, or use. For example, in response to a wooden figure from Songye, Zaire, this explanation is offered:

Metal applied to the face may indicate that it functioned as a protection against lightning.

Knowledge-seeking strategies involving supportive explanations often directed students to the significance of the artwork in art history. For instance, in a supportive explanation of Chagall's work, an advanced student focuses on formal qualities that highlight historical significance

of the work in relation to an art movement and a comparable artist:

Chagall has the raw saturated palette of the Fauves, but his counterpart in mode of expression was Franz Marc.

Extending and challenging. Occasionally, students extended and challenged an expert's analysis of an artwork in reference to the subject matter, formal qualities, interpretation, or historical theories surrounding the work of art or artist. These higher-order outcomes were accomplished by providing convincing arguments that included supportive examples or evidence. Sometimes, convincing arguments and evidence reflected advanced art knowledge. For instance, advanced knowledge and experience with art materials and processes enables the extension and challenge of ideas held by technical authorities. The following statement was written by someone with advanced knowledge of lithography:

Tamarind Book of Lithography suggests multiple stones for printing color editions. In the Printmaking Today studio handbook, Heller proposes using a single stone in the color printing process. However, Heller recommends the stone be lavigated prior to printing a second color. But when lavigating the stone, there is the risk of scratching its surface. Scratching the stone would necessitate further lavigation. With too much lavigating there is a good chance the ghost image would be lost on the stone, making future registration impossible. I have found the use of bleach cleanser to be a suitable alternative to the lavigation method. The mild abrasive in the cleanser removes the old ink, and the bleach eliminates the oil deposits. Resensitization with acetic acid is not affected.

While this extension and challenge was based on advanced knowledge in the formal dimension, advanced knowledge is not always necessary to posit a challenge. For instance, a student presented the following argument in reference to The Birthday:

The image is cut off at the right of the composition, slightly tilted in perspective, and covered with fabric. Based on a photograph of Chagall's Paris studio, I am not convinced this image is a bed. The photograph shows Chagall and his family sitting on a couch beneath the same hanging shawl. The image is probably a couch or sofa cushion.

This challenge within the descriptive dimension might be considered somewhat lesser than the color lithography argument. The student accessed informal knowledge of subject matter rather than extensive knowledge of art history in defending his/her position. Nevertheless, the student's argument calls into question Compton's (1985) assertion that the image is a bed.

Misunderstandings

In some written statements evidence revealed that the students had misunderstood the artworks. Misunderstandings reflected in outcomes occurred in relation to formal qualities, subject matter, expressive content, and/or historical information. Three types of these misunderstandings were translated into diagnostic categories, as shown in Figure 4.

Misunderstandings	
Formal Dimension:	
-F1	Incorrect formal appraisal (Supported)
-F2	Incorrect formal appraisal (Unsupported)
-F3	Illogical formal findings
Descriptive Dimension:	
-D1	Incorrect descriptive appraisal (Supported)
-D2	Incorrect descriptive appraisal (Unsupported)
-D3	Illogical descriptive findings
Interpretive Dimension:	
-I1	Incorrect interpretive appraisal (Supported)
-I2	Incorrect interpretive appraisal (Unsupported)
-I3	Illogical interpretive findings
Historical Dimension:	
-H1	Incorrect historical appraisal (Supported)
-H2	Incorrect historical appraisal (Unsupported)
-H3	Illogical historical findings

Figure 4. Misunderstandings in the formal, descriptive, interpretive, and historical dimensions.

Incorrect appraisals. Sometimes students conveyed misunderstandings but they gave supportive explanations or reasons for their incorrect appraisals. For instance, a student responded to The Birthday as follows:

These figures have very blank frozen looks on their faces . . . I see it as being sick of the everyday monotony of life or as being bored with each other.

This outcome reflects a misunderstanding because the figures in The Birthday are happily in love, as opposed to being "bored with each other." However, pointing to the "blank

frozen looks," the student gives specific reasons for his/her findings. Sometimes students misunderstood artworks and did not give any explanations or reasons. In response to The Birthday, one student remarked:

All the people are unhappy.

In this statement, no reason or explanation for the incorrect appraisal is given.

Illogical findings. Some misunderstandings seem to make no sense even though they are clearly deeper than other incorrect appraisals. The diagnostic profile recognized these misunderstandings as "illogical findings." For instance, a student viewed works of art inspired by Chagall. Some of the works depicted a loving couple, but the student remarked that "all of them have a violent theme." Although the student applied knowledge-seeking strategies in looking for meaning in the works, the interpretive outcome made absolutely no sense in light of the works being viewed.

Content Validity

Two content validity studies were performed on the diagnostic profile. The first study involved an expert in the field of evaluation in art education and the second study involved an expert in the field of art history in art education. These experts served as independent judges of the content reflected in the diagnostic profile.

Content Validity I Study - Evaluation Specialist/Art Educator

Dr. Andra Johnson, an evaluation specialist in art education, served as an independent judge of the content represented in the diagnostic profile. Dr. Johnson offered a unique perspective: a combined acquaintance with assessment instruments used in art education, and knowledge of evaluation terminology and procedures. Dr. Johnson responded to quantitative (i.e., Lickert scale, multiple-choice) and qualitative (i.e., short written) response items as shown in Appendix C.

Content representation in categories. Through multiple-choice ratings, Dr. Johnson assessed the content represented by the categories in the diagnostic profile. Judgments were rendered on the importance of categories in assessment in art education. Dr. Johnson verified that 87% of the formal and historical dimension categories were "very important," and 13% were "important." Within the descriptive dimension, 62% of the categories were judged to be "very important," while 38% were considered "important." In the interpretive dimension, 81% of the categories were rated "very important," and 19% were rated "important." According to Dr. Johnson's assessment, none of the diagnostic categories were rated "somewhat important" or "not important."

Dr. Johnson also assessed the diagnostic profile according to the appropriateness of content reflected in its

categories. Within the formal dimension, 60% of categories were judged as reflective of "extremely appropriate" content, and 40% of categories reflected "appropriate" content. Dr. Johnson found that 62% of the categories in the descriptive dimension adhered to "extremely appropriate" content, while "appropriate" content was adhered to in 38% of categories. Within the interpretive and historical dimensions, 63% of categories were found to reflect "extremely appropriate" content, while 37% reflected "appropriate" content. According to Dr. Johnson's assessment, there were no categories in the diagnostic profile deemed "somewhat appropriate" or "not appropriate."

Finally, categories within the formal, descriptive, interpretive, and historical dimension were traced to their theoretical underpinnings. According to Dr. Johnson's assessment, all categories within the diagnostic profile adhered to Koroscik's art learning model (see Figure 1).

Arrangement and ranking of categories. Dr. Johnson was also asked to assess the arrangement of categories within the dimensions and to suggest any changes that might be necessary. The arrangement of categories within the formal, descriptive, and interpretive dimensions were found to be satisfactory. However, Dr. Johnson spotted an inconsistency in the arrangement of the higher-order understanding categories within the historical dimension. She explained that the "artist's roots" category (H6) involved

identification, and should be rearranged within the lower-order understanding categories. As a result, the "artist's roots" category (H6) was merged with the "personal data about artist" category (H2).

The principal investigator made claims about the categories assessing lower-order understandings, higher-order understandings, and misunderstandings. Lower-order understandings were reflected in categories that assessed identification or recall. Categories that assessed supported judgments, questioning, comparisons, and challenges were associated with higher-order understandings. Categories that identified incorrect appraisals or illogical findings were said to assess misunderstandings. The verifications provided by Dr. Johnson in reference to lower-order understandings, higher-order understandings, and misunderstandings reflected a 100% agreement with the original claims.

Potential use of the diagnostic profile. According to Dr. Johnson, the diagnostic profile has the potential to assess understandings of students in the 2nd-grade through college levels. She further indicated that a diagnostic profile assessment could be focused on several types of data including written statements stimulated by a single work of art or multiple works of art, written statements that have been verbally cued, and verbal statements that have been transcribed.

While the diagnostic profile can be used to assess a range of students and types of data, its potential use depends on several other factors. For instance, the usefulness of an assessment instrument can be effected by the length of the instrument. With four dimensions and 60 different categories, the diagnostic profile might be considered a lengthy assessment instrument. However, Dr. Johnson found the length of the diagnostic profile to be appropriate for the complexity of the analysis it performs. She states, the length is reflective of "the nature of qualitative measurement."

The suitability and feasibility of an assessment instrument can also determine its potential use. Dr. Johnson explained that the diagnostic profile is most suitable for assessing the understandings of middle school and high school students. In terms of the feasibility of the diagnostic profile, Dr. Johnson asserts "this system is quite feasible if a teacher were to use it as a pre/post or diagnostic tool." Dr. Johnson mentioned that administering the diagnostic profile is "a bit labor intensive" and may not be feasible with large enrollments of 500 to 1000 students. However, random sampling might address to this issue.

Training procedures are another consideration to the potential use of an assessment instrument. While the diagnostic profile is complex, the developer claims that a

teacher could learn its basic components in four 2 to 3-hour sessions. Dr. Johnson agreed that teachers could implement the diagnostic profile after the estimated training period.

Administrative procedures. Methods of coding written statements are an important consideration to the accurate reporting of diagnostic findings. According to Dr. Johnson, "the coding system seems fairly straight-forward. Much simpler than assigning categories or transcribing materials into another form." However, Dr. Johnson expressed some concern over the double coding procedures and indicated careful training would be necessary in this area.

Diagnostic capacities. Dr. Johnson judged the diagnostic profile to be an excellent tool for determining a student's formal, descriptive, interpretive, and historical understanding of a work of art. Dr. Johnson states, "I think this instrument could be used to clearly identify both the breadth of a student's knowledge as well as the level of application of that knowledge."

Future implications and conclusions. Dr. Johnson found the diagnostic profile to be clear "conceptually and in its application." She found both the instrument and the theoretical model to be "well-conceived." Dr. Johnson supports the use of the diagnostic profile in research in art education, program assessment, teacher assessment, student assessment, student self-assessment, and curriculum development. In conclusion, Dr. Johnson states, "I find the

implications for teacher training and on-going self evaluation (by the teacher) to be extremely intriguing."

Content Validity Study II: Art Historian/Art Educator

Dr. Jacqueline Chanda, an art historian in art education served as an independent judge of the content reflected in the diagnostic profile. Dr. Chanda's analysis was different from the first content validity study. Initially, Dr. Chanda previewed the diagnostic profile and recommended changes to the content and wording of categories. She then performed essentially the same analysis as Dr. Johnson. There was one exception in that Dr. Chanda reviewed the diagnostic categories for their applicability in assessing a variety of artforms.

Dr. Chanda responded to both quantitative (i.e., Lickert scale, multiple-choice items) and qualitative (i.e., short written) response items as shown in Appendix E. The purpose of her analysis was to recommend changes.

Recommended changes. As a result of Dr. Chanda's assessment, several changes were made to the content and/or wording of categories. What follows is a list of her comments and recommendations and the corrective actions taken.

- Dr. Chanda requested clarification on the use of the term "symbol" in the "general description" category (D1). She pointed out that some symbols have a higher level of recognition than others, "for example Christian symbols that are not as apparent as the cross." Since the descriptive dimension requires students to name objects, no changes were made in this

category. However, clarifications was made in the scoring guide.

- Dr. Chanda explained that other approaches or perspectives of interpretation should be considered in the "interpretive literature review agreement" category (I9). The diagnostic profile is flexible in its ability to function with various interpretive perspectives. Therefore, other interpretive perspectives were listed in parenthesis at the end of the category as follows: cites conventional, feminist, psychoanalytic, Marxist, interpretive perspectives.
- The term "artist," used in six categories, was found to be inadequate. Dr. Chanda indicated that we may not always know the artist that created the artwork. However, we may know the ethnic group the artist represents. Therefore, the term "artist" was adjusted to "artist or ethnic group."
- Dr. Chanda found the term "cultural heritage" to be somewhat unclear. As per her suggestion, the term "culture" was adopted as an alternative.
- Dr. Chanda requested the "interpretation based on description" category (I6), "interpretation based on elements" category (I7), and "interpretation based on principles" category (I8) be defined as either personal or historical in nature. The term "personal interpretation" was then used to clarify each of the categories.
- The "period or movement" category (H4) was expanded to include "societies," "associations," and "ethnic groups, and/or forms."
- To expand the "culture, period, movement, societies/associations, and forms" category (H4), the terms "sorts" and "classifies" were listed with "identifies."
- According to Dr. Chanda, the term "use" is different from the word "function" in the context of Non-Western art (see category H7). Therefore, an "or" instead of an "and" was inserted between the two terms.
- Dr. Chanda pointed out that "stories" (H6) students recite about artists are based on recall and are lower-order. Therefore, "stories" was merged with the "personal data about the artist" category (H2).

- Dr. Chanda noted that "agreement with literature review" categories (F8, D6, I9, and H9) could be considered pure recall. However, this category is only to be applied in cases when students have arrived at an agreement with the literature on their own. Consequently, clear examples were provided in the supportive responses guide.

Content representation in categories. Following these changes, Dr. Chanda assessed the content represented by the categories in the diagnostic profile. Through multiple-choice ratings, judgments were rendered on the importance of categories in assessment in art education. Dr. Chanda determined that 32% of the categories were "very important," and 41% were "important." In addition, she found that 22% of the categories were "somewhat important," and 5% were "not as important."

Dr. Chanda also assessed the diagnostic profile according to the appropriateness of content reflected in its categories. Dr. Chanda found that 22% of the categories adhered to "extremely appropriate" content, while "appropriate" content was adhered to in 58% of categories. In addition, Dr. Chanda reported "somewhat appropriate" content was reflected in 17% of categories, and content not necessarily appropriate was reflected in 3% of categories. Specifically, Dr. Chanda was concerned with the interpretive "incorrect appraisal" categories (-I1, -I2). She asked "how do you determine if an interpretive appraisal is correct if it is based on personal experience?" In addition, she questioned the interpretive "illogical findings" category

(-I3) stating: "by whose logic?" To begin to examine these issues, the notion of "personal experience" must be explored and defined.

The prior knowledge students employ when looking at artworks can be gained both formally and informally. Whether a student learns inside or outside the classroom, the experience of gaining knowledge can be considered "personal" because new knowledge is interpreted through existing knowledge in the student's possession (Vosniadou & Brewer, 1987). Since individuals are unique in their formal and informal "personal experiences," there will be multiple interpretations.

"One can reasonably say that some interpretations are better than others" (Parsons, 1990, p. 40). Art historians agree on particular interpretations of The Birthday, thus validating certain ideas about this work of art. Therefore, generating a common literature base was a solution employed with the diagnostic profile. Interpretations that were inconsistent with scholarly interpretations were considered incorrect. For instance, a student responding to The Birthday stated: "the people seem sad." According to the literature base on the work, the couple in The Birthday are happily in love, therefore, the student is clearly mistaken in his/her interpretation.

Applicability to artforms. Dr. Chanda assessed each category within the diagnostic profile according to its

applicability to various types of art. Since the categories were originally derived from Western art, the results provided by Dr. Chanda were very promising. She verified 98% of the categories could be applied to Western art and fine art and 90% could be used with Non-Western art. Dr. Chanda determined 95% of the categories were applicable to popular arts and 93% could be applied to folk art. Furthermore, 88% of categories were judged as being applicable to crafts. Finally, Dr. Chanda indicated that 83% of categories could be used with antiques and heirlooms, and 82% of categories could be applied to cultural artifacts.

Ranking of categories. Categories within the formal, descriptive, interpretive, and historical dimensions were ranked according to lower-order understandings, higher-order understandings, and misunderstandings. Dr. Chanda was asked to assess the ranking of categories within these dimensions and to suggest any changes that might be necessary. The ranking of categories within the formal, descriptive, and historical dimensions were found to be satisfactory. However, as noted previously, Dr. Chanda was concerned with the "incorrect appraisal" and "illogical findings" categories in the interpretive dimension.

Potential use of the diagnostic profile. According to Dr. Chanda, the diagnostic profile has the potential to assess understandings of students in kindergarten through

grade 12. In addition, she indicated the diagnostic profile could assess the understandings of undergraduates and graduate students. She further indicated that a diagnostic profile assessment could focus on several types of data including: written statements stimulated by a single work of art or multiple works of art, written statements that have been verbally cued, and oral statements that have been transcribed.

In reference to the extensiveness of the diagnostic profile, Dr. Chanda responded, "it's a little bit long but perhaps the categories could be condensed." In addition, Dr. Chanda agrees teachers could implement the diagnostic profile in the training time specified. Commenting on the length of training procedures, Dr. Chanda stated "yes, I think this is realistic even though there are a lot of categories to remember."

When asked how suitable the diagnostic profile was for assessing understandings, Dr. Chanda stated "there are different levels of understanding and this instrument attempts to explore many of them." She further stated, "this system is one of the first that I have seen that would give a teacher a means of assessing understanding of art through written assignments." Besides student assessment, Dr. Chanda suggested the diagnostic profile could be used for student self-assessment, teacher self-assessment, and research in art education.

Diagnostic capacities. Dr. Chanda responded positively to the instrument's diagnostic capabilities as follows:

This instrument shows clearly the weakness in a student's factual knowledge base.

Dr. Chanda found the diagnostic profile to be an "excellent" tool for determining a student's formal and descriptive understandings of a work of art. She also agrees the diagnostic profile is a "good" tool for estimating students' interpretive understanding of a work of art.

Dr. Chanda rated the diagnostic profile to be a "fair" tool for judging historical understandings. She further indicated that "historical understanding comes when you pull together factual information from the context to make speculations about the work's significance." "Speculations" are addressed in diagnostic profile categories within each dimension of understanding (see categories F5, D5, I5, and H5). In addition, the historical dimension category "H9" was expanded to include "cultural significance of a work in reference to artist, context, movement, ethnic group, and/or society."

Criterion-Related Validity

Two criterion-related studies were conducted: one in a 3rd/4th-grade art class at Maize Elementary School and another in an 8th-grade art class at Sherwood Alternative Elementary School. Both schools are in Columbus, Ohio.

In each study data was gathered from: (a) teacher interviews where instructional objectives were discussed, (b) the researcher's observations of the 3rd/4th-grade and 8th-grade students and instruction, (c) written assignments given by the teacher, and (d) student questionnaires. These data served as an external criterion.

Next, written data was gathered at the end of the observational periods. The diagnostic profile was used to assess the students' written statements. Scored with the diagnostic profile, these data were compared with the criterion.

The focus of these studies was on the relationship between this external criterion and findings of the diagnostic profile. The degree of criterion-related validity was reflected in how well the external criterion predicted criterion performance as assessed with the diagnostic profile.

Criterion-Related Validity Study I - 3rd/4th-Grade

This criterion-related study of a 3rd/4th-grade class was conducted at Maize Elementary School in Columbus, Ohio. The art teacher does not have an art room at the school, which necessitates visits to the students' academic classrooms with an "art cart." A total of 9 one-hour observations were conducted in the weekly art class.

Instructional objectives. The informal interview revealed information about the art teacher's instructional objectives. The art teacher prefaced the informal interview with the following demographic information:

Approximately half the students at Maize Elementary School are black. These black students are bussed in daily to this white community [where Maize Elementary School is located].

This information apparently served as a rationalization for the unit of instruction selected by the teacher.

The observational period happened to coincide with Black History Month. According to the art teacher, Black History Month is an opportunity to "build a bridge between black and white students . . . to instill a racial harmony." The African-American local artist, Elijah Pierce, was the focus of her lesson unit.

Elijah Pierce, a folk artist, is well known in the Columbus community for his wood carvings. Often his carvings reflected autobiographical or social themes. Pierce also depicted religious subjects in his artworks. According to the art teacher, the African-American students would easily relate to Pierce's work because "religion and church is at the center of the black community. The black students know biblical stories such as Noah and the Ark." The art teacher developed a unit plan that was to fulfill objectives listed in the Long-Range Plan For Art Instruction, provided by the Columbus Public Schools. She

planned to focus on objectives related to: (a) historical information about a local artist, (b) different types of sculpture, (c) describing works of art through meaningful dialogue, and (d) creating a three-dimensional sculpture.

Summary of observations. The teacher began the first lesson by introducing the artist's name, Elijah Pierce. The students then practiced pronouncing the name. The teacher showed a slide of the artist's portrait as she discussed his background. She pointed out that Elijah Pierce was born in Mississippi, the son of a freed slave who became a successful farmer. She discussed Elijah's desire to see the "city lights" instead of being a farmer like his father. The teacher told the class entertaining stories about the life of Elijah Pierce. In one such story, the teacher explained that Elijah used to hop trains like a "bum." She discussed how he "rode the rails," taking miscellaneous jobs building bridges in Tennessee, Missouri, and Illinois. Eventually, she explained, "Elijah fell in love and settled in Columbus, Ohio." She identified the area of Columbus where Pierce started a barbering business. Many of the black students were familiar with its location on Long Street. The instructional objective related to historical information about a local artist were satisfied with this activity.

Another lesson centered around differentiating relief sculpture from sculpture in the round. Relief sculpture was

characterized as something that sticks out from the surface. And sculpture in the round was defined as "pretty from all sides." Actual examples of relief sculptures and sculptures in the round were used in this pursuit. The teacher passed the objects around for students to examine. The students were curious and attentive as they handled the various objects. The students had no difficulty making distinctions between the two types of sculpture, thus satisfying the second instructional objective.

The balance of the lesson included a slide presentation of Pierce's work, with contextual information about each piece. Most of the time the teacher read the contextual information from a prepared script. The script, related to the life of Elijah Pierce was part of a museum resource packet. The teacher marked out certain words and passages in the script she felt were too complicated for the students. In addition, she underlined areas of the script she wished to emphasize (see Appendix I). The art teacher imitated Pierce voice when she came across the direct quotations she had underlined in the script. She did this "to keep the students interested." The students were captivated and entertained by this art teacher's animated story-telling abilities.

Throughout the presentation, the teacher asked the students if they were looking at a relief or a sculpture in the round. Through this instruction, it appeared the art

teacher was trying to reinforce the definitions the students learned earlier. However, students often made errors in distinguishing "relief" from "sculpture in the round." These errors probably occurred because of the two-dimensional quality of the slide projections.

A week later, the students again viewed the series of slides of Elijah Pierce's artwork. This time, rather than reading the script, the art teacher quizzed the student about what they remembered from the last class. She cued the students with remarks like:

- Why is this artist important in Columbus, Ohio?
- What culture is he from? He's not Chinese! He's not painting dragons!
- What's this picture about?
- Do you remember the story?
- What's he trying to tell us?

Many students recalled factual information given earlier. Students also remembered contextual information from the script they had heard. The teacher called on various students to recite information remembered about each slide. When students were unable to recall information, the teacher would review the information again. The students eventually described Pierce's work, thereby partially meeting the third instructional objective. Because their descriptions were based on recall, dialogue was not as meaningful as it might have been.

