

Board of Education Agenda Item

Item: _____ D. _____

Date: March 24, 2011

Topic: Final Review of a Recommendation of the Advisory Board on Teacher Education and Licensure to Approve a Cut Score on the Praxis Art: Content Knowledge Assessment

Presenter: Mrs. Patty S. Pitts, Assistant Superintendent for Teacher Education and Licensure

Telephone Number: (804) 371-2522

E-Mail Address: Patty.Pitts@doe.virginia.gov

Origin:

_____ Topic presented for information only (no board action required)

Board review required by
 State or federal law or regulation
 Board of Education regulation
_____ Other: _____

Action requested at this meeting _____ Action requested at future meeting: _____

Previous Review/Action:

_____ No previous board review/action

Previous review/action
date February 17, 2011
action First Review of a Recommendation of the Advisory Board on Teacher Education and Licensure to Approve a Cut Score on the Praxis Art: Content Knowledge Assessment

Background Information:

The responsibility for teacher licensure is set forth in section 22.1-298.1 of the *Code of Virginia*, which states that the Board of Education shall prescribe by regulation the requirements for licensure of teachers. The *Licensure Regulations for School Personnel (September 21, 2007)* 8VAC20-22-40 (A) state, in part, that "...all candidates who hold at least a baccalaureate degree from a regionally accredited college or university and who seek an initial Virginia teaching license must obtain passing scores on professional teacher's assessments prescribed by the Board of Education."

The Board of Education prescribes the Praxis II (subject area content) examinations as the professional teacher's assessment requirements for initial licensure in Virginia. The Board originally approved cut scores on 16 subject content tests that became effective July 1, 1999. Subsequently, the Board adopted additional content knowledge tests as they were developed by the Educational Testing Service (ETS). Virginia teachers and teacher educators participated in validation and standard setting studies guided by ETS personnel to ensure an appropriate match between Praxis II tests and the competencies set forth in Virginia's regulations, as well as the K-12 *Standards of Learning*.

ETS continues to update the Praxis II assessments through the test regeneration process. When this process results in substantial changes to the assessment, another standard setting study is required.

Summary of Major Elements

To support the decision-making process for the Virginia Department of Education with regards to establishing a passing score, or cut score, for the Praxis Art: Content Knowledge Assessment (0134), research staff from Educational Testing Service (ETS) designed and conducted a standard setting study. The study also collected content-related validity evidence to confirm the importance of the content specifications for entry-level art teachers.

The study involved an expert panel comprised of teachers, administrators and college faculty. The VDOE recommended panelists with (a) art education experience, either as art teachers or college faculty who prepare art teachers, and (b) familiarity with the knowledge and skills required of beginning art teachers.

The panel was convened on November 17, 2010, in Richmond, Virginia. The attached technical report (Appendix A) is divided into three sections. The first section describes the content and format of the assessment. The second section describes the standard setting processes and methods used. The third section presents the results of the standard setting study.

In addition, research staff from the Educational Testing Service (ETS) designed and conducted two multi-state standard setting studies in November 2010. The studies also collected content-related validity evidence to confirm the importance of the content specifications for entry-level Art teachers. The attached technical report (Appendix B) details the work of the multi-state committees.

The *Praxis Art: Content Knowledge Test at a Glance* document (ETS, in press) describes the purpose and structure of the assessment. In brief, the assessment measures whether entry-level art teachers have the knowledge believed necessary for competent professional practice. A National Advisory Committee of expert practitioners and preparation faculty defined the content of the assessment, and a national survey of the field confirmed the content.

The two hour assessment contains 120 multiple-choice questions covering *Art Making – General* (approximately 15 questions); *Art Making – Media & Processes* (approximately 61 questions); *Materials & Processes in a Historical Context and Responding to Art* (approximately 17 questions); and *Western Tradition and Beyond the Western Tradition* (approximately 27 questions).

Candidate scores are reported as an overall score; four category scores – one for each content area listed above – also are reported. Of the 120 multiple-choice questions, 110 questions contribute to a candidate's score. (Ten of the 120 multiple-choice questions are pretest questions which do not contribute to the candidate's score.) The maximum total number of raw points that may be earned on each assessment is 110. The reporting scale for the Praxis Art: Content Knowledge Assessment (0134) ranges from 100 to 200 scaled-score points. The first national administration of the Praxis Art: Content Knowledge Assessment will occur in fall 2011.

The process used in the Virginia standard setting study is detailed in Appendix A. The panel recommended a cut score of 69. The value of 69 represents approximately 63 percent of the total available 110 raw points that could be earned on the Praxis Art: Content Knowledge Assessment. The scaled score associated with 69 raw points is 154.

A similar process was used in the multi-state standard setting studies as described in Appendix B. The average recommended cut score recommendations for the Praxis Art: Content Knowledge Assessment (rounded up) is 72 (on the raw score metric), which represents 65 percent of the total available 110 raw score points (the recommended cut scores for Panels 1 and 2 are 73 and 71, respectively). The scaled score associated with a raw score of 72 is 158.

When reviewing the Standard Error of Measurement (SEM) for the cut scores recommended by the Virginia Standard Setting Study as well as the Multi-State Studies, there is an overlap in the scaled scores. The SEM is a statistical phenomenon and is unrelated to the accuracy of scoring. All test results are subject to the standard error of measurement. If a test-taker were to take the same test repeatedly, with no change in his level of knowledge and preparation, it is possible that some of the resulting scores would be slightly higher or slightly lower than the score that precisely reflects the test-taker's actual level of knowledge and ability. The difference between a test-taker's actual score and his highest or lowest hypothetical score is known as the standard error of measurement. The Standard Error of Measurement for the recommended cut scores for the Virginia Standard Setting Study and the Multi-State Studies are shown on the next page. Note that consistent with the recommended cut score, the cut scores at the different SEMs have been rounded to the next highest whole number.