This questioning session was followed by an "art detective" activity in which students were required to fill-

in a work sheet (see Appendix J). The worksheet requested recall information regarding description, formal qualities, and art history facts. The students were to focus on Elijah Pierce's artwork as they listed this information on the worksheet. The students were then asked to formulate a "verdict" about the success of Pierce's work.

The slide lectures and drill sessions culminated into an art studio project related to the work by Pierce. Several class periods were used to construct Pierce-like reliefs from Styrofoam meat trays and acrylic paint. The teacher demonstrated how the meat trays could be cut and "built up like a birthday cake." The relief was to represent an occasion in the student's life when he/she had "done a good deed." The fourth instructional objective related to three-dimensional sculpture was accomplished through this studio project.

Collection of writing samples. On the last observation day, the teacher was asked to collect a written sample that could be scored with the diagnostic profile. No effort was made to control methods used to collect these written statements.

The teacher first held a review on Elijah Pierce, much like the questioning sessions already described. The art teacher then decided to have the students write about a painted wood relief by Elijah Pierce entitled The Cruelty of Slavery, constructed in 1980. The students had no previous

experience with this particular artwork. The teacher informed the students "you must think very hard because I'm going to pull the toughest one [slide] for you to write about." The art teacher wrote "Elijah Pierce" on the black board, pinned a photograph of Pierce on the bulletin board, and displayed the slide, The Cruelty of Slavery, in the darkened room.

The teacher provided students with a worksheet with instructions at the top stating "write what you see and what you know about this reproduction of the work of art" (see Appendix K). Students were continually prompted by the teacher throughout the writing exercise:

- What inspired him?
- Did you tell me the purpose of his artwork?
- Did he do a good job?
- Can you tell me about his past?
- Will it be important in 200 years?
- Why is this artist important in Columbus, Ohio?

Predictions based on the external criterion. Because the questionnaire revealed 84% of the students enjoyed writing about art at least some of the time, it was assumed most students would commit themselves to the writing task. Student writing samples were expected to be influenced by the art teacher's instruction. Instruction during the nine-week observational period encouraged memorization, and students practiced recall skills through:

- lecture format - students viewed slides in a dark room as the teacher read a script

- questioning - students were asked to recite historical facts about Elijah Pierce and his artwork
- reinforced vocabulary terms - students repeatedly identified "sculpture-in-the-round," "high and low relief" and "wood carving"

Observations indicated that these teaching methods prompted lower-order outcomes from the 3rd/4th-grade students. These lower-order outcomes were expressed verbally during class discussions and on worksheets. Based on the observations, it was very unlikely that the 3rd/4th-grade students would engage higher-order thinking skills when writing about The Cruelty of Slavery.

Essentially, the teacher used Pierce's artwork as an illustration of the stories discussed in the script. The extent to which students were exposed to description and interpretation was limited to their ability to make associations between script information and the images in the works. Since the students were not directed to describe and interpret artworks on their own, limitations were expected in the descriptive and interpretive dimensions of understanding.

In the historical dimension of understanding, students received extensive exposure to contextual information related to the life and work of Elijah Pierce. Therefore, optimal performance in the lower-order historical dimension of understanding was predicted. Since the students were well acquainted with Pierce's art techniques and medium, they were expected to name the medium used to construct The

Cruelty of Slavery (i.e., painted wood relief). Naming or identifying art materials and techniques would reflect lower-order outcomes related to formal dimensions of understanding.

Diagnostic profile findings. The diagnostic profile assessed a range of four to 14 outcomes in statements written by 21 students in the 3rd/4th-grade class (Table 2).

Table 2

Data Table: Diagnostic Profile Assessment of 3rd/4th-Grade Students' Written Responses

Dimension	Outcomes							
	Lower-Order		Higher-Order		Misunderstandings		All Cases	
	No.	%	No.	%	No.	%	No.	%
Formal	46	23	0	0	2	1	48	24
Descriptive	7	3.5	0	0	0	0	7	3.5
Interpretive	9	4.5	3	1.5	0	0	12	6
Historical	127	63.5	5	2.5	1	0.5	133	66.5
Totals	189	94.5	8	4	3	1.5	200	100

Note. N = 21; range = 4-14 items scored per statement.

As predicted, there was a dearth of higher-order functioning in all dimensions of art understanding. Higher-order outcomes were evident in only 4% of the data.

Diagnostic profile assessment of the class indicated an extremely high proportion (95%) of lower-order outcomes.

Based on the external criterion, it was not surprising that 64% of the lower-order outcomes occurred within the historical dimension. Only 7 of 200 items scored with the diagnostic profile focused on The Cruelty of Slavery. Instead, the preponderance of the lower-order outcomes could be traced directly to the script-based presentations given by the teacher.

Adopting the script and slide resource pack as the primary teaching tool might be referred to as a "reliance on experts" (Hunsaker & Johnston, 1992). By centering instruction around the script and slide reproductions, the students had little inclination and opportunity to describe and interpret the artworks on their own. This may explain students' apparent lack of attention to the The Cruelty of Slavery. Closely aligned with external criterion predictions, only 3% of the written statement described The Cruelty of Slavery. In addition, only 6% of the statements ventured to interpret The Cruelty of Slavery. Moreover, the low incidence of misunderstandings reported with the diagnostic profile might be accounted for by the scripted instruction. Students mainly reported what they recalled from the script, accepting the script as accurate information.

According to the diagnostic profile assessment, lower-order outcomes in the formal dimension of understanding amounted to 23%. In most of these cases, the diagnostic

profile indicated students classified work in terms of technique, media, and/or materials. Some students recounted Pierce's personal method or style of carving. A few students used general formal language in relation to color and shape.

Results of this study demonstrate an extremely strong relationship between the external criterion and the assessment of the criterion with the diagnostic profile. This criterion-related evidence of validity offers persuasive evidence regarding the diagnostic profile's ability to discriminate lower-order understandings.

Criterion-Related Validity Study II - 8th-Grade

The criterion-related study of an 8th-grade class was conducted at Sherwood Alternative Elementary School in Columbus, Ohio. Observations were conducted in the art teacher's classroom. The researcher made six visits to the art class, lasting one and a half-hours each.

Instructional objectives. The informal interview with the art teacher provided an opportunity to discuss instructional objectives for the unit to be observed. The art teacher planned to focus on objectives from the Long-Range Plan For Art Instruction, provided by the Columbus Public Schools. Instruction concentrated on several objectives: (a) applying critical techniques (e.g., describe, analyze, interpret, and judge visual qualities in

works of art); (b) distinguishing between judgment and opinion; (c) comparing and contrasting the effects of various line qualities noted in works of art; and (d) using organizational principles of balance, movement, dark and light, to obtain visual unity. The art teacher expected to use many reproductions of artworks during the instructional sequence. She also planned several research, writing, and studio projects.

Summary of observations. An initial class session focused on a four-step method of art criticism. The teacher referred to a handout as she reviewed each step (Appendix L). The students were to follow the steps in writing a critical essay about an artwork. The students selected from a series of art reproductions representative of both male and female artists from various cultural and ethnic backgrounds. The art reproductions exhibited a wide range of media, including painting, sculpture, and advertising.

In the first paragraph of their essays, students were to provide "data" about the artwork by referencing the artist's name, title of the work, and art medium. In addition, the students were to describe the work (e.g., colors, shapes, objects). The second paragraph of their essay involved analyzing the work according to the principles of design (e.g., movement, lightness and darkness, space). In the third paragraph, students were to discuss the expressive qualities of the work. Questions

prompted the student to think about expressive qualities as follows:

- Is the artist making a political or social statement?
- How does the title of the work help you understand this work?
- What kind of meaning did the artist seem to express to you?

The fourth paragraph of the essay called for the students to express their opinions about the work. Students were expected to specify reasons and explanations for their opinions. The first instructional objective related to the application of critical techniques was satisfied with this activity.

Art criticism methods used in this initial project were later extended to a group project involving art criticism and aesthetic inquiry. As a team, students were to agree upon a particular work of art to be purchased for a museum from a selection of five reproductions. The students were to act as "art experts" as they judged the most appropriate artwork for the art museum to purchase. A second task required teams to select an artwork that exemplified significance in relation to a culture.

Student groups were required to provide research on the artworks in reference to factual background data, as well as social and cultural significance. Based on this research, the teams were to provide aesthetic reasoning and supportive explanations for their judgments and defend their decisions

to the rest of the class. The teacher stated, "it's not what you say, but how you defend it."

Each team provided persuasive arguments for their selection of a work for the museum. After the student teams presented their research and judgments to the class, the teacher provided an immediate assessment of each presentation. The second instructional objective was satisfied with this exercise.

The art teacher quoted statements made by students when introducing the studio activities that followed. Sometimes students cited formal qualities as a reason for selecting a particular work for the museum such as:

People react to color, shape, movement.

Colors are welcoming, and relaxing. The colors give a calm cool feeling rather than a cramped up feeling.

One studio activity involved capturing movement. Students were to study art reproductions for the methods artists used to show movement in figures and animals. The the class then applied these principles of movement to drawing a student model. One student posed in a series of action positions related to various sports activities. Drawings of the model were translated into acrylic paintings that were to incorporate dark and light colors to enhance the movement. Students also completed a wire sculpture showing a figure in motion. Several other art projects were completed, each tied directly to internal visual information

which the students cited in their discussions and class presentations. The third and fourth instructional objectives were satisfied in the completion of these studio activities and later discussions and critique sessions of the completed artworks.

Collection of writing sample. On the last observation day, the teacher was asked to collect a written sample that could be scored with the diagnostic profile. No effort was made to control the methods used to collect the written statements. The students were directed to prepare a critical and an aesthetic analysis about one or more of the following works of art:

- Parade, a painting by Jacob Lawrence, 1960
- Sunny Street, a painting by Philip Evergood, 1950

The teacher equipped students with worksheets that included the following instructions:

- Worksheet 1 - Choose one as if you were to purchase the work of art for a museum: (Criticism/Aesthetics)
- Worksheet 2 - Choose one as being most cultural: (Criticism/Aesthetics) (see Appendix M)

In this writing task, the teacher expected students to transfer their knowledge of critical and aesthetic inquiry to writing about a new set of artworks. As in previous assignments, the teacher expected students to consider the cultural significance of the work of art in their discussion.

Predictions based on the external criterion. Data solicited by questionnaire indicated that 81% of the students liked writing about art at least some of the time. For this reason, students were expected to expend a reasonable amount of effort in completing the writing task.

It was expected that student learning outcomes, as reflected in the writing samples, would be influenced by the instruction delivered during the nine-week period. Teaching methods employed during the observational period included:

- research - students searched through classroom resources to learn about works of art
- "put it in writing" - students found the words to express their ideas in a cohesive written format
- constructing arguments - students were required to defend their stance with reasons
- criticism - students described, analyzed, interpreted, and judged works of art
- aesthetic inquiry - students considered social and cultural issues in the selection of artworks for a museum

The teacher's implementation of these instructional strategies encouraged students to become active participants in their own learning. Observations indicated that these teaching methods prompted higher-order outcomes from the 8th-grade students. The higher-order outcomes were expressed verbally in class presentations, group discussions, and in the writing assignment. Based on these observations, there was a high probability that most students in the 8th-grade class would engage higher-order

thinking skills when writing about Sunny Street and/or The Parade.

In the historical dimension of understanding, students developed competence in searching artworks for their cultural significance. Students also received extensive experience building arguments and making supported judgments. The teacher structured the final writing task in order to prompt students to activate these knowledge-seeking strategies. Therefore, a large percentage of students were expected to meet the criterion for the historical "literature review agreement" category (H9) by discussing cultural and/or historical significance of the work. In addition, optimal performance in judgment categories within each dimension of understanding was predicted (F9, D7, I10, H10).

Many times students pointed to subject matter in the artworks during class presentations. For this reason, they were expected to receive scores in lower-order descriptive dimensions of understanding. However, there were many occasions when students based a personal interpretation on the description of subject matter. Students were therefore expected to excel in the higher-order "interpretation based on description" category (I6).

Since students were accustomed to identifying historical data about artworks and information about the medium the artist used, they were also expected to perform

in some of the lower-order categories in the historical and formal dimensions of understanding.

Diagnostic profile findings. Writing samples clearly indicated the students had taken the task seriously. The students used complete sentences and made numerous observations. The diagnostic profile assessed a range of 6 to 29 outcomes in statements written by 21 students in the 8th-grade class (see Table 3).

Table 3

Data Table: Diagnostic Profile Assessment of 8th-Grade Students' Written Responses

Dimension	Outcomes							
	Lower-Order		Higher-Order		Misunderstandings		All Cases	
	No.	%	No.	%	No.	%	No.	%
Formal	26	19.5	6	4.5	0	0	32	24
Descriptive	43	32	7	5	0	0	50	37
Interpretive	7	5	28	21	1	1	36	27
Historical	8	6	8	6	0	0	16	12
Totals	84	62.5	49	36.5	1	1	134	100

Note. N = 11; range = 6-29 items scored per statement.

Diagnostic profile assessment of the class indicated a substantial proportion (62.5%) of lower-order outcomes. In line with earlier speculations, 32% of lower-order outcomes related to subject matter identification. In addition, the

diagnostic profile indicated that 19.5% of lower-order outcomes focused on formal qualities. Students classified work in terms of medium, and/or used general formal language in relation to elements and principles of design. In 6% of the lower-order outcomes, students provided factual historical information about the works of art (e.g., titles, name of artist).

Lower-order skills and facts are necessary to the development of more complex, higher-order understandings (Prawat, 1987; Woods, 1989). As predicted, many lower-order outcomes became the basis for subsequent higher-order interpretations and judgments. Higher-order thinking skills were exhibited by 10 of the 11 students in the 8th-grade class. Six students provided higher-order outcomes, involving as many as two personal interpretations of the artworks based on the description of subject matter (I6). In addition, 64% of the students searched artworks for their cultural significance, meeting the criterion for the historical "literature review agreement" category (H9). These findings within the historical dimensions of understanding were also in line with earlier projections.

Based on the external criterion, it was not surprising that most students gave solid reasons for their judgments regarding selection of an artwork for a museum. The diagnostic profile assessed 11 items related to judgments based on formal qualities, subject matter, and expressive

content. Assessed with the diagnostic profile, these judgments reflect higher-order outcomes similar to those noted during classroom observations.

Student outcomes of the caliber observed during the six-week period were supported in the written data. Results of this study demonstrated an extremely strong relationship between the external criterion and the assessment of the criterion with the diagnostic profile. This criterion-related evidence of validity provides compelling documentation of the diagnostic profile's effectiveness in discriminating higher-order understandings.

Construct Validity

The objective of the construct validity study was to determine whether constructs in the diagnostic profile could be supported with a comprehensive data base. From this data, written statements were located that exemplified each category of the diagnostic profile.

Construct Validity Study

There was a solid relationship between the written data and the categories in the diagnostic profile, confirming construct validity. All diagnostic categories within the diagnostic profile were supported by the written responses, as shown in Appendix G. The diagnostic profile was able to make discriminations related to lower-order understandings, higher-order understandings, and misunderstandings within

the formal, descriptive, interpretive, and historical dimensions of art understanding. This evidence indicated that meanings of supported constructs could be interpreted according to the theory behind the diagnostic profile.

Rater Reliability

For the purpose of establishing the quality of the diagnostic profile, reliability tests focused on inter-rater consistency and intra-rater consistency. The results of these tests are discussed in the following sections.

Rater Consistency Study I - Inter-Rater Reliability

In this study, three raters (teacher A, teacher B, and the criterion rater) used the diagnostic profile to score 109 written statements. The focus of the inter-rater reliability study was on how consistently raters assigned these scores.

Raters literature review. The raters scored written statements stimulated by several different artworks. Raters were provided reproductions of the artworks, and scholarly literature to use as a basis for scoring. Key aspects of the literature on each of the artworks were organized into a matrix (an example of a matrix is shown in Appendix H). The matrix facilitated quick reference of acceptable responses for the "literature review agreement" categories (F8, D6, I9, and H9).

Practice sessions. The teachers learned how to use the diagnostic profile during four 3-hour practice sessions. The practice sessions were conducted by the principal investigator whose experience included three college degrees in art and art education. The principal investigator also developed the diagnostic profile.

Only one dimension of the diagnostic profile was introduced in each practice session.

Day 1: Formal Dimension
Day 2: Descriptive Dimension
Day 3: Interpretive Dimension
Day 4: Historical Dimension

After learning about the categories in a particular dimension, the teachers and the criterion rater practiced scoring 50 written statements with the categories in that dimension. The 50 written statements used in the practice sessions were different than those used later in the actual inter-rater study. Comparisons of the scored statements stimulated discussion among the raters. These discussions provided teachers and the criterion rater an opportunity to explain and defend scores they assigned to the written statements.

The discussions held between the raters were a very enlightening step in the research process because some conceptual problems became apparent. For instance, on the first day of practice with the diagnostic profile, teacher A improperly scored the written statements. She appeared to

assign scores to statements that clearly did not meet the necessary specifications. As teacher A defended her viewpoint, it became evident that she was projecting what she believed the student was "thinking" or "meant" onto the written statement. This problem was solved by pointing out the need for written evidence of what the student was thinking, to support the scores being assigned.

When working with the interpretive dimension of the diagnostic profile, teacher B became confused with the term "interpretive." She asserted that everything in the written statements were student interpretations - a common sense view of the word. She did not grasp that the interpretive dimension of the diagnostic profile only focused on sentence fragments revealing information about meaning, emotion, feeling, and/or expression. This problem was solved with added explanation and clarification. In addition, clarifications were made in the diagnostic profile scoring guide (see Appendix H).

When working with the historical dimension of the diagnostic profile, confusion arose in relation to some of the historical categories. Teacher A's contention was that the historical categories described the work of art. For instance, when a student cites a title or date of a work, they are really describing the work. This problem was solved by drawing a comparison between the descriptive dimension and "naming objects," and the historical dimension

and "historical data." In addition, cues were incorporated into the title headings of each dimension of the diagnostic profile as follows:

- formal dimension - elements of design and principles of organization, media and technique
- descriptive dimension - naming objects
- interpretive dimension - meaning, emotion, feeling, and expression
- historical dimension - historical data

These cues assisted the teachers in making the desired associations with particular dimensions of the diagnostic profile.

Data collection and analysis. After each practice session, raters independently scored the 109 written statements with the dimension they learned. After the four practice sessions, each rater scored the 109 written statements with all dimensions of the diagnostic profile. Scores assigned to each written statement by the raters were paired in three ways as follows: teacher A and teacher B, teacher A and the criterion, and teacher B and the criterion. The percent of agreement between pairs of ratings were then calculated to determine the degree of scoring consistency. The same 109 written statements were re-scored by the raters following subsequent practice sessions (see Rater Consistency Study II).

Findings. Calculation of average reliability between pairs of raters was based on 109 checks. In the three comparisons, average reliabilities were interpreted through

the Davis (1971) conventions for describing measures of association.

The average reliability between teacher A and teacher B was .97 (range = .6 to 1). In this comparison, a "very strong association" existed between the scores assigned by teacher A and teacher B. Between teacher A and the criterion rater, average reliability was .96 (range = .5 to 1). These reliability scores reflect a "very strong association" between the ratings given by teacher A and the criterion. The average reliability was .98 (range = .5 to 1) between teacher B and the criterion. Finally, a "very strong association" was verified between the scores assigned by teacher B and the criterion rater.

Discussion. There was a very strong association between the scores assigned by each pair of raters. However, some qualifications of the high degree of inter-rater consistency should be noted. First, the typical art teacher will not have the same level of commitment as the teachers selected to participate in this study. Teacher A and teacher B had initiated proposals for master's thesis work involving a pilot study with the diagnostic profile. For this reason, both teachers had a stake in the inter-rater study, which probably had a positive effect on their performance.

Second, under normal circumstances, an art teacher would not be financially compensated for using the

diagnostic profile. However, teacher A and teacher B both received \$300 for their efforts. In all likelihood, the financial reward encouraged the teachers to expend greater effort in scoring the written statements.

Third, the teachers independently scored the 109 statements immediately following the intensive practice sessions. Finally, directions in the scoring guide were accompanied by the tutelage of the principal investigator. Under normal conditions, teachers would only be provided the diagnostic profile scoring guide.

These qualifications must be taken into consideration when interpreting the results of the inter-rater study. Under less than ideal circumstances, reliability would be expected to decrease somewhat. The data argue convincingly that with a reasonable amount of training (three hours per dimension), art teachers can be taught to reliably score a written response to a work of art using the diagnostic profile.

Rater Consistency Study II - Intra-Rater Reliability

The second study involved the comparison of scores assigned to identical written statements at different points in time. The focus of this intra-rater reliability study was on the degree of consistency between two sets of scores by the same rater.

A total of 42 statements scored by the raters in the inter-rater study were randomly selected for the intra-rater study. To insure minimal recall, the raters re-scored the 42 statements four weeks after the inter-rater study. No additional practice sessions were held for the intra-rater study. The teachers were however allowed to retain the scoring directions and the statements they scored in the earlier practice sessions. Written statements from the practice sessions were different than those used in the actual inter-rater and intra-rater studies.

Findings. The calculation of average reliabilities between scores produced four weeks apart by individual raters was based on 42 checks. In the three comparisons, average reliabilities between time one and time two were interpreted through the Davis (1971) conventions for describing measures of association.

For teacher A, average reliabilities between time one and time two were .86 (range = .5 to 1). A "very strong association" between the scores produced four weeks apart by teacher A was verified. For teacher B, average reliabilities between time one and time two were .88 (range = .5 to 1). There was a "very strong association" between the scores assigned four weeks apart by teacher B. Finally, the criterion rater's average reliabilities between time one and time two were .98 (range = .75 to 1). The two

sets of scores given four weeks apart by the criterion rater also reflected a "very strong association."

Discussion. The data demonstrated a regression in the abilities of the teachers to reliably score the 42 written statements after the four week interval. It is interesting to note that the abilities of both teacher A and teacher B declined at similar rates within the four-week period. The difference in average intra-rater reliability between time one and time two was .02. Several factors might account for this similarity and explain why some regression in the teachers' scoring abilities occurred. First, while the teachers differ in years of teaching experience, both possess the same educational degrees in art education. In addition, the two teachers were closely matched in their experience using the diagnostic profile; and in their abilities to administer the diagnostic profile (e.g., inter-rater between teacher A and teacher B was .97). Finally, neither teacher worked with the diagnostic profile during the intervening period. Overall, the two teachers retained enough information from the practice sessions to enable successful scoring of the written statements with the diagnostic profile.

A pattern emerged in the second assignment of scores by the teachers. Frequently lower-order responses were counted differently (e.g., two D1 scores instead of three D1 scores). This was probably due to the data samples received

from young students. Sometimes the number of clauses in sentences written by young students were difficult to analyze because the use of punctuation was lacking. Since lower-order scores are based on the number of clauses or "scoring units," differences in the count of lower-order scores is not surprising. Differences in the scoring by teachers did not cluster in one dimension over another.

The criterion rater demonstrated the highest intra-rater consistency. The intra-rater results of the criterion rater differed from teacher A and teacher B by as much as .12. The criterion rater was expected to demonstrate expertise in using the diagnostic profile for the following two reasons: (a) the criterion rater developed the diagnostic profile, and (b) the criterion rater continued to work with the diagnostic profile over the four-week period.

The inter-rater study and the intra-rater study are closely related because they share the same participants and some of the same data. For this reason, the same qualifications discussed in the inter-rater study directly apply to the intra-rater study. Teacher A and teacher B were certainly influenced by such factors as commitment, financial reward, intensive practice sessions, and tutelage. Under less than ideal circumstances, intra-rater reliability would be expected to decrease somewhat. The data argue convincingly that intervening time (four weeks), does not

adversely affect an art teacher's ability to reliably score written responses to art using the diagnostic profile.

CHAPTER V

SUMMARY

This study was undertaken to lessen the gap in art education research on student assessment. The instruments that are available to assess written statements about works of art do not account for cognitive conceptions of learning. Furthermore, they do not discriminate between knowledge base and knowledge-seeking strategies, higher-order and lower-order understandings, and misunderstandings.

This chapter will summarize the steps taken to develop a diagnostic assessment profile as follows: (a) the theoretical foundation directing the inquiry, (b) methodologies used in the development of categories, (c) validity and reliability studies employed to establish instrument quality, (d) its significance in regard to assessing understandings of art, and (e) future applications.

The research by Koroscik, Short, Stavropoulos, and Fortin (1992), previously referred to as the Chagall Study, motivated the development of the assessment instrument. Results of the Chagall Study indicate student understanding can be facilitated by presenting artworks within comparative

contexts. Understanding is further facilitated when verbal cues are provided. Through an analysis of qualitative data, the research team found evidence to support the independent functioning of a student's knowledge base and knowledge-seeking strategies. These findings indicate that a diagnostic assessment of art learning must encompass both facets of learning.

Further analysis of written statements from the Chagall Study reveal a continuum of learning outcomes in the formal, descriptive, interpretive, and historical dimensions of understanding. The written statements were reduced and organized into categories by adopting Guba's (1978) naturalistic inquiry methodology. Through a series of steps, learning outcomes were converted into diagnostic categories as follows: (a) to represent the student's application of knowledge base and knowledge-seeking strategies through the process of transfer, (b) to encompass terminology reflective of the field of art education, and (c) to make discriminations between lower-order understandings, higher-order understandings, and misunderstandings.

Summary of Validity Studies

Validity of the diagnostic profile was estimated by two content validity studies, two criterion-related studies, and

a construct validity study. Results of each validity study are summarized below.

Content Validity

Experts were recruited to serve as independent judges for the two content validity studies. Dr. Andra Johnson, an evaluation specialist in art education, and Dr. Jacqueline Chanda, an art historian in art education, assessed the content of the diagnostic profile. A summary of the results of their analyses follows.

Importance and appropriateness of content. Judgments were rendered on the importance and appropriateness of categories in assessing art understandings. With a few minor exceptions, the diagnostic categories were considered important and appropriate.

Practicality. The complexity of the analysis performed by the diagnostic profile justified its length, according to Dr. Johnson. In addition, Dr. Johnson responded positively to the procedural and administrative aspects of the diagnostic profile. She found the training procedures to be reasonable, and the methods of coding and reporting data were judged to be clear and concise.

Applicability to artforms. Dr. Chanda was asked to rate the diagnostic categories in terms of their applicability to a variety of artforms. Since the categories were originally derived from Western art, the

results provided by Dr. Chanda were encouraging. She verified that 98% of the categories could be applied to Western art and fine art, and that 90% could be used with Non-Western art. In addition, the diagnostic profile was highly rated for its applicability to popular arts, folk art, crafts, antiques and heirlooms, and cultural artifacts.

Applicability to data. Both judges indicated that a diagnostic assessment could be applied to a variety of data. These might include written statements about a single work of art or multiple works of art, written statements that have been verbally cued, and oral statements that have been transcribed.

Diagnostic capabilities. The independent judges agreed the diagnostic profile could be used to determine formal, descriptive, interpretive, and historical understandings of art. The experts also indicated that the diagnostic profile could be used to assess understandings of students in kindergarten through grade 12. Furthermore, the diagnostic profile can be used to assess the understandings of undergraduate and graduate students.

Future implications. Dr. Johnson found the diagnostic profile to be clear "conceptually and in its application." She found both the instrument and the theoretical model to be "well-conceived." There was also support for using the diagnostic profile in art education research, program assessment, teacher assessment, student assessment, student

self-assessment, and curriculum development. In conclusion, Dr. Johnson states, "I find the implications for teacher training and on-going self evaluation (by the teacher) to be extremely intriguing."

Criterion-Related Validity

Two criterion-related studies were conducted with a 3rd/4th-grade art class and an 8th-grade art class. The focus of these studies was on the relationship between an external criterion and the diagnostic profile findings. The principal investigator observed 3rd/4th-grade and 8th-grade students and the instruction they received over a period of several weeks. A summary of these observations served as an external criterion.

Data in the form of written statements was gathered from students at the end of the observational periods. The written statements were then scored with the diagnostic profile. The degree of criterion-related evidence of validity was reflected in how well the external criterion predicted student performance as assessed with the diagnostic profile.

3rd/4th-grade class. Student writing samples were expected to be heavily influenced by the art teacher's instruction. During the six-week observational and instructional period, students participated in the following activities:

- lecture format - students viewed slides in a dark room as the teacher read a script
- questioning - students were asked to recite historical facts about an artist and his artwork
- reinforced vocabulary terms - students repeatedly identified various art terms

Results of this study demonstrate an extremely strong relationship between the external criterion and the assessment of the 3rd/4th-grade students' written statements. This criterion-related evidence of validity offers verification regarding the diagnostic profile's ability to discriminate lower-order understandings.

8th-grade class. Observations of the 8th-grade class revealed that students received instruction that encouraged higher-order thinking skills such as:

- research - students searched through classroom resources to learn about works of art
- "put it in writing" - students found the words to express their ideas in a cohesive written format
- constructing arguments - students were required to defend their stance with reasons
- criticism - students described, analyzed, interpreted, and judged works of art
- aesthetic inquiry - students considered social and cultural issues in the selection of artworks for a museum

The teacher's implementation of these instructional strategies encouraged students to become active participants in their own learning. As predicted, higher-order thinking skills were exhibited by the vast majority of students in the 8th-grade class.

Results of this study demonstrated an extremely strong relationship between the external criterion and the assessment of the 8th-grade students' written statements with the diagnostic profile. This criterion-related evidence of validity provides convincing evidence of the diagnostic profile's effectiveness in discriminating higher-order understandings.

Construct Validity Study

The objective of the construct validity study was to determine whether constructs in the diagnostic profile could be supported with a comprehensive data base. Results indicate that all categories within the diagnostic profile could be supported by responses from the data base. A strong relationship was found between the data and the constructs in the diagnostic profile. Consequently, the diagnostic profile discriminated lower-order understandings from higher-order understandings, and identified misunderstandings.

According to Fraenkel and Wallen (1990) construct validity involves a variety of procedures that include evidence of content validity and criterion-related validity (p. 133) Therefore, construct validity of the diagnostic profile was further amplified by the favorable results of the content validity and the criterion-related validity studies previously discussed.

Summary of Reliability Studies

Reliability of the diagnostic profile was estimated by inter-rater and intra-rater reliability studies. Results of these studies are summarized in the following sections.

Rater Reliability

Reliability tests of the diagnostic profile focused on inter-rater consistency and intra-rater consistency.

Participants. The principal investigator, an expert at using the diagnostic profile, served as the criterion rater. Since written statements about works of art are generated in art classrooms, it made sense for art teachers to serve as raters. Because the teachers in the study were to provide information to assist in the refinement of the diagnostic profile, they were selected on the basis of their commitment to assessment in art education. Both teachers had embarked on graduate work, and they were compensated \$300 for participating in the rater-reliability studies. Therefore, the teachers had a stake in the results.

Data base. The diagnostic profile can be used to assess written or transcribed verbal statements about works of art. Since people respond in many different ways to works of art, a comprehensive data base of written and transcribed verbal statements was gathered for the studies. The data base reflected variance in several areas: size of class, age, sex, ethnicity, grade level, economic standard, cultural background, and academic abilities.

Inter-rater Consistency

The focus of the inter-rater reliability study was on how consistently three different raters assigned scores to written statements using the diagnostic profile. The teachers learned how to use the diagnostic profile during several practice sessions.

Findings. Calculation of average reliability between pairs of raters was based on 109 checks. In the three comparisons, average reliabilities verified a "very strong association" in the assignment of scores as follows:

- .97 - teacher A and teacher B
- .96 - teacher A and the criterion rater
- .98 - teacher B and the criterion rater

Several factors should be considered when interpreting the strong association between the raters' scores: (a) the teachers had an unusually high commitment level, (b) the teachers were financially compensated, and (c) the teachers received intensive practice sessions. Under normal circumstances, reliability would be expected to be somewhat lower. However, the study presented convincing evidence that with a reasonable amount of training art teachers can be taught to reliably score written responses with the diagnostic profile.

Intra-rater Consistency

The intra-rater consistency study involved the comparison of scores assigned to identical written

statements at different points in time. Four-weeks elapsed between the two scoring periods, and no practice sessions were held for the intra-rater study.

Findings. The average reliability between time one and time two (i.e., four weeks later) was based on 42 checks. A "very strong association" was indicated between the scores as follows:

- .86 - teacher A
- .88 - teacher B
- .98 - criterion rater (e.g., principal investigator)

Although there was a noted decline in the abilities of the teachers to apply the diagnostic profile, the retention rate held strong even after a four-week interval.

The data suggest that intervening time (four weeks), does not adversely affect an art teacher's ability to reliably score written responses to art using the diagnostic profile. Because the inter-rater and intra-rater studies involved the same participants and some of the same data, the limitations discussed in the inter-rater study apply to the findings of this study.

Significance of the Diagnostic Profile

The diagnostic profile is an assessment instrument for art education. Categories within the diagnostic profile represent learning outcomes in relation to the students' knowledge base and choice of knowledge-seeking strategies. The instrument is also diagnostic in its ability to

discriminate among lower-order understandings, higher-order understandings, and misunderstandings.

The diagnostic profile encompasses terminology reflective of the field of art education, and it is responsive to educators who have backgrounds in the visual arts. Studies indicate that the diagnostic profile was consistent and effective in assessing formal, descriptive, interpretive, and historical understandings of artworks. Based on traditional test and measurement techniques, the diagnostic profile is considered a reliable and valid assessment tool.

The diagnostic profile has the potential to assess understandings of students in kindergarten through grade 12. Moreover, the diagnostic profile has been judged to be useful in assessing the understandings of college undergraduates and graduate students.

The diagnostic profile assesses student understandings from written and/or transcribed verbal statements about works of art. Written statements can be stimulated by art reproductions, slides of artworks, actual works of art in museums or galleries, and students' own artwork.

Future Applications of the Diagnostic Profile

From the viewpoint of the principal investigator, the importance of this study is not what was accomplished heretofore in the development of an assessment instrument.

Rather, the importance of this study lies in future applications of the diagnostic profile.

Research on art education programs. The diagnostic profile provides a means of assessing alternative art education programs. In a recent report submitted by the Ohio Partnership for the Visual Arts to the Getty Center for Education in the Arts, William E. Loadman, coordinator of the Regional Institute Project on Student Assessment comments about the diagnostic profile:

The project team is very excited about the analytic scoring system because it allows the team to assess constructs such as problem solving, higher order thinking, and other sophisticated constructs that cannot be assessed using holistic scoring. It provides a mechanism to probe the viability of the theoretical framework. (Getty Center for the Education in the Arts [GCEA], 1991, p. 21)

Loadman goes on to state "the potential of this system [diagnostic profile] to document the impact of DBAE based instruction far exceeds anything that is currently available" (GCEA, 1991, p. 22).

Additional pilot studies focusing on disciplined-based art education programs are underway. This researcher has worked closely with two elementary art teachers in conducting masters thesis research involving the diagnostic profile. Margaret French is studying the effects of a disciplined-based art education program on elementary students' written statements about artworks. This quasi-experimental study incorporates a pre-test and post-test

that encompasses a writing activity. French intends to use the diagnostic profile to assess student understandings from these written statements.

Kay Cornell is using the diagnostic profile to assess understandings of 4th-grade classes. Cornell is interested in the effects of verbal cuing on written responses of her 4th-grade students exposed to disciplined-based art education. Written data will be compared to cued data by 4th-grade students. The students will be taught by another art teacher who does not use disciplined-based art education approaches in her teaching.

Curriculum. Potential learning outcomes are reflected in categories of the diagnostic profile. These learning outcomes correspond to a novice to expert continuum and provide an hierarchical framework of art learning. The diagnostic profile can therefore serve as a curriculum scheme from which to design and guide instruction.

Research on teachers. The diagnostic profile might also be used in research on teachers. For example, Dr. Johnson expressed interest in exploring teachers' attitudes toward using the diagnostic profile as follows:

How does the ability to generate supportive evidence of student learning outcomes with the diagnostic profile heighten teacher confidence and morale, sense of accomplishment, and self esteem? Will using the diagnostic profile prompt ownership of the instrument?

Another study is planned by this researcher to examine differences in how teachers interpret curricula. This

research idea grows out of the two criterion-related validity studies. Both the 3rd/4th-grade teacher and the 8th-grade art teachers teach concepts of disciplined-based art education, however, the art teachers sharply contrast in how they operationalize disciplined-based art education. The 3rd-grade art teacher uses a lecture format, questioning techniques that encourage recall, and drill over vocabulary terms. The 8th-grade art teacher has students take a more active role in their learning. She encourages research projects and reflective writing assignments. She directs students to construct arguments and defend their stance. She also stimulates student thinking with probing questions that call for higher-order understandings. While it is clear the two art teachers are dissimilar in their background qualifications and in the educational levels they teach, fluctuation in meeting disciplined-based curricular objectives may be attributed to other variables. The diagnostic profile might be useful in isolating these variables.

Student assessment. The possibilities are numerous for using the diagnostic profile to assess student understandings of artworks. It seems most appropriate to develop a form of the instrument for students to use in self-assessments. This feedback might help students more fully grasp aspects of their own educational progress.

Research. The diagnostic profile enables random sampling from large populations. Results provided by large-scale studies can (a) assist in designing more effective curricula, (b) demonstrate to parents that art programs make a difference, and (c) assist in advocacy efforts by providing comparative data. Such efforts might help secure funding for future research in art education and assist policy-makers make more equitable decisions about the allocation of educational resources.

Concluding Remarks

Grounded in current conceptions of learning, the diagnostic profile is an assessment tool that extends our ability to gauge student understandings of artworks. Standardized tests are not useful for assessing understanding because they do not provide students with the opportunity to use their prior knowledge to (a) demonstrate how they organized information, (b) give explanations and reasons for choices, and (c) present arguments. When students write about works of art their thinking process unfolds, and understandings are revealed (Efland, Koroscik, & Parsons, 1992). Writing provides students the opportunity to call upon prior knowledge in organizing information and explaining answers or solutions. Knowledge-seeking strategies such as giving reasons for choices and/or preferences, and presenting clear arguments based on

observations of artworks can also be verified in students' written statements.

Studies reported in this dissertation have shown that the diagnostic profile provides both a reliable and valid assessment of student understandings of artworks. The diagnostic profile contributes to the advancement of the field of art education by providing a means to assess student understandings of visual art. The diagnostic profile is unique in that it goes beyond description by: (a) delineating the student's construction of knowledge from a writing sample, (b) characterizing the interplay between students' knowledge base and choice of knowledge-seeking strategies, (c) assessing a range of understandings and misunderstandings, and (d) diagnosing attributes and constraints in learning. With the capability to assess student understandings and misunderstandings of art, instructional materials can be reconstructed, thereby improving teaching and learning of art education.

PLATE I
THE BIRTHDAY

Plate I. Marc Chagall. The Birthday. 1915-1923, oil on canvas, 31 7/8" x 39 3/8," The Solomon R. Guggenheim Museum, New York.

APPENDIX A

**FRAMEWORKS FOR UNDERSTANDING ART: THE FUNCTION OF
COMPARATIVE ART CONTEXTS AND VERBAL CUES**

Frameworks for Understanding Art: The Function of Comparative Art Contexts and Verbal Cues

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The purpose of this investigation was to study contextual variables that influence the understanding of works of art. A key artwork was introduced to college students with other works of art in three different comparative contexts (same-artist vs. same-theme vs. interdisciplinary). Verbal contextual conditions (cued vs. non-cued) were also manipulated to show whether students rely on explicit verbal prompts to find relationships among works of art. The results of a multiple-choice matching test and an open-ended writing task indicate both types of contextual variables can have a strong impact on what a student looks for and thinks about when examining a work of art. Verbal cues can prompt students to elaborate on possible art meanings. Comparative art contexts containing familiar ideas can reduce the occurrence of misunderstandings if those ideas are explicitly identified for students. These and other findings have a direct bearing on how educational interventions might be structured.

One of the most important characteristics of intelligence is the ability to transfer previously acquired knowledge to new learning situations (Bransford, Sherwood, Vye, & Rieser, 1986). In order for students to make use of their cognitive resources, they must find meaningful connections between their existing knowledge and whatever they are attempting to understand (Prawat, 1989). Research has shown that transfer is highly context-dependent because much of what a student understands is embedded in the original learning context (Perkins & Salomon, 1988). Studies in reading comprehension have shown that readers often determine meanings of texts by scrutinizing surrounding contexts for semantic cues (Bransford & Johnson, 1972; Carnine, Kameenui, & Coyle, 1984). Verbal contexts can provide meaningful cues for comprehending texts, and, conversely, the understanding of pictures can be influenced by verbal contextual cues (Warren & Horn, 1982). Verbalizations have been found to have particularly strong effects on the nature of understandings formed in art viewing experiences (Barrett, 1985; Koroscik, Garber, & Baxter, 1987; Koroscik, Osman, & DeSouza, 1988). What remains in question is how the presence of one artwork among other works of art affects viewers' understandings. The present investigation was conducted to help fill this gap in the research literature.

Comparative art contexts may provide implicit cues that guide the art viewer's search for meanings. If, for example, a painting is displayed with other works by the same artist, students might look for relationships they would not

think to consider if the painting was shown alone. Comparing works of art may have particularly strong effects on the way students look at art because research on learning indicates novices tend to dwell on incidental similarities unless explicitly prompted to do otherwise (Bransford, Sherwood, Vye, & Rieser, 1986; Perkins, 1987; Perkins & Salomon, 1988). Experts can readily see past surface resemblances to find deeper analogies because their richer knowledge base provides alternative sources for comparison (Chi, Glaser, & Farr, 1988; Glaser, 1988).

Teachers must concern themselves with (a) helping students expand their knowledge base and (b) developing students' abilities to transfer existing knowledge when it is appropriate to do so. We were interested in studying both aspects of learning to better explain how contextual variables influence a student's choice of search strategies and construction of art understandings. We manipulated the comparative context in which a particular artwork was shown in order to determine if students seek out meanings in predictable ways. We questioned whether art contexts would guide students to look for common features and whether comparative relationships among artworks are comprehended without explicit prompting. Evidence was also gathered to reveal the usefulness of verbal cues in the comprehension of those comparative relationships. We speculated that verbal cues might facilitate transfer by helping students find connections between the artworks' characteristics and students' own prior knowledge.

Method

Design

Two between-subjects variables were factorially combined to form six experimental groups to which undergraduate student volunteers were randomly assigned. *Art Context* consisted of comparative conditions in which a particular work of art, i.e., the key artwork, was presented in three different ways: (a) with other paintings by the same artist, i.e., the *same-artist context*; (b) with paintings depicting the same theme, i.e., the *same-theme context*; or (c) with works in other art forms (a poem, a lithograph, and a dance) that have a direct relationship to the key artwork, i.e., the *interdisciplinary context*. A second, independent variable, *Verbal Cue*, consisted of two levels: (a) Cues were given relating the key artwork to its comparative context, i.e., the *cued condition*, or (b) cues were not given, i.e., the *non-cued condition*. Student understanding of the key artwork was assessed through use of a multiple-choice matching test and an open-ended writing task. The matching test included three levels of a within-subject variable, i.e., *Dimension* (*formal*, *descriptive*, and *interpretive*). A full description of how each variable was operationalized in the present investigation is included below in the Materials and Procedures sections of this report.

Participants

Undergraduate students ($N = 120$) attending a large public research university in midwestern United States served as subjects in the study. The participants were recruited on a volunteer basis from an introductory course on the role of contemporary arts in American society; instruction in this course was based on live, recorded, and filmed performances and exhibitions. The course attracts students from a wide range of undergraduate majors since it can be counted towards fulfilling the university's basic education requirements. In exchange for participating in the study, students received extra credit in the course. An equal number of volunteers ($n = 20$) were randomly assigned to

each of the six experimental groups.

There were more sophomores ($n = 53$) who chose to participate in the study than students in any other class rank: freshmen ($n = 26$), juniors ($n = 25$), and seniors ($n = 16$). This general distribution pattern was consistent within each experimental group except in the same-artist context in which there were slightly more upper-class students in the non-cued condition. Only somewhat more women ($n = 66$) participated in the study than men ($n = 54$), although the ratio of males to females was approximately the same across all experimental groups.

Materials

Art stimuli. Marc Chagall's painting, *The Birthday*, 1915-1923, was chosen as the key artwork in the present investigation. This painting was selected because it is stylistically representative of Chagall's work, it depicts a common theme in art, it has strongly influenced work in other arts disciplines, and there is a sizeable body of published literature on the artist and this painting. Its subject matter is moderately recognizable (medium abstraction level), and its expressive content is relatively easy to interpret. The painting represents a warm, loving relationship between the artist and his wife (Compton, 1985; Markarius, 1988).

Students were shown slide reproductions of *The Birthday* along with other works of art in one of the following three comparative context conditions:

1. *Same-artist context.* In this context condition, students viewed color-slide reproductions of three other paintings by Marc Chagall from the same time period: *The Coachman*, 1911-1912; *I and the Village*, 1911-1912; and *The Fiddler*, 1912-1913.

2. *Same-theme context.* The artworks shown to students in this context condition consisted of paintings displaying the same dominant theme as *The Birthday*, i.e., they all depict relationships, either positive or negative, between men and women. The paintings chosen were: *Jawlensky and Werfkin in a Meadow*, 1908-1909, by Gabriele Muntz (positive depiction); *Untitled #2*, 1962, by Richard Lindner (negative depiction); and *Dance of Life*, 1889-1900, by Edvard Munch (negative depiction). As in the same-artist context, all paintings were presented simultaneously with *The Birthday* (positive depiction) as projected color slides.