Standard Error of Measure Summaries -- Art: Content Knowledge (0134)

Table 1

Cut Scores within 1 and 2 SEMs of the Recommended Cut Score
Art: Content Knowledge -- Virginia

Recommended Cut Score (SEM)	Scale Score Equivalent	
	69 (5.11)	154
-2 SEMs	59	141
-1 SEM	64	147
+1 SEM	75	162
+2 SEMs	80	168

Table 2

Cut Scores within 1 and 2 SEMs of the Recommended Cut Score
Art: Content Knowledge -- Multi-State Studies

Panel 1:

Recommended Cut Score (SEM)	Scale Score Equivalent	
	73 (4.98)	159
-2 SEMs	64	147
-1 SEM	69	154
+1 SEM	78	166
+2 SEMs	83	172

Panel 2:

Recommended Cut Score (SEM)		Scale Score Equivalent
	71 (5.04)	156
-2 SEMs	61	144
-1 SEM	66	150
+1 SEM	77	164
+2 SEMs	82	171

Combined Across Panels:

Recommended Cut Score (SEM)		Scale Score Equivalent
	72 (5.01)	158
-2 SEMs	62	145
-1 SEM	67	151
+1 SEM	78	166
+2 SEMs	83	172

Note. Consistent with the recommended cut score, the cut scores at the different SEMs have been rounded to the next highest whole number.

On January 24, 2011, the Advisory Board for Teacher Education and Licensure (ABTEL) recommended that the Board of Education set a cut score of 158 for the Praxis Art: Content Knowledge Assessment (0134) for individuals seeking an initial license with an endorsement in Visual Arts PreK-12. The revised assessment will be offered after September 1, 2011.

Superintendent's Recommendation:

The Superintendent of Public Instruction recommends that the Board of Education approve the Advisory Board on Teacher Education and Licensure's recommendation and adopt a cut score of 158 for the Praxis Art: Content Knowledge Assessment (0134) for individuals seeking an initial license with an endorsement in Visual Arts PreK-12.

Impact on Resources:

Costs associated with the administration of the Praxis Art: Content Knowledge Assessment (0134) will be incurred by the Educational Testing Service. Prospective teachers seeking an initial Virginia license with an endorsement in Visual Arts PreK-12 will be required to pay the registration and test fees.

Timetable for Further Review/Action:

N/A

APPENDICES

Appendix A

Standard Setting Technical Report (Virginia)

Praxis Art: Content Knowledge (0134)

Appendix B

Multi-State Standard Setting Technical Report

Praxis Art: Content Knowledge (0134)



Listening. Learning. Leading.

Standard Setting Technical Report

PRAXIS ART: CONTENT KNOWLEDGE (0134)

Prepared for the Virginia Department of Education

Educational and Credentialing Research

Educational Testing Service

Princeton, New Jersey

November 2010

Executive Summary

To support the decision-making process for the Virginia Department of Education (VDOE) with regards to establishing a passing score, or cut score, for the Praxis Art: Content Knowledge (0134) assessment, research staff from Educational Testing Service (ETS) designed and conducted a standard setting study on November 17, 2010. The study also collected content-related validity evidence to confirm the importance of the content specifications for entry-level art teachers.

Recommended Cut Scores

The recommended cut score is provided to help the VDOE determine an appropriate cut (or passing) score. For the Praxis Art: Content Knowledge (0134) assessment, the average recommended cut score is 69 (on the raw score metric), which represents 63% of total available 110 raw score points. The scaled score associated with a raw score of 69 is 154.

Summary of Content Specification Judgments

Panelists judged the extent to which the knowledge and/or skills reflected by the content specifications were important for entry-level art teachers. The favorable judgments of the panelists provided evidence that the content of the assessment is important for beginning practice.

To support the decision-making process for the Virginia Department of Education (VDOE) with regards to establishing a passing score, or cut score, for the Praxis Art: Content Knowledge (0134) assessment, research staff from Educational Testing Service (ETS) designed and conducted a standard setting study. The study also collected content-related validity evidence to confirm the importance of the content specifications for entry-level art teachers.

The study involved an expert panel, comprised of teachers, administrators and college faculty. The VDOE recommended panelists with (a) art education experience, either as art teachers or college faculty who prepare art teachers and (b) familiarity with the knowledge and skills required of beginning art teachers.

The panel was convened on November 17, 2010, in Richmond, Virginia. The following technical report is divided into three sections. The first section describes the content and format of the assessment. The second section describes the standard setting processes and methods used. The third section presents the results of the standard setting study.

The passing score recommendation for the Praxis Art: Content Knowledge (0134) assessment is provided to the VDOE. The VDOE is responsible for establishing the final passing score in accordance with applicable state regulations. The study provides a recommended passing score, which represents the combined judgments of one group of experienced educators. The full range of the VDOE's needs and expectations could not be represented during the standard setting study. The VDOE, therefore, may want to consider both the panel's recommended cut score and other sources of information when setting the final Praxis Art: Content Knowledge (0134) cut score (Geisinger & McCormick, 2010). Other kinds of information may provide reasons for the VDOE to adjust the recommended cut score. The recommended cut score may be accepted, adjusted upward to reflect more stringent expectations, or adjusted downward to reflect more lenient expectations. There is no *correct* decision; the appropriateness of any adjustment may only be evaluated in terms of its meeting the VDOE's needs.

Two critical sources of information to consider when setting the cut score are the standard error of measurement (SEM) and the standard error of judgment (SEJ). The former addresses the reliability of Praxis Art: Content Knowledge (0134) scores and the latter the reliability of panelists' cut score recommendations. The SEM allows the VDOE to recognize that a Praxis Art: Content Knowledge (0134) score—any test score on any test—is less than perfectly reliable. A test score only approximates

what a candidate *truly* knows or *truly* can do on the test. The SEM, therefore, addresses the question: How close of an approximation is the test score to the *true* score? The SEJ allows the VDOE to consider the likelihood that the recommended cut score from the current panel would be similar to cut scores recommended by other panels of experts similar in composition and experience. The smaller the SEJ, the more likely that another panel would recommend a cut score consistent with the recommended cut score. The larger the SEJ, the less likely the recommended cut score would be reproduced by another panel.