3. *Interdisciplinary context.* This context condition included other art forms that are documented as having been directly influenced by Chagall's artwork. They included a short poem (14 lines) by Paul Eluard, *To Marc Chagall*, 1911-1915 (Verdet, 1984); a lithograph by El Lissitzky, *And Came the Dog Ate the Cat*, 1919; and a 6.5 minute segment of a video-taped modern dance performance, *Chagall*, 1989, by the Canadian Dance Company O'Vertigo of Montreal. The dance's choreography by Ginette Laurin and musical score by Gaetan Lebeuf were inspired by a 1988 exhibition of Chagall's work at the Montreal Museum of Fine Arts.

Procedures

The experimental sessions were conducted in an art classroom that provided minimal distraction from extraneous stimuli. Not more than 13 and no less than 6 students participated in any one session at the same time. The participants were seated along a row of tables facing a wall onto which slides were projected and/or a VCR monitor was in view. The classroom offered adjustable lighting so students could clearly view all artworks simultaneously, and they were also able to see well enough to complete the assigned writing tasks.

The procedures we used were quite simple. First, we gave students a general

idea about the purposes of the study and informed them that their participation would take about 30 minutes. Next, the artworks were introduced one at a time at one-minute-intervals in a randomized sequence that varied with each context. After all four artworks were simultaneously in view, students were asked to respond to the first part of an open-ended writing task corresponding to the verbal-cued or non-cued condition they were randomly assigned to receive. Three minutes later, the participants were instructed to stop writing. The second part of the cued or non-cued condition was then given, and the participants were instructed to continue writing.

Verbal cues. Those participants who received verbal cues were initially prompted to look for and write about common characteristics among the artworks shown. After three minutes the key artwork was identified, and a common characteristic among all the artworks was specified. In the same-artist context, students were told that "all of these works of art were painted by the same artist, Marc Chagall." In the same-theme context, it was explained that "all of these works of art have the same theme, in that they all depict relationships between men and women." And in the interdisciplinary context, a verbal cue was given informing students that all the works "were inspired by Marc Chagall's artwork."

Participants in the non-cued condition were not told to look for common characteristics nor were any such commonalities revealed to them during the study. Instead, non-cued students were first instructed to write down their thoughts about the artworks. After three minutes, they were merely told to continue writing for another couple of minutes (an additional three minutes were provided). Unlike the verbal-cued condition, no mention was made of the key artwork during either part of the writing task.

Matching test. A multiple-choice matching test was developed to assess the degree to which participants comprehended formal, descriptive, and interpretive dimensions of the key artwork, *The Birthday*. When referring to the visual characteristics of artworks, we used the operational term *formal dimension*. All references to subject matter content were labelled *descriptive dimension*. And all expressive meanings concerning an artwork's form and/or content were termed *interpretive dimension*. Although these dimensions of artworks are inter-related, we have found in earlier research that it is possible to differentiate the comprehension of one dimension from another (e.g., Koroscik, 1982; Koroscik, Garber, & Baxter, 1987).

The format of the matching test was similar to those used in our earlier investigations (cf. Koroscik, Garber, & Baxter, 1987). Test items were identified from a comprehensive literature review on Chagall and *The Birthday*. The items consisted of 30 words or phrases (10 items per dimension) of which half corresponded to the painting and half were plausible mismatches. In the formal dimension, matching test items included "multiple points of view" and "compressed space," whereas mismatches included "jagged brushstrokes" and "symmetrical balance." The descriptive items included such matches as "a bouquet of flowers" and "lovers suspended in the air," whereas mismatch items included "acrobats flying in the air" and "a couple on stage." In the interpretive dimension, matching items included "no suggestion of erotic desire" and "love has eliminated gravity," whereas mismatches included "an act of seduction" and "a feminist comment on male/female relationships."

Participants were instructed to take as much time as they needed to decide

whether each test item matched or did not match *The Birthday*. The painting was in view throughout this entire portion of the study. After responding to each matching item, students were asked to rate their confidence in each response on a scale from 1 (not confident) to 5 (extremely confident). The confidence ratings were later used in scoring the matching test. When the matches and mismatches were correctly identified, positive numerical values of the corresponding confidence self-ratings were assigned. Incorrect responses received negative values of the corresponding confidence ratings. The values were then totaled for each level of the dimension variable (formal, descriptive, and interpretive) and compared in analysis of variance tests.

Results and Discussion

Matching Test Analyses

Data from the multiple-choice matching test were analyzed in a 3 (Comparative Art Context) $\times$ 2 (Verbal Cue) $\times$ 3 (Dimension) mixed analysis of variance. A summary of this analysis is presented in Table 1. The results did not show significant differences in performance among students in the three comparative context groups; however, differences were found for cue effects, Verbal Cue, $F(1, 114) = 6.64, p < .01, MS_e = 143.63$. Cuing students to make contextual comparisons led to higher scores on the matching test ($M = 15.16$) than those scores achieved by students who received no verbal cues ($M = 11.91$). Significant differences were also found for Dimension, $F(2, 228) = 78.73, p < .0001, MS_e = 105.20$, and for the Verbal Cue $\times$ Dimension interaction, $F(2, 228) = 5.58, p < .004, MS_e = 105.20$.

Further analysis of Dimension effects indicates students had greatest difficulty comprehending interpretive meanings of *The Birthday*: descriptive ($M =$

Table 1

ANOVA Summary Table of Matching Test Results as a Function of Comparative Art Context, Verbal Cue, and Dimension

Source	df	MS	F	p
Comparative Art Context (CAC)	2	163.53	1.14	NS
Error	114	143.63		
Verbal Cue (VC)	1	953.88	6.64	.0112
Error	114	143.63		
Dimension (D)	2	8282.53	78.73	.0001
Error	228	105.20		
CAC X VC	2	249.96	1.74	NS
Error	114	143.63		
CAC X D	4	44.13	.42	NS
Error	228	105.20		
VC X D	2	587.25	5.58	.0043
Error	228	105.20		
CAC X VC X D	4	84.57	.80	NS
Error	228	105.20		

18.83) = formal ($M = 17.70$) > interpretive ($M = 3.97$), $p < .01$. We expected to find lower scores for interpretive items because they require a deeper level of understanding (cf. Koroscik, Osman, & DeSouza, 1988).

Post hoc comparison of means in the Verbal Cue $\times$ Dimension interaction shows responses to interpretive items were most successful in all three art context conditions when students received explicit verbal cues linking *The Birthday* to other artworks (see Table 2). There was no evidence that cuing helped the participants make accurate responses to formal or descriptive items. These findings suggest that students possessed prior knowledge that was germane to understanding interpretive meanings of *The Birthday*, but they failed to access and apply this knowledge unless explicit cues were given. Even the brief verbal cues we provided led to significant differences in interpretive understandings.

Table 2

Matching Test Mean Scores as a Function of Verbal Cue and Dimension

Verbal Cue	Dimension		
	Formal	Descriptive	Interpretive
Cued	17.72	19.65	8.12
Non-Cued	16.69	18.22	-.18

Writing Task Analyses

Responses to the two-part open-ended writing task were examined on several levels in order to gain a more complete picture of how students' understandings of *The Birthday* were affected by the comparative art contexts and verbal cues. We were particularly interested in determining whether the art contexts guided the students' choice of search strategies, i.e., whether the contexts provided any implicit cues about what to look for when examining the works of art. We then compared these implicit cue effects in relation to differences brought about by explicit cuing, i.e., the verbal-cued condition. Analyses were also performed to gauge how students' understandings may have been deficient. Although art educators do not often speak of misunderstandings, there are occasions when responses to artworks are clearly off-track (Koroscik, 1990a, 1990b). We wanted to determine the conditions in which misunderstandings were most likely to occur.

Searching for understandings. The participants' written responses were first examined for evidence as to what guided their searches for meaning. We expected to find contextual differences in orientation to the formal, descriptive, and interpretive dimensions of artworks. We predicted that students in the same-artist context would give greater attention to formal qualities because these constituted common characteristics among all the works. The connecting factor among artworks in the same-theme context was subject matter; therefore, we speculated that the context would prompt students to attend to descriptive content more than to the artworks' formal or interpretive dimensions.

In the interdisciplinary context, all of the works were directly linked to Chagall's painting by primarily their expressive content, so we anticipated that this context would implicitly direct students to search for interpretive meanings.

Our predictions proved to be accurate for the first half of the writing task. There is evidence that when students first began writing, they paid some attention to all three dimensions (formal, descriptive, and interpretive) but concentrated their efforts on examining characteristics shared by all four artworks in a context. As shown in Table 3, formal attributes were written about by more participants in the same-artist context than descriptive or interpretive qualities. In the same-theme context, more students wrote about descriptive content than the other two dimensions. And in the interdisciplinary context, considerably more students wrote about interpretive qualities than any other dimension.

Table 3

Percent of Participants Who Made Some Reference to the Formal, Descriptive, or Interpretive Dimensions of Artwork in the Open-Ended Writing Task

Comparative Art Context	Writing Task					
	Part 1			Part 2		
	Dimension					
	Formal	Descriptive	Interpretive	Formal	Descriptive	Interpretive
Same-Artist						
Cued	80	64	60	48	56	72
Non-Cued	85	73	46	62	65	50
Same-Theme						
Cued	60	83	69	14	37	77
Non-Cued	86	100	73	86	86	77
Interdisciplinary						
Cued	18	55	100	27	36	68
Non-Cued	33	33	92	50	58	83

The results show that search strategies shifted during the second part of the writing task. In the cued condition, students were told how the artworks related to *The Birthday*. These students then continued examining all three dimensions of the artworks, but they gave most attention to writing about interpretive qualities. Not only did this pattern occur in the interdisciplinary context where it was expected, the same orientation was also adopted by students who received verbal cues in the same-artist context and the same-theme context. This explains, at least in part, why we found higher matching test scores for interpretive items among students who received verbal cues regardless of their art context group (refer to Table 2).

Participants in the non-cued conditions responded differently in part two of the writing tasks. As shown in Table 3, these students shifted emphasis away from writing about the artworks' shared characteristics and adopted a broader

search strategy. Students in the non-cued condition may have assumed it was wise to diversify their search strategies for information after we announced there was only a short time remaining to write about the artworks. It seems they tried quickly to take in as much as possible just in case something significant was overlooked. This shift to a more diverse orientation probably occurred because non-cued students received no confirmation that their original search strategies were appropriate. The non-cued students could only guess at what was important to look for and write about when viewing the artworks.

The occurrence of misunderstandings. Further analysis of the writing task results indicates that the understandings students formed were often mistaken. When understandings are wrong, it is common to refer to them as “misunderstandings” or “misconceptions” although these terms have perhaps limited usefulness in describing art-learning problems. Any single work of art can have multiple meanings, yet all understandings are not equal, and some are altogether inappropriate (Koroscik, 1990a). Even when students give sound reasons for their interpretations of an artwork, those interpretations may be off-track because students possess limited knowledge of fundamental contextual information about the artist and/or the work of art.

We judged the inappropriateness of all writing task responses on the basis of a literature review of each work of art. Multiple sources by art historians and other experts were used to obtain consensus, particularly with regard to an artwork’s interpretive meanings. The following excerpts are representative of the misunderstandings we found:

1. A student in the non-cued, same-artist context wrote, “I think the center two [*The Birthday* and *The Coachman*] look like they were done by one artist and the outside two [*I and the Village* and *The Fiddler*] by another artist.”
2. Another student in the same-artist context (non-cued condition) wrote that the artworks “seem dated c. 1600’s.”
3. A student in the cued, same-artist context remarked that “it [*The Birthday*] looks like something Salvador Dali might create.”
4. A student in the cued, interdisciplinary context condition stated that “all of [the artworks] have a violent theme: a young couple in troubled times do not know how to release their aggression, so they take it out on each other.”
5. Someone in the same-theme context (non-cued condition) described *The Birthday* as showing “a man desperately seeking to make up with his wife after they have had a confrontation. He is going out of his way to get to her.”

Several patterns emerged from our analyses of written responses such as these. The first pattern concerns the syntactic nature of the individual’s response. This is useful to consider because a person’s thinking process is revealed to some extent by the manner in which he or she organizes and translates thoughts in writing. In our study, the syntax of written responses typically took the form of an itemized list or a paragraph and sometimes a combination of the two. The construction of lists suggests a “bits and pieces” approach to thinking, whereas paragraph writing (containing more-or-less complete sentences) suggests an attempt to synthesize material.

When the contents of lists and paragraphs were compared in our study, we found misunderstandings occurred more frequently when students wrote lists to convey their understandings of formal, descriptive, or interpretive characteristics. Of the students whose understandings were mistaken or inappropriate, 50% wrote lists, 38% wrote paragraphs, and 12% wrote both lists and para-

graphs. We found that even the relatively simple task of describing such things as lines, colors, and shapes was not easy or obvious to the students we tested. This finding is noteworthy in light of the fact that our study involved college students. It is reasonable to conclude that younger and less experienced students would find this task even more difficult.

A second pattern to emerge from our syntactic analysis demonstrates another strong difference between the experimental groups who received verbal cues and those who did not. The verbal cues prompted more students to write paragraphs (72%) than lists (7%), although some chose to write in a combined format (21%). In the non-cued condition, we found that students (47%) were more inclined to list their thoughts. Fewer non-cued students wrote paragraphs (42%) or chose to combine formats (11%). These findings suggest to us that the presence of verbal cues immediately enabled many participants to find commonalities or to synthesize their ideas across examples. When the same students were cued a second time, they elaborated on relationships among artworks on a deeper, interpretive level. In the absence of verbal cuing, students observed common characteristics, but they were less likely to elaborate on the nature of those connections.

Choosing to write in paragraphs did not guarantee the construction of accurate understandings. At times, comparative art contexts and verbal cues were inadequate for prompting students to access and transfer relevant prior knowledge, and at other times the student's knowledge base was deficient in ways that could not be overridden by effective search strategies.

A third pattern to emerge from the writing task analyses suggests that comparative art contexts and verbal cues helped students bridge gaps in their existing knowledge only when the contexts and cues called attention to familiar ideas. As Table 4 indicates, we found the occurrence of misunderstandings varied among the three comparative art contexts. The fewest misunderstandings were produced in the same-theme context when students were explicitly cued to look for connections regarding male/female relationships. It seems likely this comparison facilitated understanding by focusing the search for meanings on a theme that students could readily link to their prior knowledge of couples in daily life. When the nature of relationships among artworks was less consistent with the student's knowledge base, i.e., the interdisciplinary context, understandings were more difficult to comprehend despite the use of appropriate search strategies. Of the three comparative contexts we provided,

Table 4

Percent of Participants Who Expressed Some Misunderstanding of Artworks in the Open-Ended Writing Task

Comparative Art Context	Verbal Cue	
	Cued	Non-Cued
Same-Artist	44	58
Same-Theme	37	59
Interdisciplinary	73	75

students were least successful when they were asked to compare *The Birthday* to the selected dance, poem, and lithograph. Even when we provided verbal contextual cues in the interdisciplinary context, misconceptions were prevalent (refer to Table 4). Almost three-fourths of the students who examined artworks in the interdisciplinary context produced misconceptions.

Conclusions

Works of art are seldom found in isolation. In classrooms and museums, for example, they are frequently displayed within the context of other artworks. The results of our investigation show that comparative contexts, such as those discussed in this report, can have a significant impact on the way students look at and think about a work of art. The art contexts we used implicitly prompted students to examine artworks in terms of shared characteristics. When artworks were grouped thematically, the students in our study concentrated most of their attention on examining subject matter. When we grouped works of art by another set of shared characteristics in the same-artist context and interdisciplinary context, students' choice of search strategies shifted accordingly to focus on those common characteristics instead.

It should be emphasized to teachers that comparative art contexts were most effective in our study when they were accompanied by explicit verbal cues about the artworks' shared characteristics. Although we only introduced brief verbal statements, these explicit verbal references helped students immediately synthesize their ideas across works of art. This resulted in the construction of more elaborate meanings and deeper understandings. The verbal cues we provided also helped reduce misunderstandings, although they did not eliminate such problems altogether. In the absence of explicit verbal cues, students elected to employ broader search strategies which proved to be far less effective. These findings suggest teachers should provide comparative contexts and explicit verbal cues when depth of understanding is preferred over breadth. It should not be taken for granted that students will find meaningful or accurate ideas about artworks on their own.

Art teachers routinely display art reproductions in their classrooms, but it is unlikely that teachers spend much time considering how such displays might dictate student thinking about a particular artwork. We recommend that art educators plan instructional interventions to capitalize on contextual effects. Since multiple comparisons are possible for any work of art, it is important for teachers to first decide on the key ideas they want students to learn (Perkins, 1987). Prawat (1989) insists that some ideas in a domain or discipline are more meaningful than others because they allow for a richer set of connections. Our findings suggest that it is wise to base art comparisons on key ideas that have some relationship to students' existing knowledge. We concur with Prawat that it is equally important for teachers to consider the structure of the discipline and the cognitive structure of expert learners in that particular discipline.

One thing that has become clear from expert-novice research is that the expert's knowledge base is organized around a more central set of understandings than the novice's. One way to promote accessibility, then, might be to provide students with the concepts and principles most likely to promote expert competence in the domain in question. This requires a good deal of thoughtful analysis on the part of educators. (Prawat, 1989, pp. 6-7)

Our findings also underscore the value of differentiating two components of

learning: (a) the student's knowledge base and (b) the strategies used by the student to activate prior knowledge. We found that problems in understanding works of art can be a function of one component only or of both. If a student chooses a search strategy that is inappropriate, there is little chance relevant knowledge will be transferred even if the student possesses it. On the other hand, if effective search strategies are employed but the student's knowledge base is lacking, understanding will be impaired or misguided. In either instance, the remedies teachers use to overcome learning obstacles must correspond to the specific nature of the problem.

Researchers must provide teachers with valid diagnostic tools to assess the scope of a student's existing knowledge base. Researchers must also develop methods for assessing a student's ability to employ knowledge-seeking strategies at appropriate times. The results of our study suggest multiple-choice matching tests are only somewhat useful for this purpose. Open-ended writing tasks were found to be more useful, but analysis of them is extremely time intensive. This is yet another reason why it may be desirable for educators to focus learning objectives on a limited set of key ideas. Instead of assessing a full range of possible learning outcomes, teachers (and students) might restrict themselves to evaluating the depth to which key ideas have been learned.

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APPENDIX B
CREDENTIALS OF DR. ANDRA JOHNSON

DR. ANDRA N. JOHNSON

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 Associate Professor of Art
 University of Georgia
 Athens, Georgia 30602

EDUCATION BACKGROUND:

January 1979-August 1984. Ed. D. Art Education, University of Illinois,
 Champaign-Urbana, Illinois.
 August 1976-August 1977. M. Ed. Special Education, University of
 Illinois, Urbana-Champaign, Illinois.
 September 1969-January 1973. B.F.A., Ceramics, University of Illinois,
 Urbana-Champaign, Illinois.

TEACHING BACKGROUND:

September 1984-Present, University of Georgia, Athens, Department of Art,

Associate Professor, Art Education
 Coordinator and Instructor for Art 305, Art and the Child;
 Instructor for Art 335, Basic Curriculum in Art Education;
 Supervisor of Student Teaching in EAR, EAR 546 & 746;
 Instructor for Art 513/713, Crafts for Teachers;
 Instructor for Art 737, Curriculum Development in EAR; Art 963, Critique of
 the Literature; Art 900D & 930D, Doctoral Research and Dissertation.

August 1980-May 1984, University of Illinois, Urbana-Champaign; School of Art and Design.

Student Teaching Field Supervisor, Art Education, University of Illinois.
 Organized, observed and evaluated art education teachers in Chicago and east central
 Illinois. Instructor for seminar offered in conjunction with practicum.
 Coordinator, recruiting for the School of Art and Design. Coordinated and conducted
 presentations in secondary schools in Chicago area.
 Co-coordinator, University of Illinois Saturday School Art Program.

August 1980-May 1984, University of Illinois, Urbana-Champaign

Developed and coordinated curriculum and evaluation of student teachers and
 teaching assistants, University of Illinois Saturday School Art Program.
 Critic Teacher, University of Illinois Saturday School Art Program.
 Direct supervisor of student teachers for high school and adult levels.
 Instructor, University of Illinois Extension Course, Quincy, Illinois.
 Graduate level painting class offered through Continuing Education Program.
 Instructor; Chairman of Art Department at University High School; College of
 Education, University of Illinois
 Coordinator; Development and implementation of Direct Reading Instructional Program
 for students at University High School; College of Education, University of Illinois.
 Instructor for elementary level art enrichment program at Leal School, Urbana, Illinois.

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TEACHING BACKGROUND(Continued):

August 1977-August 80; University of Illinois, Urbana-Champaign.

Education specialist, Institute for Child Behavior and Development; Colonel Wolfe School;
 Supervision of students in graduate level internship program.
 Head teacher for Rapyth classroom for special education students.
 Writer; curriculum materials for art, special education and gifted education
 Graduate internship for studies in Early Childhood Education for Exceptional Children;
 Colonel Wolfe School; ICB, University of Illinois.
 Instructor, A Very Special Arts Festival, Urbana, Illinois. Sponsored by the National Committee, Arts for the Handicapped and City of Urbana, Illinois.

PUBLICATIONS:

BOOKS (Edited):

Johnson, A. N. (Ed.) *Art Education: Elementary*. Reston, Va: National Art Education Association, 1989.

JURIED PUBLICATIONS:

- Johnson, A. N. " Teacher Assessment: An Update and Implications for Art Education." *Visual Arts Research*, Spring 1989.
- Johnson, A. N. " Assessment of Teaching: A Study of Teacher Evaluation Systems and Applications for the Art Classroom." *Journal of Arts and Learning Research* , June 1989.
- Johnson, A. N. " Achieving Clarity of Instruction in Art Education." *National Art Education Advisory Series*, Fall 1988.
- Johnson, A. N. "What Educational Research Says about Instruction for the Visual Arts Classroom." *National Art Education Association Advisory Series*, Spring 1988.
- Johnson, A. N. "Maintaining Learner Attention in the Art Classroom." *National Art Education Advisory Series*, Spring 1988.
- Johnson, A. N. " The Role of Discrimination and Mediation in Concept Formation in Art." *Visual Arts Research*, Vol. 2, no. 2, issue 22 (Fall 1985): 31-39.
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- Johnson, A. N. & Meadows, M. " Computer Art Education and its Value for Special Education Students." Submitted to *Art Education*, February 1990.

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INSTRUCTIONAL MANUALS:

Johnson, A. N. *Planning Instruction for Performance Assessment: Writing the TPAI Portfolio for the Visual Arts Program* (instructional guide): Published through the University of Georgia Bookstore, 1988.

Georgia Fine Arts Resource Guide: Curriculum Guidelines for the Grade Eight; Georgia State Department of Education, Atlanta, GA, 1990.

OTHER PUBLICATIONS:

Book Chapters:

Johnson, A. N. "The Middle School Art Program." Middle School Education Project, College of Education, the University of Georgia, 1988.

Johnson, A. N. "The Period of Transescience and its Relevance to Art Education at the Secondary Level. In B. Little (Ed.) *Secondary Art Education: An Anthology of Issues*. Reston, VA: National Art Education Association, 1988.

Articles (Non-refereed publications):

Johnson, A. N. "Collaborating on a mural", *School Arts*, Oct., 1991, 36-37.

Johnson, A. N. "Commentary on the Holmes Report", *NAEA Newsletter*, March 1987.

Book reviews:

Egan, K. & Nadaner, D. *Imagination and Education*. New York: Teachers College Press, 1987. *NAEA NEWS*.

Blandy, D. and Congdon, K. (Eds.) *Art in a Democracy*. New York: Teachers College Press, 1987. *NAEA NEWS*.

PRESENTATIONS AT PROFESSIONAL MEETINGS:

"Teacher Assessment Practices: A View from the Classroom." Presented at the National Art Education Association convention in Phoenix, May 1992.

"Performance Appraisal Systems: Relevance and Implications for the Visual Arts Classroom." Presented at the National Art Education Association convention in Atlanta, March 1991.

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PRESENTATIONS AT PROFESSIONAL MEETINGS (Continued):

- "Assessment of Teaching: A Study of Teacher Evaluation Systems and Applications for the Art Classroom." Presented at the National Art Education Association convention in Kansas City, April 1990.
- "Art Education and Teacher Evaluation: An Analysis of Teacher Assessment Systems and Applications to Classrooms." Presented at the American Educational Research Association Annual Meeting in Washington, March 1989.
- "Strengthening Art Education: A Profile of Nine States." Presented at the National Art Education Association convention in Los Angeles, April 1988.
- "Serving the Needs of our Profession: An Inservice Program in Action." Presented at the NAEA National Conference in Boston, April 1987.
- "An Examination of Issues in Teacher Training: A Needs Assessment for Teacher Preparation and Inservice Programs." Presented at the NAEA National Conference in New Orleans, April 1986.
- "The Role of Discrimination and Mediation in Concept Formation in Art." Presented at the NAEA National Conference, Dallas, Texas, 1985.
- "The Influence of Mediational Organization and Training on Identification of Stylistic Concepts Based on the Structural Properties of Paintings. " Presented at the National Art Education Association convention in Miami, 1984.
- "The Influence of Training on Identification of Stylistic Concepts Based on the Structural Properties of Paintings." Presented at Doctoral Symposium, University of Illinois, 1983.
- "Developmental Theories of Perceptual Development and Their Implications for Art Education," presented at the Graduate Student Symposium, University of Wisconsin, 1982.
- Chairperson for research reporting sessions, National Symposium for Research in Art, University of Illinois, Urbana-Champaign, 1982.
- Chairperson for research reporting sessions, National Symposium for Research in Art, University of Illinois, Urbana-Champaign, 1980.

RELATED EXPERIENCE:

- February 1989-present, Editor, *NAEA Advisory*, National Art Education Association. Editing, layout and correspondence for quarterly publication of occasional papers.
- August 1980-May 1983; University of Illinois, Urbana-Champaign, School of Art and Design. Editorial Assistant for Visual Arts Research. Edited papers submitted for publication.

Dr. Andra N. Johnson

RELATED EXPERIENCE (Continued):

August 1980- August 1984; Research Assistant for Professor George Hardiman and Professor Theodore Zemich. Data Collection, analysis, and library searches for studies on public school art and graduate programs in art education.

August 1977-August 1983; University of Illinois, Institute for Child Behavior and Development; Colonel Wolfe School. Task Force Participant. Development of assessment and curriculum materials for Institute of Child Behavior and Development. Revision of talent guidelines and assessment instrument for identification of children with talent in art. Development and implementation of program for ROPYHT classroom. Research Assistant for ROPYHT Project to Dr. Reid Zehrbach; ICBP Proposal development, data collection and graphics.

UNIVERSITY LEVEL SERVICE:

Member, University Council, University of Georgia, 1988-91.
Member, University Council Executive Committee, 1989-91.
Member, University Conference Steering Committee, 1988-89.
Chair, Presidents Collection Committee, 1989-92.
Member, Faculty Admissions Committee, 1990-92.
Member, IRC Review Committee, 1991-92.

DEPARTMENTAL SERVICE:

Graduate Faculty Member, 1989-present.
Chair, Departmental Curriculum Committee, 1990-present.
Departmental Curriculum Committee, 1988-90.
Member, Computer Utilization Committee, 1986-present.
Board member, School Arts Symposium, 1989.
Member, Museum Education Advisory Committee, 1987-89.
Instructor, Teacher Workshop; School Arts Symposium, 1988.
Member, Fine Arts Advisory Committee, 1987-88.
Scholarship Recipient Exhibition Chair, 1987.
Scholarship Committee, Chair, 1986-87.
Graduate Faculty Member 1985-88 (provisional status).
Ceramics Instructor, School Art Symposium, December 1985.
Participant, Committee for Art Education Accreditation Review Report, Georgia Department of Education, 1984.

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PUBLIC SERVICE:

Member, State Department of Education Curriculum Revision Committee, 1987-89.
 Chair, Georgia Art Education Association Statewide Workshops, 1987-1989.
 Participant and Organizer of Very Special Arts Festival, Oct. 1986, Oct. 1987.
 Committee member, UGA New Faculty Orientation Program, 1986-87.
 Co-chair and Coordinator for the Southern Regional Fibers Exhibition, University of Georgia Department of Art, March 1987.
 Chair and Coordinator of the Southeastern Regional Fiber Arts Conference-University of Georgia Department of Art, March 1987.
 District President, N. E. Georgia, Georgia Art Education Association, 1985-87.
 Judge, Poster Contest, Oconee Co. Middle School, Moss Realty (Sponsor) 1985-86.
 Unit Counselor, Project Reach Special Education Program, Bishop Park, Athens, 1985.
 Participant and Organizer of Student Staff, Children's Art Festival, April 1985.
 Committee Member, Task Force on Program Development for Houston County School District, Perry, Georgia, 1985.

EXHIBITIONS:

Art Education Faculty Exhibition, October 1988.
 Lyndon House Crafts Exhibition, February 1987.
 Works on Paper, Athens Clarke Heritage Foundation, May 1987.
 Liturgical Arts Exhibition, Barrington, Illinois, March-April 1987.
 Faculty Art Show, University of Georgia Museum of Art, February 1986.
 Fiberarts Guild Show, Athens Clarke Heritage Foundation, February 1986.
 Two-person exhibition, Athens-Clarke Heritage Foundation, December 1986.

GRANTS AND HONORS RECEIVED:

University of Georgia Faculty Research Grant: 1989-90; \$5,100.00; for research on assessment procedures and art education at the national level.
 Instructional Improvement Grant - OIDE, University of Georgia, 1988-89; development of instructional materials using computer-assisted instruction and the videodisc collection of the National Gallery of Art.
 Lilly Teaching Fellowship and Grant - University of Georgia, 1986-87; development of instructional guide: *Planning Instruction for Performance Assessment: Writing the TPAI Portfolio for the Visual Arts Program*..
 Summer Research Grant, Art Department, The University of Georgia, 1986; creative research in intaglio and ceramic processes.
 Summer Research Grant, Art Department, The University of Georgia, 1985; survey of Georgia art teachers, teacher training programs and inservice needs.

APPENDIX C
CONTENT VALIDITY SURVEY: EVALUATION SPECIALIST/ART EDUCATOR

QUESTIONS:

1. What do you think about the length of the instrument?
2. Please discuss the feasibility of this system.
3. Please discuss the suitability of this system.
4. How well could this instrument determine a students' formal understanding of a work of art?

<Poor 1 2 3 4 5 Excellent>

5. How well could this instrument determine a students' descriptive understanding of a work of art?

<Poor 1 2 3 4 5 Excellent>

6. How well could this instrument determine a students' interpretive understanding of a work of art?

<Poor 1 2 3 4 5 Excellent>

7. How well could this instrument determine a students' historical understanding of a work of art?

<Poor 1 2 3 4 5 Excellent>

8. Could a teacher diagnose weakness in the students' knowledge base with this instrument?

9. Could a teacher diagnose weakness in the students' search strategies with this instrument?

10. Is there anything about the instrument or its application that would prevent understandings?

11. On what types of written statements could the instrument be directed?

- a) Written statements about a work of art
- b) Written statements about several works of art.
- c) Cued statements written about work(s) of art.
- d) Oral statements that have been transcribed.
- e) _____(other)
- f) _____(other)

12. This system could be used to assess art understandings at which of the following levels? (circle each one that applies.)

a) Grade K	h) Grade 7	n) College Freshman
b) Grade 1	i) Grade 8	o) College Sophomore
c) Grade 2	j) Grade 9	p) College Junior
d) Grade 3	k) Grade 10	q) College Senior
e) Grade 4	l) Grade 11	r) Masters
f) Grade 5	m) Grade 12	s) Doctorate
g) Grade 6		

13. The system could potentially be utilized in which of the following? (You may circle more than one.)

A) Research in Art Education
 B) Program Assessment
 C) Teacher Assessment
 D) Student Assessment
 E) Student Self-Assessment
 F) Teacher Self-Assessment
 G) Curriculum Development
 H) _____(other)
 I) _____(other)
 J) _____(other)

14. The author claims that a teacher can learn the basic components of the instrument in 4 two to three hour sessions. Is this realistic? Give your impressions.

15. Please comment on the coding method used to analyze statements.

16. Please comment on the charts that can be generated.

a. Knowledge-Seeking: Frequency Bar Graph (Quantitative Measure).

b. Knowledge-Seeking: % Pie Chart (Quantitative Measure).

c. Transfer: Degree of Cognitive Complexity Bar Graph (Qualitative Measure)

d. Accuracy: Lower-Order Understanding, Higher-Order Understanding, and Misunderstandings (Quantitative Measure Based on Qualitative Data)

17. Other Comments:

DIRECTIONS

PART 1:Arrangement of Categories - Formal Dimension

The arrangement of "F0" through "F10" in the formal dimension categories is meant to suggest a gradual increase in cognitive complexity (F0 is the lowest degree of cognitive complexity and F10 is the highest degree of cognitive complexity).

The arrangement of -F1 to -F3 in the formal dimension of misunderstanding categories is meant to suggest degrees of misunderstanding (-F3 represents the lowest degree of misunderstanding and -F3 represents the highest degree of misunderstanding).

Question:

Yes	No	Not Sure	Do you feel any changes should be
			made to the arrangement of these
	(circle one)		categories?

If changes are necessary, please diagram the changes you recommend on the attached instrument.

PART 2:QUESTIONS:

As per the theoretical framework, formal dimension categories "F0" through "F4" are considered reflective of lower-order formal understandings.

Strongly Agree	Agree	Disagree
----------------	-------	----------

As per the theoretical framework, formal dimension categories "F5" through "F11" are considered to be reflective of higher-order formal understandings

Strongly Agree	Agree	Disagree
----------------	-------	----------

As per the theoretical framework, formal dimension categories "-F1" through "-F3" are considered to be reflective of formal misunderstandings.

Strongly Agree	Agree	Disagree
----------------	-------	----------

DIRECTIONS

Arrangement of Categories - Descriptive DimensionPART 1:

The arrangement of "D0" through "D9" in the descriptive dimension categories is meant to suggest a gradual increase in cognitive complexity (D0 is the lowest degree of cognitive complexity and D9 is the highest degree of cognitive complexity).

The arrangement of -D1 to -D3 in the descriptive dimension of misunderstanding categories is meant to suggest degrees of misunderstanding (-D1 represents the lowest degree of misunderstanding and -D3 represents the highest degree of misunderstanding).

QUESTION:

Yes	No	Not Sure	Do you feel any changes should be
			made to the arrangement of these
	(circle one)		categories?

If changes are necessary, please diagram the changes you recommend on the attached instrument.

PART 2:QUESTIONS:

As per the theoretical framework, descriptive dimension categories "D0" through "D4" are considered reflective of lower-order descriptive understandings.

Strongly Agree	Agree	Disagree
----------------	-------	----------

As per the theoretical framework, descriptive dimension categories "D5" through "D9" are considered to be reflective of higher-order descriptive understandings.

Strongly Agree	Agree	Disagree
----------------	-------	----------

As per the theoretical framework, descriptive dimension categories "-D1" through "-D3" are considered to be reflective of descriptive misunderstandings.

Strongly Agree	Agree	Disagree
----------------	-------	----------

DIRECTIONS

Arrangement of Categories - Interpretive DimensionPART 1:

The arrangement of "I0" through "I12" in the interpretive dimension categories is meant to suggest a gradual increase in cognitive complexity (I0 is the lowest degree of cognitive complexity and I12 is the highest degree of cognitive complexity).

The arrangement of -I1 to -I3 in the interpretive dimension of misunderstanding categories is meant to suggest degrees of misunderstanding (-I1 represents the lowest degree of misunderstanding and -I3 represents the highest degree of misunderstanding).

QUESTION:

Yes	No	Not Sure	Do you feel any changes should be
			made to the arrangement of these
			categories?
(circle one)			

If changes are necessary, please diagram the changes you recommend on the attached instrument.

PART 2:QUESTIONS:

As per the theoretical framework, interpretive dimension categories "I0" through "I4" are considered reflective of lower-order interpretive understandings.

Strongly Agree	Agree	Disagree

As per the theoretical framework, interpretive dimension categories "I5" through "I12" are considered to be reflective of higher-order interpretive understandings.

Strongly Agree	Agree	Disagree

As per the theoretical framework, interpretive dimension categories "-I1" through "-I3" are considered to be reflective of interpretive misunderstandings.

Strongly Agree	Agree	Disagree

DIRECTIONS

PART 1:Arrangement of Categories - Historical Dimension

The arrangement of "H0" through "H12" in the historical dimension categories is meant to suggest a gradual increase in cognitive complexity (H0 is the lowest degree of cognitive complexity and H12 is the highest degree of cognitive complexity).

The arrangement of -H1 to -H3 in the historical dimension of misunderstanding categories is meant to suggest degrees of misunderstanding (-H1 represents the lowest degree of misunderstanding and -H3 represents the highest degree of misunderstanding).

QUESTION:

Yes	No	Not Sure	Do you feel any changes should be
			made to the arrangement of these
	(circle one)		categories?

If changes are necessary, please diagram the changes you recommend on the attached instrument.

PART 2:QUESTIONS:

As per the theoretical framework, historical dimension categories "H0" through "H4" are considered reflective of lower-order historical understandings.

Strongly Agree	Agree	Disagree

As per the theoretical framework, historical dimension categories "H5" through "H12" are considered to be reflective of higher-order historical understandings.

Strongly Agree	Agree	Disagree

As per the theoretical framework, historical dimension categories "-H1" through "-H3" are considered to be reflective of historical misunderstandings.

Strongly Agree	Agree	Disagree

CONTENT VALIDITY DIRECTIONS

Each category in the "Stavropoulos Diagnostic Profile of Art Understandings" is listed sequentially. Beneath each category, there are four divisions dealing with: importance of category in assessment; appropriateness of content reflected in category; level of understanding to which supportive responses fall; and theoretical representativeness of the categories.

There are four levels of the "importance of the category in assessment" for you to select from. Select only one in each column as shown below:

- ☐ Very Important to Assess
- ☒ Important to Assess
- ☐ Somewhat Important to Assess
- ☐ Not Important to Assess

There are four levels of "appropriateness of content" for you to select from. Select only one in each column as shown below:

- ☒ Extremely Appropriate Content in Art Education
- ☐ Appropriate Content in Art Education
- ☐ Somewhat Appropriate Content in Art Education
- ☐ Inappropriate Content in Art Education

There are three levels of understanding for you to select from. Determine which item MOST CLOSELY describes the level of understanding represented in the category. Use the supported responses (attached to the master instruments) to make this determination.

- ☒ Higher-Order Understandings
- ☐ Lower-Order Understandings
- ☐ Misunderstanding

Respond to the theoretical representativeness of the category by circling yes or no. If you are unsure, respond with a question mark.

EXAMPLE:**F9 Supported judgment and/or aesthetic reasoning (formal).**

☐ Very Important	☐ Extremely Appropriate	☐ Higher-Order
☐ Important	☐ Appropriate	☐ Lower-Order
☐ Somewhat Important	☐ Somewhat Appropriate	☐ Misunder-
☐ Not Important	☐ Inappropriate	standing

 Yes No This category represents a construct derived from
 the "Knowledge Base/Knowledge-Seeking" theory.

Note:

The above format was used to assess every category of the
 diagnostic profile.

APPENDIX D
CREDENTIALS OF DR. JACQUELINE CHANDA

CURRICULUM VITAE

NAME:	Jacqueline Chanda
SOCIAL SECURITY NUMBER:	565-82-3972
HOME ADDRESS:	5687 Saranac Dr. Columbus, OH 43232 (614) 861-4407

ACADEMIC QUALIFICATIONS:

1972	B.A.: Painting, Drawing, University of California, Los Angeles
1974	LICENCE D'ENSEIGNEMENT (B.A.) : Education of Art, Sorbonne University of Paris I.
1977	MAITRISE D'ENSEIGNEMENT (M.A.) : Education of Art, Major: African Art, Minor: Islamic Art. Sorbonne, University of Paris I.
1983	DOCTORATE DE 3e CYCLE (Ph.D.) : Art Plastiques - Theorie et Pratique (Plastic art Theory and Practice). Specilization: Art History - South Central Africa. Title of Dissertation: Les Arts de Mwinilunga, Sorbonne, University of Paris I.
1987	CALIFORNIA TEACHING CREDENTIAL - SINGLE SUBJECT Subject Area: Art/French, California State University, Los Angeles.

EMPLOYMENT:

1973-76	Instructor, La Societe Interlangues, Paris, France.
1976-77	Instructor, L'Institute de Formation pour Le Tourisme et l'Hotellerie, Paris, France.
1979-82	Teacher, Ministry of Education, Republic of Zambia.
1980-82	Tutor, University of Zambia Lusaka Campus, Republic of Zambia
1980-82	Research Affiliate, Institute of African Studies Lusaka, Republic of Zambia
1982-83	Lecturer, Zambia Institute of Technology, Republic of Zambia
1983-85	Lecturer II, University of Zambia, Ndola Campus, Republic of Zambia
1985-87	Teacher, Los Angeles, Unified School District
1987	Associate Coordinator, Getty Institute for Education on the Visual Arts, Summer
1987	Assistant Professor, California State University, Los Angeles, Summer
1987-1989	Assistant Professor, Ball State University, Muncie, Indiana
1989-1991	Assistant Professor, University of North Texas, Denton, Texas
1991-present	Assistant Professor, The Ohio State University, Columbus, Ohio

GRANTS, AWARDS AND DISTINCTIONS:

1968	Bank of America Award Winner
1966-68	Scholarships to the Art Center
1970-71	Year Abroad Fellowship to France
1972	Galaxy of Arts Award (competitive, juried award).
1972	Los Angeles County Fair Award (competitive, juried award)
1983	Doctorat de 3e Cycle with "mention tres bien".
1987	Certificate of Excellence - Getty Institute for Educators on the Visual Arts
1988	Research Grant from Ball State University - Faculty Grant
1988	Faculty Fellowship Award - Smithsonian Institution
1989	Faculty Development Grant - Ball State University
1989	New Faculty Grant - University of North Texas
1990	Faculty Grant - University of North Texas
1991	Junior Faculty Summer Grant - University of North Texas
1991	Small Grant Award - The Ohio State University

PUBLICATIONS:

- Review of Book, *Zambian Traditional Architecture*, H. Schmetzer, African Arts, 1988
- Review of Book, *Art by Metamorphosis*, Jegede, African Arts, 1990
- *Alternative Concepts and Terminologies for Teaching African Art*, Art education, January 1992
- *Multicultural Education in the Visual Arts*, Design for Arts in Education September/October 1992

Publications in review:

- *Teaching Strategies for Non-Western Art History*, (in review)
- *African Art and Culture* - book in preparation for Davis Publications

EXHIBITIONS:

1967	Duarte Festival of Arts (exhibition of paintings)
1974	"Trois Peintres et Un Theme - L'Afrique," Maisons Internationales Des Jeunes Etudiants de Paris, Paris, France (exhibition of paintings).
1975	Galerie 7 Pougues-les-Eaux, France (exhibition of paintings).
1977	Salon des Artistes Independents Grand Palais, Paris, France (exhibition of paintings)
1978	Salon des Artistes Independents Grand Palais, Paris, France (exhibition of paintings)
1979	Salon des Artistes Independents

Grand Palais, Paris, France (exhibition of paintings)

CONFERENCE PARTICIPATION:

- 1977 Symposium of African Art, Sorbonne University of Paris, Paris, France
- 1986 Getty Art Program, July, Getty Art Foundation, Cal Tech, Pasadena, California
- 1987 National Art Education Association Conference, Boston, Massachusettes
- 1987 Indiana Art Education Association Conference, Indianapolis, Indiana
- 1988 The Arts and Education Symposium IX, Bloomington, Indiana
- 1988 National Art Education Association Conference, Los Angeles, California (evaluator)
- 1988 University of Iowa - "Art and Initiation in Zaire"
- 1988 Indiana Art Education Association Conference, Indianapolis, Indiana
- 1989 National Art Education Association Conference, Washington, D.C.
- 1989 Getty Institute for Educators in the Visual Arts, Pasadena, California
- 1989 Texas Art Education Association, San Antonio, Texas
- 1990 National Art Education Association Conference, Kansas City, Missouri
- 1991 National Art Education Association Conference, Atlanta, Georgia
- 1991 African Studies Association Conference, St. Louis, Missouri
- 1992 MidWestern Art History Society, Columbus, Ohio
- 1992 African Studies Arts Council, Iowa City, Iowa

RECENT PROFESSIONAL PAPERS PRESENTED:

- 1981 Art Within Zambian Development, paper presented at a Conference on Culture and Development in August, University of Zambia Ridgeway Campus, Republic of Zambia
- 1981 Zambian Art in Context, paper presented at African Regional Assembly of World Crafts Councils, April, Mulungushi Conference Hall, Lusaka, Repbulic of Zambia.
- 1986 Color Symbolism Among the Ndembu-Lunda of Zambia, paper presented at the 29th Annual Conference of the African Studies Association (ASA), October, Madison, Wisconsin.
- 1987 Ceramics in Zambia: A Means of Perpetuating Roles and Values, paper presented at the 30th Annual Conference of the African Studies Association (ASA), November, Denver, Colorado.
- 1988 The Makishi Masquerade, its Connection with Nature Spirits, paper presented at the 31st Annual Conference of the African Studies Association (ASA), October, Chicago, Illinois.
- 1989 What Effect Does An Art Historical Approach Have on the Attitudes of Students Towards Art?, paper presented at the 29th Annual Convention of the National art Education

- Association, April, Washington, D.C.
- 1989 African Art History in the Classroom, paper presented at the Texas Art Education Association Conference, Nov, San Antonio, Texas.
- 1990 A Comparson of non-Western and Western Art History Methods, paper presented at the Texas Art Education Association Conference, Nov, Fort Worth, Texas.
- 1990 A Guide to Teaching an In-depth Understanding of African Art History, paper presented at the National Art Education Association Annual meeting, April, Kansas City, Missouri
- 1990 Non-Western Teaching Strategies, paper presented at the Mid-America collage Art Association, October, Tuscon, Arizona.
- 1991 Theoretical Justification for Different Teaching Models for Non-Western Art, paper presented at the National Art Education Association Conference, March, Atlanta, Georgia.
- 1991 The African Aesthetic, a paper presented at the USSEA symposium, Columbus, Ohio
- 1992 Anthropomorphic Pottery from South Central African, paper presented at the Midwestern Art History Society annual meeting, Columbus, Ohio.
- 1992 African Art in the Elementary and Secondary Classroom: Problems and Solutions, paper presented at the Ninth Triennial Symposium on African Art, Iowa city, Iowa.