In addition to measurement error metrics (e.g., SEM, SEJ), the VDOE should consider the likelihood of classification error. That is, when adjusting a cut score, policymakers should consider whether it is more important to minimize a false positive decision or to minimize a false negative decision. A false positive decision occurs when a candidate's test score suggests he should receive a license/certificate, but his actual knowledge/skill level is lower (i.e., the candidate does not possess the required knowledge/skills). A false negative occurs when a candidate's test score suggests that she should not receive a license/certificate, but she actually does possess the required knowledge/skills. The VDOE needs to consider which decision error to minimize; it is not possible to eliminate both types of decision errors simultaneously.

Overview of the Praxis Assessment

The *Praxis Art: Content Knowledge Test at a Glance* document (ETS, in press) describes the purpose and structure of the assessment. In brief, the assessment measures whether entry-level art teachers have the knowledge believed necessary for competent professional practice. A National Advisory Committee of expert practitioners and preparation faculty defined the content of the assessment, and a national survey of the field confirmed the content.

The two hour assessment contains 120 multiple-choice questions covering *Art Making- General* (approximately 15 questions); *Art Making – Media & Processes* (approximately 61 questions); *Materials & Processes in a Historical Context and Responding to Art* (approximately 17 questions); and *Western Tradition and Beyond the Western Tradition* (approximately 27 questions)¹.

¹ The number of questions for each content area may vary slightly from form to form of the assessment.

Candidate scores are reported as an overall score; four category scores – one for each content area listed above – also are reported. Of the 120 multiple-choice questions, 110 questions contribute to a candidate’s score². The maximum total number of raw points that may be earned on each assessment is 110. The reporting scale for the Praxis Art: Content Knowledge (0134) assessment ranges from 100 to 200 scaled-score points.

Processes and Methods

The following section describes the processes and methods used to train panelists, gather panelists’ judgments and to calculate recommended passing scores, or cut scores. (The agenda for the panel meeting is presented in the Appendix.)

The panelists were sent an e-mail explaining the purpose of the standard-setting study and requesting that they review the test content specifications for the assessment (included in the *Test at a Glance* document, which was attached to the e-mail). The purpose of the review was to familiarize the panelists with the general structure and content of the assessment.

The standard-setting study began with a welcome and introduction by James Lanham, from the VDOE. The ETS facilitator then explained how the assessment was developed, provided an overview of standard setting, and presented the agenda for the study.

Reviewing the Assessment

The first activity was for the panelists to “take the test.” (Each panelist had signed a nondisclosure form.) The panelists were given approximately an hour and a half to respond to the multiple-choice questions. The purpose of “taking the test” was for the panelists to become familiar with the test format, content, and difficulty. After “taking the test,” the panelists were given the answer key for the assessment and checked their responses. How well the panelists did on the assessment was not shared with the panel.

The panelists then engaged in a discussion of the major content areas being addressed by the assessment; they were also asked to remark on any content areas that they thought would be particularly challenging for entering art teachers, and areas that addressed content that would be particularly important for entering teachers.

² Ten of the 120 multiple-choice questions are pretest questions which do not contribute to a candidate’s score.

Defining the Just Qualified Candidate

Following the review of the assessment, panelists internalized the definition of the Just Qualified Candidate (JQC). The JQC is the test taker who has the minimum level of knowledge and/or skills believed necessary to be a qualified art teacher. The JQC definition is the operational definition of the cut score. The goal of the standard-setting process is to identify the test score that aligns with this definition of the JQC.

The panelists were split into smaller groups, and each group was asked to write down their definition of a JQC. Each group referred to *Praxis Art: Content Knowledge Test at a Glance* to guide their definition. Each group posted its definition on chart paper, and a full-panel discussion occurred to reach consensus on a final definition (see the consensus JQC definition in the Appendix).

Panelists' Judgments

The standard-setting process for the Praxis Art: Content Knowledge (0134) assessment was conducted for the overall test. A probability-based Angoff method (Brandon, 2004; Hambleton & Pitoniak, 2006) was used. In this approach, for each multiple-choice question, a panelist decides on the likelihood (probability or chance) that a JQC would answer it correctly. Panelists made their judgments using the following rating scale: 0, .05, .10, .20, .30, .40, .50, .60, .70, .80, .90, .95, 1. The lower the value, the less likely it is that a JQC would answer the question correctly, because the question is difficult for the JQC. The higher the value, the more likely it is that a JQC would answer the question correctly.

The panelists were asked to approach the judgment process in two stages. First, they reviewed the definition of the JQC and the question and decided if, overall, the question was difficult for the JQC, easy for the JQC, or moderately difficult/easy. The facilitator encouraged the panelists to consider the following rule of thumb to guide their decision:

- difficult questions for a JQC were in the 0 to .30 range;
- moderately difficult/easy questions for a JQC were in the .40 to .60 range; and
- easy questions for a JQC were in the .70 to 1 range.

The second decision was for panelists to decide how they wanted to refine their judgment within the range. For example, if a panelist thought that a question was easy for a JQC, the initial decision

located the question in the .70 to 1 range. The second decision was for the panelist to decide if the likelihood of answering it correctly was .70, .80, .90, .95, or 1.0. The two-stage decision-process was implemented to reduce the cognitive load placed on the panelists. The panelists practiced making their standard-setting judgments on the first five questions.

Judgment of Content Specifications

In addition to the standard setting process, the panel judged the importance of the knowledge and/or skills stated or implied in the assessment content specifications for the job of an entry-level art teacher. These judgments addressed the perceived content-based validity of the assessment. Judgments were made using a four-point Likert scale — *Very Important*, *Important*, *Slightly Important*, and *Not Important*. Each panelist independently judged the knowledge categories and knowledge/skills statements.

Results

Expert Panels

The standard setting study included an expert panel. The VDOE recruited panelists to represent a range of professional perspectives. A description of the panel is presented below. (See Appendix for a listing of panelists.)

The panel included 13 teachers, administrators, and college faculty who prepare art teachers. In brief, ten panelists were teachers, two were college faculty, and one was both an administrator and college faculty. All the panelists who were college faculty were currently involved in the training or preparation of art teachers. Nine panelists were White, two were African American, and two were Asian American. Seven panelists were female. Eleven panelists reported being certified art teachers in Virginia. The majority of panelists (7 of the 13 panelists or 54%) had 11 or fewer years of experience as an art teacher, and approximately a third (5 of the 13 panelists or 38%) had 16 or more years of teaching experience.