INSERVICES GIVEN:

- 1985 Art as a Means to Geometry, October, Los Angeles, Teachers Center, Los Angeles, California.
- 1985 Art Appreication in Elementary School, December, Los Angeles, Teachers Center, Los Angeles, California.
- 1986 Disciplined Based Art Education, December, Miramonte Elementary School, Los Angeles, California.
- 1991 On the Teaching of Art History, June, Tennessee Arts Academy, Nashville, Tennessee.
- 1991 Teaching Art History in The Classroom, January, Lima Arts Council, Lima, Ohio
- 1992 Teaching Art History in the Classroom, February, Dublin, Ohio.
- 1992 Multicultural Art History, May, Columbus, Ohio

OTHER TRAINING:

- 1972-73 Ecole National Superieure des Beaux Arts, Instruction in painting
- 1977 Universitat des Saarlandes, Instruction in the German Language
- 1977 Centre Culturel Allemand, Goethe Institut - Paris, Instruction in the German Language.

COMMUNITY PROJECTS:

- 1980-82 Illustrator, Orbit Magazine, Ministry of Education, Republic of Zambia
- 1983 Program Artist, Club House, A Television Zambia Production, Republic of Zambia.
- 1984 Judge, Copperbelt Agricultural Show.
- 1988-89 Indiana Arts Commission - Advisor
- 1989 Indiana Department of Education - Committee on Curriculum Standards
- 1989 Consultant to Getty Institute for Education on the Visual Arts - Pasadena, California
- 1990 Consultant to Getty Institute for Education on the Visual Arts - University of North Texas
- 1992 Coordinator of Young Scholar's program for the Visual Arts, Ohio State University

CURRENT PROJECTS:

- Since 1987 Revision and translation of a chapter of Ph.D. dissertation of publication.
- 1990 Submission of proposals for NEH grant continue research in the field *Anthropomorphic Ceramic Ware from Sub-Saharan Africa*.

COURSES TAUGHT:

Introduction of art, Drawing, Painting, Aesthetics, Modern Art History, African Art History, English Composition, English as a Foreign Language, French Conversations (junior and senior levels), Elementary French Composition, General studies for elementary school children, pre-service courses for elementary education majors in drawing, painting, Art Teaching methods, Teaching Learning Strategies for Art Education Majors, and Art Appreciation (general studies course), Art and Aesthetics, Drawing II, African Art: an introduction, Art History Survey I and II, On the Teaching of Art History, Student Teaching, Critical Informed Dialogue About a Work of Art, Curriculum for Art Appreciation, Concepts for Planning Art Education.

ASSOCIATIONS:

Arts Council of the African Studies Association
 National Art Education Association
 Texas Art Education Association
 National Education Association
 African Studies Association
 Midwestern Art History Association

UNIVERSITY COMMITTEE SERVICE:

- 1983-85 Academic Board Committee, University of Zambia
- 1983-85 Agricultural Show Committee, University of Zambia

1983-85	Board of Studies Committee, University of Zambia
1987-89	Grievance and Discrimination Committee, Ball State University
1988-89	Minority Task Force
1988-89	University Governance Committee-Creative Arts
1988-89	Faculty Search Committee - Art Education
1990-92	Academic Committee, University of North Texas
1991-92	Graduate Studies Committee, The Ohio State University
1991-93	Arts and Memorials Committee, The Ohio State University

LANGUAGES:

French: spoken, written and read

German: read

REFERENCES:

References are furnished up on request.

APPENDIX E

CONTENT VALIDITY SURVEY: ART HISTORIAN/ART EDUCATOR

DIRECTIONS

According to Fraenkel and Wallen (1990), content-related evidence of validity refers to the nature of the content included within an assessment instrument and the specifications the researcher used to formulate the content (p. 128). As an independent judge of content validity of the diagnostic profile, please conduct the following analyses:

Speak to the relevance and representativeness of content expressed in each category of the diagnostic profile. Please indicate any changes that are necessary in content, wording, or form.

According to your recommendations, adjustment will be made in the diagnostic profile. You will then be asked to complete a series of questions and multiple-choice items on the revised version.

Thank you for your assistance,

Carol Stavropoulos

Fraenkel, J. R., & Wallen, N. E. (1990). How to design and evaluate research in education. New York: McGraw-Hill Publishing Company.

QUESTIONS:

1. What do you think about the length of the instrument?
2. Please discuss the feasibility of this system.
3. Please discuss the suitability of this system.
4. How well could this instrument determine a students' formal understanding of a work of art?

<Poor 1 2 3 4 5 Excellent>

5. How well could this instrument determine a students' descriptive understanding of a work of art?

<Poor 1 2 3 4 5 Excellent>

6. How well could this instrument determine a students' interpretive understanding of a work of art?

<Poor 1 2 3 4 5 Excellent>

7. How well could this instrument determine a students' historical understanding of a work of art?

<Poor 1 2 3 4 5 Excellent>

8. Could a teacher diagnose weakness in the students' knowledge base with this instrument?

9. Could a teacher diagnose weakness in the students' search strategies with this instrument?

10. Is there anything about the instrument or its application that would prevent understandings?

11. On what types of written statements could the instrument be directed?

- a) Written statements about a work of art
- b) Written statements about several works of art.
- c) Cued statements written about work(s) of art.
- d) Oral statements that have been transcribed.
- e) _____(other)
- f) _____(other)

12. This system could be used to assess art understandings at which of the following levels? (circle each one that applies.)
a) Grade K	h) Grade 7	n) College Freshman
b) Grade 1	i) Grade 8	o) College Sophomore
c) Grade 2	j) Grade 9	p) College Junior
d) Grade 3	k) Grade 10	q) College Senior
e) Grade 4	l) Grade 11	r) Masters
f) Grade 5	m) Grade 12	s) Doctorate
g) Grade 6		
13. The system could potentially be utilized in which of the following? (You may circle more than one.)
- A) Research in Art Education
 - B) Program Assessment
 - C) Teacher Assessment
 - D) Student Assessment
 - E) Student Self-Assessment
 - F) Teacher Self-Assessment
 - G) Curriculum Development
 - H) _____(other)
 - I) _____(other)
 - J) _____(other)
14. The author claims that a teacher can learn the basic components of the instrument in 4 two to three hour sessions. Is this realistic? Give your impressions.
15. Please comment on the coding method used to analyze statements.
16. Please comment on the charts that can be generated.
- a. Knowledge-Seeking: Frequency Bar Graph (Quantitative Measure).
 - b. Knowledge-Seeking: % Pie Chart (Quantitative Measure).
 - c. Transfer: Degree of Cognitive Complexity Bar Graph (Qualitative Measure)
 - d. Accuracy: Lower-Order Understanding, Higher-Order Understanding, and Misunderstandings (Quantitative Measure Based on Qualitative Data)
17. Other Comments:

DIRECTIONS

PART 1:Arrangement of Categories - Formal Dimension

The arrangement of "F0" through "F10" in the formal dimension categories is meant to suggest a gradual increase in cognitive complexity (F0 is the lowest degree of cognitive complexity and F10 is the highest degree of cognitive complexity).

The arrangement of -F1 to -F3 in the formal dimension of misunderstanding categories is meant to suggest degrees of misunderstanding (-F3 represents the lowest degree of misunderstanding and -F3 represents the highest degree of misunderstanding).

Question:

Yes	No	Not Sure	Do you feel any changes should be
			made to the arrangement of these
	(circle one)		categories?

If changes are necessary, please diagram the changes you recommend on the attached instrument.

PART 2:QUESTIONS:

As per the theoretical framework, formal dimension categories "F0" through "F4" are considered reflective of lower-order formal understandings.

Strongly Agree	Agree	Disagree

As per the theoretical framework, formal dimension categories "F5" through "F11" are considered to be reflective of higher-order formal understandings

Strongly Agree	Agree	Disagree

As per the theoretical framework, formal dimension categories "-F1" through "-F3" are considered to be reflective of formal misunderstandings.

Strongly Agree	Agree	Disagree

DIRECTIONS

Arrangement of Categories - Descriptive DimensionPART 1:

The arrangement of "D0" through "D9" in the descriptive dimension categories is meant to suggest a gradual increase in cognitive complexity (D0 is the lowest degree of cognitive complexity and D9 is the highest degree of cognitive complexity).

The arrangement of -D1 to -D3 in the descriptive dimension of misunderstanding categories is meant to suggest degrees of misunderstanding (-D1 represents the lowest degree of misunderstanding and -D3 represents the highest degree of misunderstanding).

QUESTION:

Yes	No	Not Sure	Do you feel any changes should be
			made to the arrangement of these
	(circle one)		categories?

If changes are necessary, please diagram the changes you recommend on the attached instrument.

PART 2:QUESTIONS:

As per the theoretical framework, descriptive dimension categories "D0" through "D4" are considered reflective of lower-order descriptive understandings.

Strongly Agree	Agree	Disagree

As per the theoretical framework, descriptive dimension categories "D5" through "D9" are considered to be reflective of higher-order descriptive understandings.

Strongly Agree	Agree	Disagree

As per the theoretical framework, descriptive dimension categories "-D1" through "-D3" are considered to be reflective of descriptive misunderstandings.

Strongly Agree	Agree	Disagree

DIRECTIONS

Arrangement of Categories - Interpretive DimensionPART 1:

The arrangement of "I0" through "I12" in the interpretive dimension categories is meant to suggest a gradual increase in cognitive complexity (I0 is the lowest degree of cognitive complexity and I12 is the highest degree of cognitive complexity).

The arrangement of -I1 to -I3 in the interpretive dimension of misunderstanding categories is meant to suggest degrees of misunderstanding (-I1 represents the lowest degree of misunderstanding and -I3 represents the highest degree of misunderstanding).

QUESTION:

Yes	No	Not Sure	Do you feel any changes should be made to the arrangement of these categories?
(circle one)			

If changes are necessary, please diagram the changes you recommend on the attached instrument.

PART 2:QUESTIONS:

As per the theoretical framework, interpretive dimension categories "I0" through "I4" are considered reflective of lower-order interpretive understandings.

Strongly Agree	Agree	Disagree

As per the theoretical framework, interpretive dimension categories "I5" through "I12" are considered to be reflective of higher-order interpretive understandings.

Strongly Agree	Agree	Disagree

As per the theoretical framework, interpretive dimension categories "-I1" through "-I3" are considered to be reflective of interpretive misunderstandings.

Strongly Agree	Agree	Disagree

DIRECTIONS

PART 1:Arrangement of Categories - Historical Dimension

The arrangement of "H0" through "H12" in the historical dimension categories is meant to suggest a gradual increase in cognitive complexity (H0 is the lowest degree of cognitive complexity and H12 is the highest degree of cognitive complexity).

The arrangement of -H1 to -H3 in the historical dimension of misunderstanding categories is meant to suggest degrees of misunderstanding (-H1 represents the lowest degree of misunderstanding and -H3 represents the highest degree of misunderstanding).

QUESTION:

Yes	No	Not Sure	Do you feel any changes should be
			made to the arrangement of these
	(circle one)		categories?

If changes are necessary, please diagram the changes you recommend on the attached instrument.

PART 2:QUESTIONS:

As per the theoretical framework, historical dimension categories "H0" through "H4" are considered reflective of lower-order historical understandings.

Strongly Agree	Agree	Disagree

As per the theoretical framework, historical dimension categories "H5" through "H12" are considered to be reflective of higher-order historical understandings.

Strongly Agree	Agree	Disagree

As per the theoretical framework, historical dimension categories "-H1" through "-H3" are considered to be reflective of historical misunderstandings.

Strongly Agree	Agree	Disagree

CONTENT VALIDITY DIRECTIONS

Each category in the "Stavropoulos Diagnostic Profile of Art Understandings" is listed sequentially. Beneath each category, there are four divisions dealing with: importance of category in assessment; appropriateness of content reflected in category; level of understanding to which supportive responses fall; and theoretical representativeness of the categories. There are four levels of the "importance of the category in assessment" for you to select from. Select only one in each column as shown below:

☐ Very Important to Assess
☒ Important to Assess
☐ Somewhat Important to Assess
☐ Not Important to Assess

There are four levels of "appropriateness of content" for you to select from. Select only one in each column as shown below:

☐ Extremely Appropriate Content in Art Education
☐ Appropriate Content in Art Education
☐ Somewhat Appropriate Content in Art Education
☐ Inappropriate Content in Art Education

There are three levels of understanding for you to select from. Determine which item MOST CLOSELY describes the level of understanding represented in the category. Use the supported responses (attached to the master instruments) to make this determination.

☒ Higher-Order Understandings
☐ Lower-Order Understandings
☐ Misunder-
 standing

Respond to the theoretical representativeness of the category by circling yes or no. If you are unsure, respond with a question mark.

Respond to the representativeness of the category in reference to Western art, Non-Western Art, fine art, folk art, popular arts, crafts, antiques/heirlooms, and cultural arts, by circling yes or no or sometimes.

EXAMPLE:

IO Nebulous response (immature interpretive judgment,
unclear interpretive statement and/or parroted response).

☐ Very Important	☐ Extremely Appropriate	☐ Higher-Order
☐ Important	☐ Appropriate	☐ Lower-Order
☐ Somewhat Important	☐ Somewhat Appropriate	☐ Misunder-
☐ Not Important	☐ Inappropriate	standing

- - - - -
Yes No This category represents a construct derived from
the "Knowledge Base/Knowledge-Seeking" theory.

Yes No Can this category be used with Western art?
Sometimes

Yes No Can this category be used with Non-Western art?
Sometimes

Yes No Can this category be used with fine arts?
Sometimes

Yes No Can this category be used with folk arts?
Sometimes

Yes No Can this category be used with popular arts?
Sometimes

Yes No Can this category be used with crafts?
Sometimes

Yes No Can this category be used with antiques/heirlooms?
Sometimes

Yes No Can this category be used with cultural artifacts?
Sometimes

The above format was used to assess every category of the
diagnostic profile.

APPENDIX F
DIAGNOSTIC PROFILE OF ART UNDERSTANDINGS

Formal Dimension

**"Elements of Design and Principles of Organization,
Media and Technique"**

- F0** Immature judgment, nebulous or unclear formal statement.
- F1** General recognition/identification/definition of elements, principles, marks, graphic details, grounds and/or perspective.
- F2** Identifies abstract, real, or nonobjective qualities.
- F3** Points out style or personal method used by the artist or ethnic group.
- F4** Correctly classifies work in terms of technique processes, media and/or materials used.
- F5** Student actively searches work for formal understanding (e.g., compound sentences, complex thought structures, connection-making, comparisons, speculation, hypotheses, and/or conclusions).
- F6** Analyzes work in terms of the elements of design (e.g., line, shape, color, texture).
- F7** Analyzes work in terms of the principles of design (e.g., repetition, variation, action/movement, balance, unity, dominance, contrast).
- F8** Formal agreement with literature review.
- F9** Supported judgment and/or aesthetic reasoning (formal).
- F10** Formal questioning.
- F11** Extends and/or challenges technicians' appraisal regarding the technical process/medium utilized to make the work, through convincing argument which includes supportive examples or evidence. Extends and/or challenges an historians' or critics analysis of the work in reference to the elements and principles of design, through convincing argument which includes supportive examples or evidence.

Misunderstandings:

- F1 Incorrect formal appraisal (Supported)
- F2 Incorrect formal appraisal (Unsupported)
- F3 Illogical formal findings

Descriptive Dimension**"Naming Objects"**

- D0 Immature judgment, nebulous or unclear descriptive statement.
- D1 Identifies, lists, and demonstrates a general recognition of images, scenes, and/or symbols.
- D2 Student lists and/or explains activities (verb/and at least one noun).
- D3 Identification of artforms (e.g., landscape, portraiture, caricature, still-life, street scene).
- D4 Examines and describes surface details of images.
- D5 Student actively searches work for descriptive understanding (e.g., compound sentences, complex thought structures, connection-making, comparisons, speculation, hypotheses, and/or conclusions).
- D6 Descriptive agreement with literature review.
- D7 Supported judgment and/or aesthetic reasoning (descriptive).
- D8 Descriptive questioning.
- D9 Extends and/or challenges historians' and/or critics' description of the work through convincing argument which includes supportive examples or evidence.

Misunderstandings:

- D1 Incorrect descriptive appraisal (Supported)
- D2 Incorrect descriptive appraisal (Unsupported)
- D3 Illogical descriptive findings

Interpretive Dimension

"Meaning, Emotion, Feeling, and Expression"

- I0 Immature judgment, nebulous or unclear interpretive statement.
- I1 General interpretive language.
- I2 Uncustomary/unexpected impression (viz., personal).
- I3 Relates work to "popular culture" (e.g., names pop culture).
- I4 Correctly relates work to a culture or religious belief system.
- I5 Student actively searches work for interpretive understanding (e.g., compound sentences, complex thought structures, connection-making, comparisons, speculation, hypotheses, and/or conclusions).
- I6 Personal interpretation based on description of images, scene, and/or symbols.
- I7 Personal interpretation based on analysis of elements of design (e.g., line, shape, color, texture).
- I8 Personal interpretation based on analysis of principles of design (e.g., repetition, variation, dominance, balance, transition, unity, contrast, movement, action).
- I9 Interpretation agreement with literature review (e.g., cites conventional, feminist, psychoanalytic, Marxist interpretive perspectives).
- I10 Supported judgment and/or aesthetic reasoning (interpretive).
- I11 Interpretive questioning.
- I12 Extends and/or challenges historians' and/or critics' interpretation of the work through convincing argument which includes supportive examples or evidence.

Misunderstandings:

- I1 Incorrect interpretive appraisal (Supported)
- I2 Incorrect interpretive appraisal (Unsupported)
- I3 Illogical interpretive findings

Historical Dimension**"Historical Data"**

- H0 Immature judgment, nebulous or unclear historical statement.
- H1 Artist's name(s), or ethnic group.
- H2 Personal data or background about artist (e.g., age, sex, race, culture, where artist was born, lived, worked and/or "stories" about artist's life) or ethnic group (e.g., culture, county, sex of artist).
- H3 Title or date of work(s), the place or person(s) the work might depict.
- H4 Identifies, sorts, or classifies work(s) according to culture, period, movement, societies and associations; and/or form(s).
- H5 Student actively searches work for historical understanding (e.g., compound sentences, complex thought structures, connection-making, comparisons, speculation, hypotheses, and/or conclusions).
- H6 Discusses the artist's inspiration or mythology about the origin of the form in a supportive explanation of the work.
- H7 Provides a supportive explanation of the work in reference to its purpose, function, or use.
- H8 Makes comparison(s) of other works by same artist or ethnic group(s) or different artist(s) and/or ethnic group(s).
- H9 Historical agreement with literature review (e.g., cites cultural significance of work in reference to artist, context, movement, ethnic group and/or society).
- H10 Supported judgment and/or aesthetic reasoning (historical).
- H11 Historical questioning.
- H12 Extends and/or challenges historians' and/or critics' appraisal, analysis, and/or theories applied to the work of art or artist through convincing argument which includes supportive examples and evidence.

Historical dimension continued

Misunderstandings:

- H1 Incorrect historical appraisal (Supported)
- H2 Incorrect historical appraisal (Unsupported)
- H3 Illogical historical findings

APPENDIX G
SUPPORTIVE RESPONSES FOR DIAGNOSTIC CATEGORIES

Sample responses are given to support each category within the diagnostic profile. Following each sample is a code number that corresponds to the artwork, group of artworks, or artist that stimulated the response as shown below:

0. The artist, Marc Chagall
1. The Birthday, a painting by Marc Chagall, 1915-23
2. Chagall, a dance choreography by Ginette Laurin, 1988
To Marc Chagall, a poem by Paul Eluard, 1911-1915
And Came the Dog and Ate the Cat, a lithograph by El Lissitzky, 1919
The Birthday, a painting by Marc Chagall, 1915-23
3. The Holy Coachman, a painting by Marc Chagall, 1911-1912
I and the Village, a painting by Marc Chagall, 1911-1912
The Fiddler, a painting by Marc Chagall, 1912-1913
The Birthday, a painting by Marc Chagall, 1915-23
4. Jawlensky and Werefkin in a Meadow, a painting by Gabriele Muntz, 1908-1909
Untitled #2, a painting by Richard Lindner, 1962
The Dance of Life, a painting by Edvard Munch, 1899-1900
The Birthday, a painting by Marc Chagall, 1915-23
5. Los Mismos, aquatint print from the Disasters of War series, by Francisco Goya, 1919
6. The artist, Vincent Van Gogh

Expert statements. Expert statements about works of art were also part of the sample selection. These statements were appropriated from two sources. Some expert statements came directly from books on art history and art techniques. Other statements were solicited from persons with advanced knowledge in visual art, art education, or art history. These statements are coded with the word "expert."

Supportive Responses: Formal Dimension

- F0** Immature judgment, nebulous or unclear formal statement.
- I like it because it has orangish-red in it (1)
- the work is very good and detailed (5)
- F1** General recognition/identification/definition of elements, principles, marks, graphic details, grounds and/or perspective.
- red, blue, green (3)
- perspective used (2)
- F2** Identifies abstract, real, or nonobjective qualities.
- a little abstract especially in distorting the features of the body (3)
- none are realistic, again abstract (3)
- but they are not realistic portrayals, the last one looks almost real w/very little abstraction if any at all (3)
- F3** Points out style or personal method used by the artist or ethnic group.
- Van Gogh has a unusual brushstroke - very wild w/energy (6)
- F4** Correctly classifies work in terms of technique processes, media and/or materials used.
- the way the paint is applied it seems to have been thinned and soaked into the canvas (3)
- a 'collage' type picture, meaning that several pictures are painted on top of each other (3)
- they used a shading technique (5)
- one color will fade into the next (3)
- F5** Student actively searches work for formal understanding (e.g., compound sentences, complex thought structures, connection-making, comparisons, speculation, hypotheses, and/or conclusions).

he uses lots of curvy lines in his paintings. The other painting inspired by him also uses curvy lines. The dancers are using curves, when they move (2)

abstract work - a man and a woman . . . the pieces all fit to make up the images, yet they are all different shapes and colors (4)

- F6 Analyzes work in terms of the elements of design (e.g., line, shape, color, texture).**

red/orange draws attention, black is important as a shading/defining color (3)

some [colors] are soft and timid while others harsh and bright (3)

the shapes of the faces are very similar (3)

- F7 Analyzes work in terms of the principles of design (e.g., repetition, variation, action/movement, balance, unity, dominance, contrast).**

dominant figures that the eye is attracted to (3)

detail around the sides draws the eye outward (3)

each has a main focal point (3)

black and white suggest opposition and contrast (2)

- F8 Formal agreement with literature review.**

Goya used an aquatint method of printing (expert)

- F9 Supported judgment and/or aesthetic reasoning (formal).**

doesn't give my eye a focal point, it isn't pleasant to look at (3)

cluttered . . . too many contrasting views (3)

the color white is used effectively as a receding color (3)

- F10 Formal questioning.**

We have studied many painting by Chagall in class. Has Chagall ever worked in any other media, such as wood, clay, or printmaking? (0)

- F11 Extends and/or challenges technicians' appraisal regarding the technical process/medium utilized to make the work, through convincing argument which includes supportive examples or evidence. Extends and/or challenges an historians' or critics analysis of the work in reference to the elements and principles of design, through convincing argument which includes supportive examples or evidence.**

Tamarind Book of Lithography states the stone should be lavigated before resensitization with acedic acid, in preparation for the second printing. However, when lavigating the stone there is the risk of scratching its surface, making additional lavigating necessary. With too much lavigating there is a good chance the ghost image would be lost on the stone, making further detailing of the image and future registration impossible. I have found the use of bleach cleanser to be a suitable alternative to the lavigation method. The mild abrasive in the cleanser removes the old ink, and the bleach eliminates the oil deposits. Resensitization with acedic acid is not affected.
(expert in lithography)

-F1 Incorrect formal appraisal (Supported)

Marc Chagall does not proportion feet & hands correctly - they are stretched out (2)

you can tell its a black and white etching because of the deep lines and dark color (2)

-F2 Incorrect formal appraisal (Unsupported)

its done in ball-point pen (5)

each painting uses the same color scheme of primary colors (3)

-F3 Illogical formal findings

painting looks almost one-dimensional (4)

Supportive Responses: Descriptive Dimension

- D0 Immature judgment, nebulous or unclear descriptive statement.**

I like it because of the people (1)

- D1 Identifies, lists, and demonstrates a general recognition of images, scenes, and/or symbols (nouns).**
man and woman (4)
body, face, village, church, cabins (3)
image of an animal, a cow, and two people (3)
- D2 Student lists and/or explains activities (verbs).**
2 people starting to kiss (3)
man in air - backwards (2)
men fighting with each other (5)
this is an image of a person that appears to be flowing or flying near a church (3)
- D3 Identification of artforms (e.g., landscape, portraiture, caricature, still-life, street scene)**
land types (5)
portrait of a couple (1)
- D4 Examines and describes surface details of images.**
the faces look like skeletons (5)
goat face and a human face (3)
scarves on the wall have a detailed paisley pattern (1)
- D5 Student actively searches work for descriptive understanding (e.g., compound sentences, complex thought structures, connection-making, comparisons, speculation, hypotheses, and/or conclusions).**
humans in unhuman states, and non-humans in human states (3)
there is a woman kissing a man who is stretched around her, he is floating in the air . . . there are animals fighting . . . 2 people touching very close together . . . the dancers are also in the air a lot, like they're all floating just like the man in Chagall's painting (2)
- D6 Descriptive agreement with literature review.**

man playing the fiddle - standing on top of the world
(3)

portrayed in a floating, distorted manner (3)

killing, rape (5)

**D7 Supported judgment and/or aesthetic reasoning
(descriptive).**

I don't like this piece because of the man's body and
how its disfigured (4)

I don't like this painting because the man's neck in
the picture makes me feel strange and uncomfortable (4)

D8 Descriptive questioning.

why are the walls of the apartment pictured in The
Birthday decorated with colorful scarves? Was there a
special reason for the scarves to be hung in this way?
(1)

a robot's knee is showing - why? (4)

why is the lady so big? (4)

**D9 Extends and/or challenges historians' and/or critics'
description of the work through convincing argument
which includes supportive examples or evidence.**

because the "bed image" is cut off at the right of the
composition, slightly tilted in perspective, and
covered with scarves, it could be very well be a
pillow rather than a bed (1)

-D1 Incorrect descriptive appraisal (Supported)

it appears the woman is kissing a ghost since he is
floating in the air (4)

the look on the man and woman's face appear to be
angry and they look as though they are arguing (1)

-D2 Incorrect descriptive appraisal (Unsupported)

black and white monsters (2)

-D3 Illogical descriptive findings

there are martians invading a planet (1)

Supportive Responses: Interpretive Dimension

- I0 **Immature judgment, nebulous or unclear interpretive statement.**
- I like it because it makes me happy (1)
- I1 **General interpretive language.**
- this work is very violent (5)
- vulgar, disgusting (5)
- I2 **Uncustomary/unexpected impression (viz., personal).**
- murder, hate, killing - things I like (5)
- I3 **Relates work to "popular culture" (e.g., names pop culture).**
- Fiddler on the Roof (3)
- Bart Simpson (5)
- I4 **Correctly relates work to a culture or religious belief system.**
- Reference to Christianity in all of them - the symbol of the cross" (3)
- A couple of them have a Christian theme" (3)
- I5 **Student actively searches work for interpretive understanding (e.g., compound sentences, complex thought structures, connection-making, comparisons, speculation, hypotheses, and/or conclusions).**
- they all involve two people or two major subjects; deal with love; romance in a bazaar way; eerie kind of love; not ordinary (4)
- I6 **Personal interpretation based on description of images, scene, and/or symbols.**
- man bending over woman - To me this signifies that a man bends over backward to make a woman happy (4)
- a couple sitting on a hillside and they seem content with each other (4)

- I7 Personal interpretation based on analysis of elements of design (e.g., line, shape, color, texture).**

almost wicked because of the dark colors (3)

it looks like a happy wedding reception, but the bride is in red and the guests are in white (4)

- I8 Personal interpretation based on analysis of principles of design (e.g., repetition, variation, dominance, balance, transition, unity, contrast, movement, action).**

a light and joyous feeling caused by the delicate motion of the dancers - graceful movement (2)

create a sense of anxiety because there appears to be haphazard movement within each scene (2)

- I9 Interpretation agreement with literature review.**

someone being head over heels in love . . . floating on air (3)

dreamy - reminds me of a dream. I think of floating - I like it - different (4)

its about the horrors of war (5)

- I10 Supported judgment and/or aesthetic reasoning (interpretive).**

My favorite piece is the last one because its simple and peaceful (4)

Looks romantic - I like it - it reminds me of happy moments (4)

- I11 Interpretive questioning.**

were any other contemporaries of Chagall working with the theme of love during this time? (0)

did the euphoria of their love cause them to have an outer body experience? (1)

- I12 Extends and/or challenges historians' and/or critics' interpretation of the work through convincing argument which includes supportive examples or evidence.**

the title of the painting suggests the work should be interpreted as the celebration of a birthday. However, the two lovers pictured may have just been married. The woman holds the traditional bridal bouquet, they are so in love they have defied gravity (1)

-I1 Incorrect interpretive appraisal (Supported)

all of these figures have very blank frozen looks on their faces . . . I see it as being sick of the everyday monotony of life or as being bored with each other (4)

all of the people seem sad, with their heads hung, or facial expressions (4)

-I2 Incorrect interpretive appraisal (Unsupported)

these artworks are about a man and woman interacting, generally sexually (4)

I'd say it looks like jealousy (4)

-I3 Illogical interpretive findings

to me seems satanistic. Like there is a heaven and hell (2)

all of them have a violent theme, a young couple in troubled times do not know how to release their aggressions, so they take it out on each other (2)

Supportive Responses: Historical Dimension

H0 Immature judgment, nebulous or unclear historical statement.

I like it because it is Surrealistic (1)

H1 Artist's name(s), or ethnic group.

the work is painted by Marc Chagall (1)

H2 Personal data or background about artist (e.g., age, sex, race, culture, where artist was born, lived, worked and/or "stories" about artist's life) or ethnic group (e.g., culture, county, sex of artist).

he was born in Russia (0)

he had a studio in Paris (0)

- H3 Title or date of work(s), the place or person(s) the work might depict.
the work is entitled The Birthday and was painted in 1915 (1)

outside the window is a view of Vitebsk (1)

- H4 Identifies, sorts, or classifies work(s) according to culture, period, movement, societies and associations; and/or form(s).

Like the Impressionists, Van Gogh painted the light with his favorite color yellow (expert)

Chagall accepted the sophisticated theories and practices of the times: Expressionism, Cubism, and Fauvist color (expert)

- H5 Student actively searches work for historical understanding (e.g., compound sentences, complex thought structures, connection-making, comparisons, speculation, hypotheses, and/or conclusions).

this painting [The Birthday] incorporates the pure saturated color of the Fauvist, and the floating figures are reminiscent of Surrealism. In examining the tilted perspective of the table, and the multiple points of view, Cubist qualities become apparent (expert)

- H6 Discusses the artist's inspiration or mythology about the origin of the form in a supportive explanation of the work.

Chagall's imagery is representative of his early life in a Russian village (0)

the Bwami society is compared to a tree with far reaching roots (expert)

- H7 Provides a supportive explanation of the work in reference to its purpose, function, or use.

warriors' tunics were occasionally worn by kings (expert)

- H8 Makes comparison(s) of other works by same artist or ethnic group(s) or different artist(s) and/or ethnic group(s).

a comparison of Chagall's interpretation of war with Picasso's in the Guernica illuminates the broad scale of expressive emotion upon which art can play (expert)

- H9 Historical agreement with literature review (e.g., cites cultural significance of work in reference to artist, context, movement, ethnic group and/or society).

Chagall portrays the trials and persecutions of the Jewish people (0)

- H10 Supported judgment and/or aesthetic reasoning (historical).

this is a successful work of art because it can touch people of different ages. Children can relate to the child-like quality of the execution - exact representation is not important, figures float about the picture plane. The work can remind the adult of happy childhood dreams and memories (1)

- H11 Historical questioning.

the work of Chagall seems to have elements of several different styles and movements (Expressionism, Fauvist color, Fantasy, Surrealism, etc.). In what period of art history is Chagall's work most associated? (0)

- H12 Extends and/or challenges historians' and/or critics' appraisal, analysis, and/or theories of the work with supportive examples, explanation, and/or evidence.

West (1990) reminds us that "indeed all such stories by Bella and Chagall himself must be read with the knowledge that they were writing retrospectively, and could thus construct their interpretations to suit themselves" (p. 80). I question West's (1990) remarks, that in essence tend to reduce the credibility of the remembrances of Bella Chagall. Does Bella Chagall's (1973) account give a clue to the understanding of the painting Above the Town? This 1917 painting depicts Bella and Marc floating in the sky over Vitebsk. It is interesting to note that the view from the window of The Birthday has also been identified as Vitebsk. And further, Bella has on the same dress as she wears in The Birthday; Marc wears a similar green shirt and black pants. Could Above the Town, painted two years later than The Birthday, record the imaginary flight over Vitebsk that summer evening? (expert)

-H1 Incorrect historical appraisal (Supported)

the stories reflected in the works are from the past,
maybe in the 19th century (3)

-H2 Incorrect historical appraisal (Unsupported)

its abstract expressionism (3)

-H3 Illogical historical findings

the painting looks like it was done back in the era of
Napoleon (2)

APPENDIX H
SCORING INSTRUCTIONS

About the Diagnostic Profile

The diagnostic profile is an assessment instrument for art education grounded in current conceptions of learning. The diagnostic profile encompasses terminology reflective of the field of art education, and is responsive to the educator with a background in the arts. Categories within the diagnostic profile represent the student's application of the knowledge base and knowledge-seeking strategies through the process of transfer. This assessment instrument is diagnostic in its ability to discriminate between lower-order understandings, higher-order understandings, and misunderstandings.

The diagnostic profile assesses student understandings from written and/or transcribed verbal statements stimulated by artworks. Written statements can be stimulated by art reproductions, slides of artworks, actual works of art in museums or galleries, and the students own artwork.

The Four Dimensions of the Diagnostic Profile

The diagnostic profile is comprised of four dimensions: formal, descriptive, interpretive, and historical. Each dimension contains a series of categories describing student learning outcomes. All of the dimensions within the diagnostic profile can be used for a complete analysis. However, a teacher may wish to employ selected dimensions in the analysis of written statements.

Formal Dimension

Categories within the formal dimension represent a range of learning outcomes related to the formal qualities of artworks:

- elements of design (e.g., line, shape, color, texture);
- organizational principles of design (e.g., repetition, variation, transition, balance, unity);
- technical processes or media (e.g., impasto, printmaking, drawing, ink);
- art styles (e.g., abstract, non-objective, realistic).

Descriptive Dimension

Descriptive dimension categories included learning outcomes related to the subject matter of artworks:

- objects or figures (e.g., images, symbols);
- artforms (e.g., landscape, still-life);
- activities or actions.

Interpretive Dimension

The categories within the interpretive dimension provided a broad spectrum of learning outcomes related to:

- expressive qualities of artworks;
- personal meaning and interpretations;
- interpretive perspectives.

Historical Dimension

The learning outcomes within the historical dimension categories focused on:

- personal data about the artist (e.g., name, race, birthplace);
- historical data about the work (e.g., title, date);
- classifications (e.g., Impressionism, Surrealism);
- stories, inspirations, mythology regarding the artwork;
- purpose, function, use of the artwork;
- significance.

(Individual categories are described more fully on pages 85-102.)

Scoring Units: Lower-Order

Each single word, clause, or sentence can be used as a unit of analysis for lower-order outcomes. A scoring unit is a word, or a group of words in a clause or phrase, that may or may not comprise a whole sentence. A scoring unit can have one or more of the following in various combinations: noun, verb, adjective.

Each of the following equal a single scoring units:

- a dog with a cat (subject + subject)
- a dog and a cat (subject + subject)
- a dog running (subject + verb)
- dog running after a cat (subject + verb + subject)

Sometimes there are multiple scoring units in one sentence.

Usually, these compound sentences are separated by coordinating conjunctions (e.g., then, and, but, or, however) or by punctuation (e.g., a dash, comma).

Examples of compound sentences equal to 2 scoring units:

- dog running after a cat while the pet owner watches
(noun + verb + noun) (conjunction) (noun + verb)
- A dog and a cat in the background, and a hamster in the foreground. (noun + verb + noun + noun)
(conjunction) (noun + noun)

Scoring Units: Higher-Order

Clauses, phrases, sentences, and/or paragraphs can be used as units of analysis for higher-order outcomes. Often,

parts of higher-order units have been previously scored according to their lower-order content. For this reason, scoring for higher-order is essentially a second screening or double-coding of a statement. For example, in the following statement, the student performs a higher-order formal analysis of a work of art based on the elements of design:

- red/orange draws attention, black is important as a shading/defining color

In this example, the student has employed knowledge-seeking strategies to access relevant prior knowledge of the effects and functions of color. However, the analysis could not be performed without lower-order identification of color. Therefore, lower-order outcomes (coded 1 through 4 within dimensions) are analyzed separately from higher-order-outcomes (coded 5 and above within dimensions).

Scoring Units: Misunderstandings

Sometimes students misunderstand the work of art. Instances of misunderstandings can reflect lower-order and/or higher-order content that is incorrect. For example, in the following statement the student has misunderstood The Birthday:

- the people are unhappy

The people in The Birthday are happily in love, therefore this statement is incongruent to scholarly interpretations on the work. However, to arrive at the misunderstanding,

the student rendered a lower-order description of "people" while using interpretive language. If the student provided a supportive argument about why the people appear unhappy, the content of the misunderstanding would be higher-order.

Color Coding

Units within the written statement are first distinguished according to formal, descriptive, interpretive, or historical dimensions. It is also helpful to note misunderstandings in this initial screening. This step is facilitated by coding each unit with a transparent marker in the appropriate color:

- formal dimension - yellow
- descriptive dimension - orange
- interpretive dimension - pink
- historical dimension - green
- misunderstanding - double code with dimension color and blue

The scoring unit "there is contrast between black and white" is coded with a yellow marker because the student is referring to formal qualities. The unit "a dog is running" is coded with the orange marker because the student is describing subject matter. The unit "this gives me a happy feeling" is coded with a pink marker because the student is using interpretive language. The unit "Marc Chagall" is coded with a green marker because the student is giving historical information in reference to the artist name.

The same color coding system is used to screen higher-order outcomes. However, in lengthy statements, drawing a

circle, or using a bracket to indicate the location of the higher-order outcome is more clear.

If a student incorrectly stated the artist was "Vincent Van Gogh," the statement would be double-coded green for the historical information and blue for the misunderstanding.

If a student states "the people in The Birthday are unhappy," the word "people" is coded orange, "unhappy" is coded pink, and "The Birthday" is coded green. However, since the student misunderstood the interpretive dimension of the work, the statement would also be double-coded with blue.

Coding According to Categories in the Diagnostic Profile

After each unit has been color coded, the rater then analyzes one dimension in the written statement at a time. The units of one particular color are analyzed according to the categories within the appropriate dimension of the diagnostic profile. The rater writes the category code next to each unit in the written statement. The criteria for some categories representing lower-order outcomes can be revealed by the use of a single word. The criteria for categories representing higher-order outcomes can be revealed by a phrase, sentence, or paragraph.

Written statements can be composed of one or more thoughts. Only the first instance of a classification is to be scored within a single thought. The supportive responses

(see Appendix G) are useful as standard examples that meet the criterion of the category.

Tally of Scores

Items numbered "0" through "4" are considered lower-order outcomes. Items numbered "5" and above are considered higher order outcomes. Items identified with negative numbers represent misunderstandings.

Construct a tally sheet, as shown in Figure 5 below. The tally sheet can be used to record outcomes of a single student or an entire class. List the codes of each outcome on the appropriate line (lower-order, higher-order, or misunderstanding). As outcomes are recorded they should be placed under the appropriate dimension column:

F = formal

D = descriptive

I = interpretive

H = historical

	F	D	I	H
Lower-order				
Higher-order				
Misunderstanding				
Total				

Figure 5. Diagnostic profile assessment tally sheet.

Diagnosis: A Sample Scored Statement

The sample scored statement shown in Figure 6 was stimulated by the following artworks:

- Chagall, a dance choreography by Ginette Laurin, 1988
- To Marc Chagall, a poem by Paul Eluard, 1911-1915
- And Came the Dog and Ate the Cat, a lithograph by El Lissitzky, 1919
- The Birthday, a painting by Marc Chagall, 1915-23

A matrix containing acceptable criterion to meet literature review agreement categories (F8, D6, I9, and/or H9) is constructed below:

Formal = juxtaposition, abnormal proportion
 Descriptive = floating, suspended figures
 Interpretive = lovers, relationship, romance
 Historical = Fauvist, Surrealist, Expressionist influence

Poem that has something to do with a (man and a woman.)
 This is a (woman kissing a man) who is stretched around to her. He is (floating in the air) - color. There are animals fighting - black and white only. Romantic dance - 2 people touching - stay very close together. I think that all four of these have a romantic sense about them, I'm not sure what the third piece has to do with (love) or romance, but the other reflect it. He uses lots of curvy lines in his paintings. The other artworks inspired by him also uses curvy lines. The dancers are using curves when they move. The dancers are also in the air a lot, like they're all floating just like the man in Chagall's painting.

Handwritten annotations: F4, D2, D1, D5, D2, D6, F1, I1, I9, I1, I5, F5, F6, D3, D5, D2, D6, H1, F4.

Figure 6. Sample scored statement.

Each of the 27 items scored in the previous statement have been tallied as shown in Figure 7:

	F	D	I	H	Total
Lower-order	1,1,1,4, 4,4	1,2,2,2,2, 2,3	1,1,1	1	17
Higher-order	5, 6	5,5,6,6	5,9,9,11		10
Misunder- standing					0
Total	8	11	7	1	27

Figure 7. Tally of diagnostic profile scores.

From the tally of diagnostic profile scores, the teacher can assess the student's knowledge base for the presence of lower-order and higher-order understandings, and misunderstandings. With simple computations based on the 27 items scored with the diagnostic profile, a teacher can arrive at an assessment of the student's knowledge-seeking strategies:

- 29.63% = knowledge-seeking in formal dimension
- 40.74% = knowledge-seeking in descriptive dimension
- 25.93% = knowledge-seeking in interpretive dimension
- 3.70% = knowledge-seeking in historical dimension

The frequency of knowledge-seeking strategies within the formal, descriptive, interpretive, and historical dimensions of understanding can also be depicted graphically. As shown in Figures 8 and 9, the construction of pie chart and bar graph can display visual evidence of

Figure 8. Knowledge-seeking assessment pie chart: Frequency of response within dimensions.

Figure 9. Knowledge-seeking assessment bar graph: Frequency of response within dimensions.

the student's concentration in one dimension of understanding over another.

Extent of formal, descriptive, interpretive, and historical understanding can also be plotted from the tally sheet of diagnostic scores. A frequency distribution of the individual scores can be depicted graphically to illustrate the degree of cognitive complexity reflected in the written statement. Based on the frequency of response (vertical axis), and the scores received in individual diagnostic categories within each dimension (horizontal axis); a histogram can be constructed, as shown in Figure 10.

Figure 10. Degree of cognitive complexity histogram: Extent of formal, descriptive, interpretive, and historical understanding.

The histogram in Figure 10 provides a more detailed visual account of the learning outcomes in the various dimensions. As indicated by the arrow, certain higher-order outcomes may be of special interest to a teacher. A diagnostic account of these learning outcomes can be extracted directly from the language used in the categories of the diagnostic profile. In the case of the sample statement, the student has concentrated his/her knowledge-seeking strategies in the descriptive dimension, explaining the activities and actions taking place in the artworks. However, the histogram reveals that the student has also employed knowledge-seeking strategies involving the construction of a question pertaining to the meaning of the artworks (I11). As a result of this knowledge-seeking strategy, the student has arrived at an interpretive understanding of the artworks reflective of the scholarly literature on the works of art (I9).

Based on the tally of diagnostic profile scores in the sample statement, a diagnostic assessment can also be displayed by graphing understandings and misunderstandings. As shown in Figure 11, the bar graph makes diagnostic discriminations between learning outcomes reflective of lower-order and higher-order understandings, and misunderstandings; and isolates these learning outcomes within the formal, descriptive, interpretive, an historical dimensions of the student's knowledge base.

Figure 11. Diagnostic assessment bar graph: Understandings and misunderstandings within dimensions.

APPENDIX I
ELIJAH PIERCE SCRIPT

ELIJAH PIERCE

WOOD CARVER

Until his death in May 1984, Elijah Pierce and his wife Estelle received thousands of visitors to the barbershop-turned-art gallery, on East Long Street, near the museum. There, adults and children alike were encouraged to investigate wooden figures and relief panels and to hear Pierce — the barber, minister, and folk artist — tell the stories which had inspired the pieces.