A fuller demographic description for the members of the panel is presented in Table 1.

Table 1***Panel Member Demographics***

	N	Percent
Current Position		
Teachers	10	77%
College Faculty	2	15%
Administrator/College Faculty	1	8%
Race		
White	9	69%
Black or African American	2	15%
Asian American	2	15%
Gender		
Female	7	54%
Male	6	46%
Are you currently certified as an art teacher in Virginia?		
Yes	11	85%
No	2	15%
Are you currently teaching art in Virginia?		
Yes	12	92%
No	1	8%
Are you currently supervising or mentoring other art teachers?		
Yes	6	46%
No	7	54%
How many years of experience do you have teaching art?		
3 years or less	0	0%
4 - 7 years	3	23%
8 - 11 years	4	31%
12 - 15 years	1	8%
16 years or more	5	38%

Table 1 (continued)***Panel Member Demographics***

	N	Percent
At what K-12 grade level are you currently teaching art?		
Elementary (K - 5 or K - 6)	3	23%
Middle School (6 - 8 or 7 - 9)	1	8%
High School (9 - 12 or 10 - 12)	5	38%
Middle and High School	1	8%
Not currently teaching at the K-12 level	3	23%
Which best describes the location of your K-12 school?		
Urban	3	23%
Suburban	2	15%
Rural	5	38%
Not currently teaching at the K-12 level	3	23%
If you are college faculty, are you currently involved in the training/preparation of art teachers?		
Yes	3	23%
No	0	0%
Not college faculty	10	77%

Initial Evaluation Forms.

The panelists completed an initial evaluation after receiving training on how to make question-level judgments. The primary information collected from this form was the panelists indicating if they had received adequate training to make their standard-setting judgments and were ready to proceed. All panelists indicated that they were prepared to make their judgments.

Summary of Standard Setting Judgments

A summary of the standard-setting judgments is presented in Table 2. The numbers in the table reflect the recommended cut scores — the number of raw points needed to “pass” the assessment — of each panelist. The panel’s average recommended cut score and highest and lowest cut scores are reported, as are the standard deviations (SD) of panelists’ cut scores and the standard errors of judgment (SEJ). The SEJ is one way of estimating the reliability of the judgments. It indicates how likely it would be for other panels of educators similar in make-up, experience, and standard-setting training to the

current panel to recommend the same cut score on the same form of the assessment. A comparable panel’s cut score would be within 1 SEJ of the current average cut score 68 percent of the time and within 2 SEJs 95 percent of the time.

The panel’s cut score recommendation for the Praxis Art: Content Knowledge (0134) assessment is 68.43 (see Table 2). The value was rounded to 69, the next highest whole number, to determine the functional recommended cut score. The value of 69 represents approximately 63% of the total available 110 raw-score points that could be earned on the assessment. The scaled score associated with 69 raw points is 154.

Table 2
Summary of Standard Setting Judgments

Panelist	Cut Score
1	69.25
2	72.65
3	59.70
4	76.60
5	74.50
6	88.20
7	52.60
8	68.45
9	82.25
10	70.15
11	46.45
12	68.35
13	60.50
Average	68.43
SD	11.47
SEJ	3.18
Highest	88.20
Lowest	46.45

Table 3 presents the estimated standard errors of measurement (SEM) around the recommended cut score. A standard error represents the uncertainty associated with a test score. The scaled scores associated with 1 and 2 SEMs above and below the recommended cut scores are provided. The standard

errors provided are an estimate, given that the Praxis Art: Content Knowledge (0134) assessment has not yet been administered.

Table 3

Cut Scores within 1 and 2 SEMs of the Recommended Cut Score

Recommended Cut Score (SEM)		Scale Score Equivalent
	69 (5.11)	154
- 2 SEMs	59	141
-1 SEM	64	147
+1 SEM	75	162
+ 2 SEMs	80	168

Note. Consistent with the recommended cut score, the cut scores at the different SEMs have been rounded to the next highest whole number.

Summary of Content Specification Judgments.

Panelists judged the extent to which the knowledge and/or skills reflected by the Praxis Art: Content Knowledge (0134) assessment content specifications were important for entry-level art teachers. Panelists rated the knowledge categories and knowledge/skills statements on a four-point scale ranging from *Very Important* to *Not Important*. The panelists’ ratings are summarized in Table 4 (in Appendix).

Eleven of the 16 knowledge categories were judged to be *Very Important* or *Important* by 76% or more of the panelists. The knowledge categories of “*Understands and applies the elements of art and principles of visual organization*” and “*Knows and understands safety, environmental, and storage issues*” (77% of the panelists judged as *Very Important*) were seen as the most important for beginning art teachers. The knowledge category of “*Understand materials, tools and processes for videography, filmmaking, and installations*” (62% of the panelists judged as *Slightly Important* or *Not Important*) was seen as less important for beginning art teachers. All but 16 of the 70 knowledge statements covered by the Praxis Art: Content Knowledge (0134) assessment were judged to be *Very Important* or *Important* by at least two-thirds of the panelists.

Summary of Final Evaluations.

The panelists completed an evaluation form at the conclusion of their standard setting study. The evaluation form asked the panelists to provide feedback about the quality of the standard-setting implementation. Table 5 (in Appendix) present the results of the final evaluations.

All panelists *agreed* or *strongly agreed* that they understood the purpose of the study and that the facilitator's instructions and explanations were clear. All panelists *agreed* or *strongly agreed* that they were prepared to make their standard setting judgments. Approximately 85% of the panelists *strongly agreed* that the standard-setting process was easy to follow.

Summary

To support the decision-making process for the Virginia Department of Education (VDOE) with regards to establishing passing score, or cut score, for Praxis Art: Content Knowledge (0134) assessment, research staff from Educational Testing Service (ETS) designed and conducted a standard setting study. The study also collected content-related validity evidence to confirm the importance of the content specifications for entry-level art teachers.

The recommended cut score is provided to help the VDOE determine an appropriate cut (or passing) score. For Praxis Art: Content Knowledge (0134), the average recommended cut score is 69 (on the raw score metric), which represents 63% of total available 110 raw score points. The scaled score associated with a raw score of 69 is 154.