Pierce was born on March 5, 1892, in Mississippi, where his father, a religious man and former slave, owned a successful farm. Unlike his brothers and sisters, Pierce disliked farm life and left home "to see the bright city lights," as he put it. Pierce rode the rails for several years after 1916, living as a hobo or working on bridge gangs in Tennessee, Missouri, and Illinois. In 1924, he settled in Columbus and began work as a barber. In 1954, he built the shop on East Long Street, which he maintained until retiring in 1978.

Pierce recalls, "When I was a boy I was always carving . . . I'd look at a tree and I could hardly help it, I'd start carving . . . most anything I could think to put on the bark of a tree," or, as it turned out, on walking sticks and scraps of wood. Years later, his wife's appreciation of a small elephant he had carved for her birthday served to focus Pierce's interest on making all types of animals, as well as people and imaginary beasts. From these free-standing works his idea of creating scenes on panels evolved quite naturally. During the late 1920s and 1930s he began mounting arrangements of his three-dimensional figures and animals on wood or cardboard backgrounds. He then decided to work directly on wood panels, carving out his scenes in one-inch relief. Pierce's work is frequently painted in bold, decorative colors, usually enamel, common house paint, or even a combination of magic marker, varnish, and glitter.

The power of Pierce's personal vision is conveyed in his many works depicting biblical parables and other religious subjects. Secular themes include autobiographical, political, and social topics as well as admired figures in sports and history. But whether amusing, moralizing, or simply documentary, the narrative content of his work is always direct, immediate, and captivating.

In the last several years of his life, Elijah Pierce received increasingly wide recognition as an artist. His work has been exhibited at major museums throughout the country and he has been hailed as one of the outstanding folk artists of our time. The Columbus Museum of Art is fortunate to have been able to purchase the pieces that remained in Pierce's possession at the time of his death. The collection is comprehensive, encompassing the artist's entire career. It is the Museum's goal to preserve this fine body of works and to make them available to a wider audience.

Columbus Museum of Art
480 East Broad Street / Columbus, Ohio 43215

POST-VISIT ACTIVITY

Collage of Symbols

In telling stories about his own life, through his wood carvings, Elijah Pierce uses symbols to represent feelings, occurrences, people, and moods. Think back over your life and try to pick out interesting or important events that others might like to know about. The story could be about you and your family, your pet, the house or apartment where you live, a sport you play, or a trip you've taken.

First, write this story out on paper, using as many details and descriptions as possible. Then try to imagine how you might tell this story without using words. What symbols or pictures representing events in the story could you use? (Example: a story about a football game might use symbols of a helmet, goalposts, the football, or musical instruments in a marching band.)

The project is to create a collage (a work of art created by gluing or pasting pictures, paper or flat objects) which will tell this unique story from your life. You might look for items for your collage in magazines, photo albums, old posters, the rag bag (you can use fabric too!), or you can also draw or paint pictures to be included.

Arrange the symbols or pictures which tell your story on a 12" x 18" piece of paper. Don't glue them down right away. You may want to experiment with the arrangement.

NOTE TO TEACHER: Once the works are complete, each child could tell his or her story while displaying the collage, similar to the way Elijah Pierce likes to tell his stories.

POST-VISIT ACTIVITY

"Noah and the Ark Storyboard"

In viewing the slides of Elijah Pierce's work, you saw his wood carving of the Old Testament story of Noah's Ark. This project will enable your students to present this familiar story in their own way.

Read the following story of Noah's Ark to your class aloud while each student tries to visualize the different parts of the story:

- I. Once upon a time, many, many years ago, there lived a good man named Noah. But all around Noah lived wicked people who made God very angry.
- II. God came to Noah and told him he was going to destroy the world because it was filled with evil, God also said he would save Noah and his family because they were good.

God told Noah to build a very large ark with three decks and plenty of room. Noah and his family worked hard to build the ark.
- III. Then God told Noah to take his family and two of each kind of animal on the earth onto the ark. Noah did as God told him.
- IV. Soon it began to rain. It rained for forty days and forty nights. The rain waters covered all the earth, but Noah's ark and all its passengers floated safely through the flood.
- V. When the rains stopped and the sky became calm, Noah sent a dove out to find a sign of land. The dove returned with nothing.

In seven days Noah sent the dove out again and this time the dove returned with an olive branch in her beak. This meant the flood waters were going down.
- VI. Noah waited seven more days and saw that the waters were drying up and that the ark was resting on a mountain.
- VII. Noah opened the door to the ark and all the pairs of animals returned to the land to find a new place to live.
- VIII. Then Noah and his family saw a rainbow arching across the sky. It was a symbol of God's promise never again to destroy the earth by flood.

The project is to create a "storyboard" which will depict the story of Noah's ark. Think of a storyboard as a comic strip without words. Each section of the board should be uniform in size to create continuity. Paper 9" x 12" or larger would be ideal for each section.

There are eight sections in the story, so divide your class into eight groups. Give each group a section of the written story to work with. Each group will produce one segment of the storyboard.

-2-

Using the descriptive words in the text and a lot of imagination, each group of children should try to develop a visual representation of that part of the story. Use crayons, markers, watercolor -- anything available to you -- which will enhance the storyboard creation.

Finally mount the sections in order so the visual story of Noah's ark can be seen in sequence.

Elijah Pierce

Museum Resource Packet #3

Columbus Museum of Art

480 East Broad Street / Columbus, Ohio 43215 / 614-221-6801

ELIJAH PIERCE

"My wife said once that I was a bad boy, that God had put me out on the woodpile and I had to stay there and carve it all up . . ."

Elijah Pierce

When we look at a work of art we sometimes forget about the artist who made it, what kind of person he was, and why he chose to create it. This is especially true when an artist lived and died many, many years ago.

We in Columbus are very fortunate to have listened to and recorded the words of Elijah Pierce who died only a short time ago, in May of 1984.

Mr. Pierce, who lived to be in his nineties, worked as a barber for many years in a shop on Long Street. He did carvings from wood when he was not giving haircuts. Eventually, he stopped giving haircuts and devoted his time to his woodcarvings. His barber shop became a studio which he opened to the public several days during the week. Many people came to watch him work on his woodcarvings and listen to him tell wonderful stories about his life and his art.

Elijah Pierce was born in a log cabin in Mississippi. His father, who was once a slave, raised his nine children in a strict religious atmosphere. As a child Elijah worked on the farm and spent his free time carving with his favorite pocketknife -- pictures of farm animals, Indians with bows and arrows, girls' names -- anything he could think of. Perhaps it was his fascination with cutting and shaping which led him to become a barber. He left Mississippi when he was a young man and traveled around the South and the Middle West, supporting himself the only way he knew how, by cutting hair.

Pierce recalled wanting to see the bright lights of the city. With a nickel in his pocket, he left his home and family behind. He jumped on freight trains and slept in boxcars and abandoned buildings. Somehow he found his way to Danville, Illinois where he found work and met the young

girl who would soon become his wife. When she left for Columbus, Ohio, where the rest of her family lived, Pierce followed and married her on the day he arrived here. He remembered Columbus as a big, overgrown farm town where he and his wife rode down Long Street in a streetcar. He credited his wife with making him settle down and get to work.

Elijah Pierce never gave up carving. Originally he carved only small animals or walking sticks, but in the early thirties he began to concentrate on Biblical stories and folk tales. He learned his art without going to art school, and he drew his inspiration from the Bible stories that had been so much a part of his everyday life as a child in the South. There was a deeply felt sermon or a message in each piece he carved.

During summer vacations Pierce and his wife would load his carvings into the car and drive from state to state, showing his work and preaching informally. They sold only enough to pay their expenses, and he often gave away his carvings.

Then, in 1971, an Ohio State University graduate student recognized the value of Mr. Pierce's work as folk art and began to organize exhibitions of the carvings. Today, his pieces are displayed in museums across the country, and his stories and works are featured in many books and magazines. Elijah Pierce spoke of his fame:

"I never went after any of these honors . . . I didn't even know I was an 'artist' till they told me."

Attention and fame were not going to change Elijah Pierce. "I'll just keep on working, same as I always have," he said.

The strong, simple images in Mr. Pierce's works are direct and appealing. His colors come straight from the paint can, forceful and often dazzling from the sprinkling of glitter dust. His tools are also simple, a pocket-knife, a chisel, a piece of broken glass, and scraps of sandpaper.

Elijah Pierce created works of art which also teach a lesson, just as a preacher tells stories in order to teach a lesson. These stories, many of which come from the Bible, are especially appealing to us because they are familiar and easy to understand. In Columbus we can be proud that an artist who is an important figure in the history of folk art, lived and worked here.

Here are some of the stories behind Elijah Pierce's work, in some cases, told in his own words.

STORIES FROM ELIJAH PIERCE'S LIFE

Slide #1: Elijah Pierce, born 1892, Standing in Front of his Barbershop.

"I enjoy carving as much as anyone could -- sometimes I think I enjoy it too much. I never get lonesome if I got a piece of wood. And when I'm working on something else -- cutting hair -- I'm thinking about a piece of wood that I'm working on. Sometimes a customer comes into the shop, I hate to see him coming because I know I have to stop carving and cut his hair; and sometimes it's hard to go back and pick up."

Slide #2: The Elephant, 1972.

"One day I got a little piece of wood and I made an elephant... and my wife liked it and she put a ribbon around its neck and put it up on the mantel... and I told her, 'If you like that, I'll carve you a whole zoo,' and started to carve every kind of animal I'd ever seen, in pictures, or what I could think of."

Slide #3: Pair of Pointers, 1936; Pinto Horse, 1972.

After he carved his first animal, the elephant, Pierce did many more of these to give to friends and to sell.

"Sometimes I'd hear a song, or go to church and hear a man preach a sermon, and a picture would form in my mind, and -- oh, sometimes it may be four or five weeks, that picture'd come back to me, and I'd get me a piece of wood and start to carve it."

Slide #4: Tiger, 1972; Crocodile, 1973.

Even during the years when Pierce was concentrating on carving complex story pictures full of symbolic images, he would often take a few minutes between haircuts to carve one of these little animals.

Slide #5: Monkeys.

Monkeys must have fascinated Pierce because he often used them as subjects in his work. He made several humorous carvings of them. This slide shows jealous monkeys chopping off the tail of another monkey with the longest tail. Meanwhile, the monkey swinging the ax is getting his tail chewed off by the monkey with the longest tail.

Said Pierce, "So many of us lose our tail while trying to cut off somebody else's tail."

Slide #6: Slavery Time, 1973

"My father was a slave in Mississippi. When the War was over, they wanted him to stay on as a houseboy. But after he heard that the slaves was free, he just didn't want to stay on anymore. So he just went out; he didn't know where he was goin', he just went. He never knew any of his brothers and sisters; every time they'd sell him, he'd have to take on the name of his new slave master. The name Pierce came from a man out of Richmond, Virginia."

In Slavery Time, Pierce illustrates the tales told to him by his father about slavery. In the upper, middle section you can see slaves up for sale on the auction block. Their sleeves and pant legs are rolled up to show their condition. Next, to the left, is the cottonfield and, underneath, the other fields with slaves working. On the right, two slaves carry a large pail with dinner to the other slaves. In the lower right corner, a girl is strung from a tree and a man is being whipped to illustrate slave punishments. The neat, white building is the overseer's house and the

cabins that of the slaves. Uncle Sam in red, white, and blue represents emancipation. The slaves are asking Uncle Sam for what they had been promised -- a mule, forty acres, and fifty dollars.

Slide #7: Vision of Heaven.

Pierce said of this work, "That was something that happened to me down home in Mississippi, where I was born and raised. My mother and I would read the Bible after we got through with our evening chores around the center table near the lamp. I was told to read a certain passage of Scripture. Sears Roebuck had sent a catalogue down there that day -- and I decided I'd look through it, and I reached over the Bible to look through the catalogue and Jesus Christ laid his hand on my head and I fell out of the chair. My mother and my sister ... put me on the bed, and as they were dragging me out I heard a voice say, 'I told you to read the Bible and you disobeyed me, and I'm just showing you My Power.' And the neighbors heard my mother and sister crying, and there was a house full of people in a few minutes. Some of the old-timers came and examined me and said that I were dead. And I stayed in that condition long enough so that they sent for the doctor and some were fixing to send for the undertaker. I didn't feel any pain -- I went out just like the sun going behind a cloud. Last thing I heard was my mother saying, 'Lord have mercy, honey, what's the matter?' And they were still screaming when I came back -- just like the sun coming from behind a cloud, and I said, 'Hush, Mother, I know what's the matter ...'"

Slide #8: Elijah Escapes the Mob, 1972.

Pierce told about one Saturday morning when he was playing baseball with some friends. An angry mob was searching for a black youth who had reportedly killed a white man. The suspect happened to be the same weight and height as Pierce and both had two gold-crowned teeth in their mouths. In the meantime, one of the boys who had been playing ball had a gun and asked

Pierce to hide it in his coat. Pierce took the gun and was planning to return home after the game when a police detective approached him and told him to put up his hands. The police had heard that the suspected killer was armed so they searched Pierce. When they found the gun, they immediately marched him to jail and locked him up. The police sent for someone who could identify the suspect. Fortunately, when the man came he realized that Pierce was not the suspect although they could have passed for twins. Pierce was set free and told to get out of town before the mob killed him by mistake. He was eighteen miles from home but he covered the distance by foot very quickly.

Slide #9: Presidents and Convicts, 1941

Here is Elijah Pierce's explanation of this carving:

"I was on a vacation trip down south, south of Atlanta, and I saw these convicts working on the road with picks. They had chains on their legs and there was a guard standing over them with a sawed-off shotgun and some bloodhounds near in case any of them would run away. I put the President on the same picture because he was the head of the country and it just flashed in my mind that that would be a good place to put the convicts -- they were criminals and were out there doing their time -- and it just impressed me so I put it on the same picture. That was near twenty years ago or more."

STORIES FROM THE BIBLE

Slide #10: The Book of Wood

Elijah Pierce told us that The Book of Wood, from the permanent collection of the Columbus Museum of Art, was put together around 1932. "I had carved up a lot of pictures, and my wife said, 'Let's make a book, a book of wood,' so we got together and started small pieces that we could put on a page ... The seven pages represent the seven great churches of Asia Minor, and the thirty-three scenes represent the thirty-three years Jesus Christ was on earth."

Reading clockwise from left, the stories from the Bible include: "The Birth of Jesus; the Angel appears to the shepherds; the three Wise Men; Mary, Jesus and Joseph on the flight into Egypt; the first meeting of Jesus and John the Baptist; Jesus, Mary and John the Baptist."

Slide #11: The Book-of Wood

Here is another page from The Book of Wood. Pierce described these scenes (from left to right), "Jesus turns the water into wine; Jesus tempted by the Devil, and; He told him, 'Get thee hence, Satan'; Jesus baptised in the River Jordan by John the Baptist and the Spirit of God descending in the bodily shape of a dove, saying, 'This is My Beloved Son in Whom I am well pleased.'"

Slide #12: The Devil Fishing, 1973.

Of this piece concerning the Devil tempting man, Pierce said, "He's caught all of us at one time or another ..."

Slide #13: Noah's Ark, 1944.

Pierce worked on Noah's Ark for six weeks in the shop between haircuts and every night until he completed it. A masterpiece of detail, it includes even a pair of mosquitoes.

Can you find the pair of mosquitoes? What is the story of Noah's Ark?

Slide #14: Jonah and the Fish.

Pierce called himself a Jonah because he believed God was calling on him to serve just as God had called on Jonah. Pierce told the story, "You see, the Lord told Jonah to go down to preach in Nineveh; but Jonah didn't want to because that was a sinful place. So he took a ship in the other direction. A big storm came up, and all the people were frightened. They went to find Jonah: he was hiding down in the hold of the ship." Pierce continued as

they threw Jonah overboard, "and this big fish swallowed him and he stayed in the belly of that fish three days, and when the fish vomited up, he was glad to go on to Nineveh, or anywhere else that God wanted him to go. He was punished for disobeying God."

Like Jonah, Pierce decided to serve God by preaching. He told as many people as he could to repent their sins and turn to God. Said Pierce, "God will talk to anyone if they live a right life, have a right attitude, he'll talk to you just like talking to a natural man."

Slide #15: The Three Wise Men, 1936.

Elijah Pierce especially liked the Nativity story and referred to this in many of his pieces. Here, the Three Wise Men are bringing gifts to the Christ Child at His birth. On the left is Melchior carrying gold to the Baby; Caspar is in the center, bearing frankincense; on the right is Balthazar bringing myrrh. Notice the glitter Pierce used on the star to make it brilliant.

STORIES WITH A MORAL

Slide #16: Straining at a Gnat and Swallowing a Camel.

Here are Pierce's thoughts about this work, "Everywhere I go people ask me to talk about this picture. It represents so many of us. During the daytime, we're pretending to be what we're not, saying things like, 'Oh, I don't drink' or 'I don't curse' or 'I don't do this or that.' That's what I call straining at a gnat. But let the sun go down, and they'll get behind closed doors and do most anything -- drink, curse, anything. That's what I call swallowing a camel."

Slide #17: Man Crushed by a Snake when the Woman Stuck a Pin In, 1973.

"This was a true story from a marketplace in the South. The man would perform with the snake -- wrap it around his body -- in this marketplace.

The man was a show-off, ~~an exhibitionist~~ who wanted to make a big impression on the ladies around ~~there~~. But he was married, and his wife was a very jealous woman -- jealous of the other women and of the snake! So one day while he was doing his act, the snake wrapped around his body, she went up and stuck a pin into the snake. The snake got scared, panicked, and crushed the man to death."

Slide #18: Pride, ca. 1925.

Elijah Pierce and his wife eventually decided to collect his first carvings of small three-dimensional figures and mount them together on a board, as in Pride. Pictures done after this time were usually carved directly into a flat piece of wood, creating a relief.

This piece illustrates the old saying "Pride goes before a fall." In other words, if you are bragging and showing off, something is likely to happen to you to make you look very foolish. Notice that all the figures are falling. Pierce has included "gossips" -- people who speak badly of others -- as well as a peacock, representing people who are very proud of their own appearance, and two goats which symbolize those who "butt in" on other people's business.

Slide #19: Burying the Hatchet, 1973.

"Two people might be having a discussion and something might come up and make them angry and they get offended; they might say, 'Well, let's bury the hatchet and call it over.' Well, they bury the hatchet, but leave the handle sticking up so that in case it comes up again it won't be so hard to grab it. But when a person really buries the hatchet, he buries the handle too. In other words, forgive and forget.

"They're shaking hands with the right hand, but behind their back in the left hand is an ax or a knife, and the Devil is behind. They claim to be talking about peace, but . . . there won't be no peace until we recognize

the Fatherhood of God and the Brotherhood of Man. They're talking about peace, but there's more killing and slaughtering and hatred in the human heart than there ever was in history. These nations now, they're just saying 'peace,' but going back and making ammunition and missiles and every other device." Pierce concluded that all they do is talk about peace.

Slide #20: Your Life is a Book and Every Day is a Page.

The idea expressed in this carving is the essence of Elijah Pierce's art: His life was truly a book, full of stories and experiences that he translated into exciting pictures and tales we all can understand and enjoy.

When you look at works of art in the Columbus Museum of Art, notice those that tell a story. Then think about the artist. Even if you don't know anything about his or her background (and there are hundreds of artists about whom we know almost nothing), try to imagine what kind of a person he or she might have been, or why the artist chose to paint, draw, or carve this subject. Maybe it's a well-known story from the Bible, or from history. It might be a myth or a legend. Perhaps you don't know what the subject is, but you can see people doing something. Can you make up a story to go with the picture? What do you think the artist was trying to say?

APPENDIX J
ART DETECTIVE WORKSHEET

prompted

THE CASE OF UNKNOWN WORK

Be an Art Detective

Name: _____
Grade: _____
Teacher: _____

THE SEARCH!

Tell me what you see:

Clues

People/place/thing
Action
Elements
How the elements are used

THE FACTS!!

Tell me about the work:

Artist
Subject
Art Form
Media/technique
Style/time period
Is this imitationism
emotionalism
formalism
functional

Tell me about the artist:

Artist's background
Influences on him
Intent
Purpose
Accomplishments

THE FINDINGS...

Tell me what you know or understand:

What is it about?
What does it tell you?
How does it make you feel?
How does the artist handle
subject and treat the
elements?

THE VERDICT

Is this a good work of Art?

Was the artist successful?

APPENDIX K

DATA COLLECTION SHEET: 3RD/4TH-GRADE CLASS

D.B.A.E.

WRITE WHAT YOU SEE AND WHAT YOU KNOW ABOUT
THIS REPRODUCTION OF THE WORK OF ART.

This image shows a full page of a document template consisting of approximately 20 evenly spaced horizontal black lines on a white background. The lines are uniform in thickness and extend across the entire width of the page, providing a guide for writing or drawing. There are no margins, headers, footers, or other markings present.

APPENDIX L
FOUR-STEP ART CRITICISM

* EACH STEP
BEGINNS A NEW
PARAGRAPH - INDENT!

* USE COMPLETE
SENTENCES!

ART CRITICISM - (IN 4 EASY STEPS!)

STEP ONE: The first sentence includes the artist, title, and media. Then DESCRIBE what you see (what colors, shapes, objects...).

STEP TWO: Write about where the light and dark areas are in the work and how space is used.

(For example, $\frac{3}{4}$ of the work is light, and the objects use up most of the space which is diagonally placed on the page.)

Write about depth (you can see really far into the work, or that it is shallow - you can see only a few feet into the work, or it is flat in that it looks like it is right in front of you.)

If colors, shapes, or lines are repeated, write about the rhythm they create. Perhaps use an adjective about this rhythm.

ART CRITICISM

STEP THREE: Write about what you think the purpose of the work is. What kind of meaning did the artist seem to express to you? Describe this in terms of emotions, or even just trying to imitate nature and in what ways? Is the artist's work making a political or social statement? How does the title of the work help you understand this work?

STEP FOUR: (Now is the time for your opinion!!)
Do you think this work expresses a good idea? Why / why not? Would you place this work in a museum? Explain. If you had any amount of money you wanted, how much would you pay for this artwork? Anything else you want to say about this artist or the work??

THE END

APPENDIX M
DATA COLLECTIONS SHEETS: 8TH-GRADE CLASS

NAME: _____

DATE: _____

- A. Choose one as if you were to purchase the work of art for a museum: (Criticism / Aesthetics)
"The Parade" by: Jacob Lawrence
"Sunny Side of the Street" by: Phillip Evergood
- B. Why??

NAME: _____

DATE: _____

- I. CHOOSE ONE: (circle)
as being the most Cultural: (Criticism / Aesthetics)
"The Parade" by: Jacob Lawrence
"Sunny Side of the Street" by: Phillip Evergood

II. WHY??:

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