Panelists judged the extent to which the knowledge and/or skills reflected by the content specifications were important for entry-level art teachers. The favorable judgments of the panelists provided evidence that the content of the assessment is important for beginning practice.

References

- Brandon, P.R. (2004). Conclusions about frequently studied modified Angoff standard-setting topics. *Applied Measurement in Education, 17*, 59-88.
- ETS. (In press). *Art: Content Knowledge Test at a Glance*. Princeton, NJ.
- Geisinger, K.F., & McCormick, C.A. (2010). Adopting cut scores: Post-standard-setting panel considerations for decision makers. *Educational Measurement: Issues and Practice, 29*, 38–44.
- Hambleton, R. K., & Pitoniak, M.J. (2006). Setting performance standards. In R. L. Brennan (Ed.), *Educational Measurement* (4th ed., pp. 433-470). Westport, CT: American Council on Education/Praeger.

Appendix

Panelists' Names & Affiliations

Panelist

Al Choo Ashe
Richard J. Bay
Margaret C. Bowen
Kimberly Gibson-McDonald
Al Harris
Trish M. Harris
Patricia S. Herring
Robert S. Hunter
Angel D. Jones
Cynthia B. Redman
Geoffrey Rowland
Aaron Stratten
Edward Young

Affiliation

Hampton City Schools
Radford University
Christopher Newport University
Lynchburg City Schools
Norfolk Public Schools
Henrico County Public Schools
Nottoway County Public Schools
Colonial Beach Public Schools
Norfolk Public Schools
Warren County Public Schools
Montgomery County Public Schools
Fairfax County Public Schools
Russell County Public Schools

Agenda: VISUAL ARTS (K-12) PANEL

Wednesday, November 17, 2010

8:00 am	Registration and Breakfast
8:30 am	Welcome and Introduction
8:50 am	Overview of Study
9:20 am	Take the Test and Self-Score
10:50 am	BREAK
11:00 am	Discuss the Test Content
11:30 am	Discuss the Just Qualified Candidate (JQC)
Noon	LUNCH
12:45 pm	Define the Just Qualified Candidate (JQC) - Continued
1:30 pm	Training for Standard Setting Judgments
2:00 pm	Complete Standard Setting Judgments
	BREAK
3:00 pm	Specification Judgment Training
3:30 pm	Complete Specification Judgments
3:45 pm	Complete Final Evaluation
4:00 pm	Collect Materials and Adjourn

Thank You for Participating



Copyright © 2010 by Educational Testing Service. All rights reserved.

Description of a Just Qualified Candidate
Praxis Art: Content Knowledge (0134)
(Developed for the Virginia Department of Education)

- Knows characteristics of common 2-D and 3-D materials and processes
- Can compare characteristics of common 2-D and 3-D materials and processes.
- Knows characteristics of current technologies and equipment such as photography, videography, and computer applications
- Understands safety and health issues related to common materials and processes; applies safety procedures in the classroom
- Knows how to prepare an exhibition using appropriate presentation techniques
- Demonstrates knowledge and application of art vocabulary
- Knows major trends in Western and Nonwestern art and architecture
- Knows and understands the chronological timeline and thematic organization of art history
- Ability to analyze works of art and evaluate them critically across cultures and periods of time
- Understands the functions and purposes of works of art
- Knows the role of visual literacy and popular culture

Table 4

Specification Judgments

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
I. A. ART MAKING - GENERAL								
• Understands and applies the elements of art and principles of visual organization as applied to two-dimensional and three-dimensional media.	10	77%	2	15%	1	8%	0	0%
• Identifies elements and principles of design in visual stimuli	11	85%	1	8%	1	8%	0	0%
• Explains relationships of elements to principles	7	54%	5	38%	1	8%	0	0%
• Distinguishes uses of elements and principles in two-dimensional and three-dimensional art	9	69%	3	23%	1	8%	1	8%
• Knows various historical methods and contemporary approaches to creating art.	2	15%	10	77%	1	8%	0	0%
• Defines/identifies both historical and contemporary methods	3	23%	8	62%	2	15%	0	0%

Table 4 (continued)

Specification Judgments

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
I. B. ART MAKING – MEDIA AND PROCESSES								
• Knows and understands safety, environmental, and storage issues related to the use of art materials and art processes.	10	77%	3	23%	0	0%	0	0%
• Identifies dangerous materials and their effects	11	85%	2	15%	0	0%	0	0%
• Categorizes dangerous materials and their effects	5	38%	8	62%	0	0%	0	0%
• Describes proper ventilation, storage, and disposal procedures based on the medium	11	85%	2	15%	0	0%	0	0%
• Demonstrates knowledge of MSDS sheets	4	31%	7	54%	2	15%	0	0%
• Demonstrates understanding of safety procedures and precautions for using artist’s materials and tools	10	77%	3	23%	0	0%	0	0%
• Demonstrates knowledge of health issues related to the use of artists’ materials and tools	8	62%	3	23%	2	15%	0	0%
• Knows and understands how to use a variety of drawing, painting, and printmaking materials and processes.	6	46%	7	54%	0	0%	0	0%
• Identifies characteristics of materials	7	54%	6	46%	0	0%	0	0%
• Identifies similarities and differences among materials	6	46%	7	54%	0	0%	0	0%
• Knows vocabulary related to drawing, painting, and printmaking materials and processes	6	46%	5	38%	2	15%	0	0%
• Describes drawing, painting, and printmaking processes	5	38%	6	46%	2	15%	0	0%
• Solves problems and evaluates possible solutions	7	54%	6	46%	0	0%	0	0%

Table 4 (continued)

Specification Judgments

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
• Compares materials and techniques, and analyzes the compatibility of materials and techniques	2	15%	8	62%	3	23%	0	0%
• Recognizes or identifies processes through reproductions	2	15%	8	62%	3	23%	0	0%
• Knows and understands how to use digital photography and image processes.	3	23%	8	62%	2	15%	0	0%
• Demonstrates basic camera knowledge (camera parts, vocabulary)	3	23%	9	69%	1	8%	0	0%
• Demonstrates knowledge of common editing and imaging software	2	15%	6	46%	5	38%	0	0%
• Demonstrates knowledge of uploading, downloading, storing common file types, transferring and printing images	3	23%	6	46%	4	31%	0	0%
• Knows and understands how to use the process of creating digital images	2	15%	7	54%	4	31%	0	0%
• Understand materials, tools and processes for videography, filmmaking, and installations	0	0%	5	38%	7	54%	1	8%
• Identifies/describes materials, tools, and processes for videography, filmmaking and installations	0	0%	6	46%	6	46%	1	8%
• Knows and understands how to use sculptural materials and processes.	3	23%	9	69%	1	8%	0	0%
• Identifies characteristics of materials	4	31%	8	62%	1	8%	0	0%
• Identifies similarities and differences among materials	2	15%	8	62%	2	15%	1	8%
• Knows vocabulary related to sculptural materials and processes	4	31%	7	54%	2	15%	0	0%
• Describes sculptural processes	5	38%	6	46%	2	15%	0	0%

Table 4 (continued)

Specification Judgments

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
• Solves problems and evaluates possible solutions	6	46%	6	46%	1	8%	0	0%
• Compares materials and techniques, and analyzes the compatibility of materials and techniques	1	8%	8	62%	3	23%	1	8%
• Recognizes or identifies processes through reproductions	2	15%	5	38%	5	38%	1	8%
• Knows and understands how to use a variety of fiber art materials and processes.	1	8%	5	38%	6	46%	1	8%
• Identifies characteristics of materials	1	8%	6	46%	6	46%	0	0%
• Identifies similarities and differences among materials	2	15%	4	31%	6	46%	1	8%
• Knows vocabulary related to fiber materials and processes	2	15%	6	46%	4	31%	1	8%
• Describes fiber processes	1	8%	7	54%	4	31%	1	8%
• Solves problems and evaluates possible solutions	5	38%	3	23%	5	38%	0	0%
• Compares materials and techniques, and analyzes the compatibility of materials and techniques	1	8%	5	38%	6	46%	1	8%
• Recognizes or identifies processes through reproductions	1	8%	4	31%	6	46%	2	15%

Table 4 (continued)

Specification Judgments

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
<ul style="list-style-type: none"> • Understands the physical aspects and effective ways of presenting art work for display purposes. 	7	54%	4	31%	2	15%	0	0%
<ul style="list-style-type: none"> • Identifies and recognizes methods of mounting and matting work in ways appropriate to the medium 	5	38%	5	38%	3	23%	0	0%
<ul style="list-style-type: none"> • Identifies and describes methods of displaying three-dimensional work 	6	46%	5	38%	2	15%	0	0%
<ul style="list-style-type: none"> • Describes appropriate ways of using exhibition spaces 	7	54%	2	15%	4	31%	0	0%
II. A. HISTORICAL & THEORETICAL FOUNDATION OF ART – MATERIALS & PROCESSES								
<ul style="list-style-type: none"> • Understands the following materials within an art historical context: Painting, Drawing, Printmaking, Sculpture, Architecture, Photography, Fiber Arts, Crafts. 	6	46%	4	31%	3	23%	0	0%
<ul style="list-style-type: none"> • Identifies characteristics of materials, processes, and techniques within an art historical context 	5	38%	5	38%	3	23%	0	0%
<ul style="list-style-type: none"> • Identifies similarities and differences among materials, processes, and techniques (e.g., evolution over time) 	4	31%	6	46%	3	23%	0	0%
<ul style="list-style-type: none"> • Knows vocabulary related to two-dimensional and three-dimensional media and processes within an art historical context 	7	54%	3	23%	3	23%	0	0%
<ul style="list-style-type: none"> • Recognizes or identifies processes within an art historical context through reproductions 	3	23%	5	38%	4	31%	1	8%

Table 4 (continued)

Specification Judgments

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
II. B. HISTORICAL & THEORETICAL FOUNDATION OF ART – THE WESTERN TRADITION IN ART HISTORY								
<ul style="list-style-type: none"> • Recognizes stylistic traits of art and architecture from each of the following time periods: Prehistory; Ancient Near East; Ancient Greece and Rome; Early Christian, Byzantine and Medieval periods; the Renaissance; the Baroque; 18th through 20th centuries in Europe and North America; contemporary art. 	3	23%	5	38%	5	38%	0	0%
<ul style="list-style-type: none"> • Identifies the styles of works of art and architecture 	2	15%	7	54%	4	31%	0	0%
<ul style="list-style-type: none"> • Categorizes art and architecture according to style and/or period 	2	15%	7	54%	3	23%	1	8%
<ul style="list-style-type: none"> • Identifies major works of art and architecture by title, style, and/or artist, as appropriate 	2	15%	5	38%	6	46%	0	0%
<ul style="list-style-type: none"> • Analyzes/explains the influence of art periods or schools on later work 	3	23%	8	62%	2	15%	0	0%
<ul style="list-style-type: none"> • Analyzes compositional elements and principles of design in works of art and architecture 	4	31%	6	46%	2	15%	1	8%
<ul style="list-style-type: none"> • Recognizes the impact of major artistic and technological innovations on the stylistic traits of art 	2	15%	9	69%	2	15%	0	0%

Table 4 (continued)

Specification Judgments

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
<ul style="list-style-type: none"> • Understands the content, context, and/or purpose of art and architecture from each of the following time periods: Prehistory; Ancient Near East; Ancient Greece and Rome; Early Christian, Byzantine and Medieval periods; the Renaissance; the Baroque; 18th through 20th centuries in Europe and North America; contemporary art. 	5	38%	5	38%	3	23%	0	0%
<ul style="list-style-type: none"> • Explains the purposes of works of art from various time periods 	4	31%	6	46%	3	23%	0	0%
<ul style="list-style-type: none"> • Decodes/analyzes the narrative or intended content of a work of art 	4	31%	5	38%	3	23%	1	8%
<ul style="list-style-type: none"> • Analyzes/explains the interrelationships between art and social factors, cultural context, and events 	7	54%	4	31%	2	15%	0	0%
<ul style="list-style-type: none"> • Explains the impact of major artistic and technological innovations on the content, context, and purposes of art 	5	38%	7	54%	1	8%	0	0%
<ul style="list-style-type: none"> • Evaluates information about art and artists from various sources 	3	23%	6	46%	4	31%	0	0%

Table 4 (continued)

Specification Judgments

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
II. C. HISTORICAL & THEORETICAL FOUNDATION OF ART – ART BEYOND THE WESTERN TRADITION								
• Knows and understands the general visual characteristics of art and architecture from Asia, Africa, the Americas, the South Pacific region.	3	23%	6	46%	4	31%	0	0%
• Classifies works of art and architecture by regions/cultures	3	23%	7	54%	2	15%	1	8%
• Describes/analyzes works of art and architecture using compositional elements and principles of design	5	38%	5	38%	2	15%	1	8%
• Describes/analyzes the interrelationships between art from beyond the Western traditions and art from the Western tradition	2	15%	9	69%	1	8%	1	8%
• Identifies major works of art and architecture by title, style, and/or artist, as appropriate	4	31%	3	23%	4	31%	2	15%
• Understands the general content, context, and purposes of art from Asia, Africa, the Americas, the South Pacific region.	5	38%	5	38%	3	23%	0	0%
• Explains the content and/or purpose (as appropriate) of frequently referenced works of art from various locations and cultures ¹⁶	5	38%	4	31%	4	31%	0	0%
• Identifies the general role of a work of art in its culture	4	31%	7	54%	2	15%	0	0%
• Explains how the context in which a work of art is created conveys information about various lifestyles and belief systems	5	38%	4	31%	4	31%	0	0%
• Evaluates information about art and artists from various sources	4	31%	4	31%	3	23%	2	15%

Table 4 (continued)

Specification Judgments

	Very Important		Important		Slightly Important		Not Important		
	N	%	N	%	N	%	N	%	
II. D. HISTORICAL & THEORETICAL FOUNDATION OF ART – RESPONDING TO ART									
• Understands the major theories of art and aesthetics.	5	38%	3	23%	5	38%	0	0%	
• Recognizes the major characteristics of various theories of art and aesthetics	4	31%	8	62%	1	8%	0	0%	
• Distinguishes among the major theories of art and aesthetics	4	31%	5	38%	4	31%	0	0%	
• Compares and contrasts the differences/similarities among theories of art and aesthetics	3	23%	5	38%	5	38%	0	0%	
• Interprets and evaluates works of art based on theories of art and aesthetics (as opposed to personal opinion)	6	46%	2	15%	5	38%	0	0%	
• Understands the relationship between art and critical response.	3	23%	9	69%	1	8%	0	0%	
• Demonstrates knowledge of critical reactions to well-known works and/or art movements	2	15%	8	62%	3	23%	0	0%	
• Recognizes/uses multiple viewpoints in examining a work of art	1	8%	9	69%	3	23%	0	0%	
• Recognizes the way personal experience affects interpretation of art	3	23%	9	69%	1	8%	0	0%	
• Recognizes how meaning is created in art (e.g., through symbols, iconography, formal elements and principles)	8	62%	4	31%	1	8%	0	0%	

Table 5**Final Evaluation**

	Strongly Agree		Agree		Disagree		Strongly Disagree	
	N	Percent	N	Percent	N	Percent	N	Percent
• I understood the purpose of this study.	12	92%	1	8%	0	0%	0	0%
• The instructions and explanations provided by the facilitators were clear.	12	92%	1	8%	0	0%	0	0%
• The opportunity to “take the test” and to discuss the test content was useful	12	92%	1	8%	0	0%	0	0%
• The opportunity to practice making standard setting judgments was useful	11	85%	2	15%	0	0%	0	0%
• The training for the standard setting judgments was adequate to give me the information I needed to complete my assignment	11	85%	2	15%	0	0%	0	0%
• The process of making the standard setting judgments was easy to follow.	11	85%	2	15%	0	0%	0	0%



Listening. Learning. Leading.

Multi-State Standard Setting Technical Report

PRAXIS ART: CONTENT KNOWLEDGE (0134)

Educational and Credentialing Research

Educational Testing Service

Princeton, New Jersey

November 2010

Executive Summary

To support the decision-making process for state departments of education with regards to establishing a passing score, or cut score, for a revised assessment in the Praxis Series™ — Art: Content Knowledge (0134) — research staff from Educational Testing Service (ETS) designed and conducted two multi-state standard setting studies¹. The studies also collected content-related validity evidence to confirm the importance of the content specifications for entry-level Art teachers.

Participating States

Panelists from 22 states were recommended by state departments of education to participate on expert panels. The state departments of education recommended panelists with (a) art education experience, either as K-12 Art teachers or college faculty who prepare Art teachers and (b) familiarity with the knowledge and skills required of beginning Art teachers.

Recommended Cut Scores

The recommended cut scores for each panel, as well as the average cut score across the two panels, are provided to help state departments of education determine an appropriate cut (or passing) score. For the Praxis Art: Content Knowledge (0134) assessment, the average recommended cut score (rounded up) is 72 (on the raw score metric), which represents 65% of total available 110 raw score points (the recommended cut scores for Panels 1 and 2 are 73 and 71, respectively). The scaled score associated with a raw score of 72 is 158.

Summary of Content Specification Judgments

Panelists judged the extent to which the knowledge and/or skills reflected by the content specifications were important for entry-level Art teachers. The favorable judgments of the panelists provided evidence that the content of the assessment is important for beginning practice.

¹ The two multi-state standard setting studies collected expert judgments for questions comprising both the Praxis Art: Content Knowledge (0134) and Praxis Art: Content and Analysis (0135) assessments. Standard-setting procedures and results presented in the following report only pertain to the Praxis Art: Content Knowledge (0134) assessment. A separate report contains similar information for Praxis Art: Content and Analysis (0135).

To support the decision-making process for state departments of education with regards to establishing a passing score, or cut score, for a revised assessment in the Praxis Series™ — Art: Content Knowledge (0134) — research staff from Educational Testing Service (ETS) designed and conducted two multi-state standard setting studies². The studies also collected content-related validity evidence to confirm the importance of the content specifications for entry-level Art teachers. Panelists were recommended by state departments of education³ to participate on the two expert panels. The state departments of education recommended panelists with (a) art education experience, either as K-12 Art teachers or college faculty who prepare Art teachers and (b) familiarity with the knowledge and skills required of beginning Art teachers.

The two, non-overlapping panels (a) allow each participating state to be represented and (b) provide a replication of the judgment process to strengthen the technical quality of the recommended passing score. For the Praxis Art: Content Knowledge (0134) assessment, 22 states were represented by 42 panelists across the two panels, (See Appendix A for the names and affiliations of the panelists.)

² The two multi-state standard setting studies collected expert judgments for questions comprising both the Praxis Art: Content Knowledge (0134) and Praxis Art: Content and Analysis (0135) assessments. Standard-setting procedures and results presented in the following report only pertain to the Praxis Art: Content Knowledge (0134) assessment. A separate report contains similar information for Praxis Art: Content and Analysis (0135).

³ State departments of education that currently use one or more Praxis tests were invited to participate in the multi-state standard setting studies.

Table 1

Participating States (and number of panelists) for Multi-State Panels

Alabama (2 panelists)	New Hampshire (2 panelists)
Arkansas (2 panelists)	New Jersey (2 panelists)
Connecticut (2 panelists)	Ohio (2 panelists)
Kentucky (2 panelists)	Pennsylvania (1 panelist)
Louisiana (2 panelists)	South Carolina (2 panelists)
Maryland (2 panelists)	Tennessee (2 panelists)
Maine (2 panelists)	Utah (2 panelists)
Missouri (2 panelists)	Vermont (2 panelists)
Mississippi (2 panelists)	Washington, DC (1 panelist)
North Carolina (2 panelists)	Wisconsin (2 panelists)
North Dakota (2 panelists)	West Virginia (2 panelists)

Note. Pennsylvania and Washington, DC were represented on only one of the two panels.

The panels were convened in November 2010 in Princeton, New Jersey. For both panels, the same processes and methods were used to train panelists, gather panelists' judgments and to calculate the recommended passing score, or cut score.

The following technical report is divided into three sections. The first section describes the content and format of the assessment. The second section describes the standard setting processes and methods used. The third section presents the results of the standard setting studies.

The passing score recommendation for the assessment is provided to each of the represented state departments of education. In each state, the department of education, the state board of education, or a designated educator licensure board is responsible for establishing the final passing score in accordance with applicable state regulations.

The first national administration of the new Praxis Art: Content Knowledge (0134) assessment will occur in fall 2011.

Overview of the Praxis Assessment

The *Praxis Art: Content Knowledge Test at a Glance* document (ETS, in press) describes the purpose and structure of the assessment. In brief, the assessment measures whether entry-level Art teachers have the content knowledge believed necessary for competent professional practice. A National Advisory Committee of expert practitioners and preparation faculty defined the content of the assessment, and a national survey of the field confirmed the content.

The two hour assessment contains 120 multiple-choice questions covering *Art Making- General* (approximately 15 questions); *Art Making – Media & Processes* (approximately 61 questions); *Materials & Processes in a Historical Context and Responding to Art* (approximately 17 questions); and *Western Tradition and Beyond the Western Tradition* (approximately 27 questions)⁴.

Candidate scores are reported as an overall score; four category scores – one for each content area listed above – also are reported. Of the 120 multiple-choice questions, 110 questions contribute to a candidate’s score⁵. The maximum total number of raw points that may be earned on each assessment is 110. The reporting scale for the Praxis Art: Content Knowledge (0134) assessment ranges from 100 to 200 scaled-score points.

Processes and Methods

For both expert panels, the same processes and methods were used to train panelists, gather panelists’ judgments and to calculate the recommended passing score, or cut score. The following section describes the processes and methods used⁶. (The agenda for the panel meetings is presented in Appendix A.)

The design of the standard setting study included two non-overlapping expert panels. The training provided to panelists as well as the study materials were consistent across panels with the exception of defining the Just Qualified Candidate (JQC). To assure that both panels were using the same frame of reference when making question-level standard setting judgments, the JQC definition developed through a consensus process by the first panel was used as the definition for the second panel.

⁴ The number of questions for each content area may vary slightly from form to form of the assessment.

⁵ Ten of the 120 multiple-choice questions are pretest questions which do not contribute to a candidate’s score.

⁶ Panelists also judged the constructed-response questions that appear on the Praxis Art: Content and Analysis assessment. The process for making these judgments are not described in this report but are described in the technical report for the Praxis Art: Content and Analysis (0135) standard setting.

The second panel did complete a thorough review of the definition to allow panelists to internalize the definition. The processes for developing the definition (with Panel 1) and reviewing/internalizing the definition (with Panel 2) are described later, and the Just Qualified Candidate definitions are presented in Appendix C.

The panelists were sent an e-mail explaining the purpose of the standard-setting study and requesting that they review the test content specifications for the assessment (included in the *Test at a Glance* document, which was attached to the e-mail). The purpose of the review was to familiarize the panelists with the general structure and content of the assessment.

The standard-setting study began with a welcome and introduction by the meeting facilitator, Dr. Clyde Reese from the Center for Validity Research. He explained how the assessment was developed, provided an overview of standard setting, and presented the agenda for the study.

Reviewing the Assessment

The first activity was for the panelists to “take the test.” (Each panelist had signed a nondisclosure form.) The panelists were given approximately an hour and a half to respond to the 120 multiple-choice questions (as well as the three constructed-response questions that are included on the Praxis Art: Knowledge and Analysis assessment). Panelists were instructed not to refer to the answer key while taking the test. The purpose of “taking the test” was for the panelists to become familiar with the test format, content, and difficulty. After “taking the test,” the panelists checked their responses against the answer key.

The panelists then engaged in a discussion of the major content areas being addressed by the assessment; they were also asked to remark on any content areas that they thought would be particularly challenging for entering Art teachers, and areas that addressed content that would be particularly important for entering teachers.

Defining the Just Qualified Candidate

Following the review of the assessment, panelists internalized the definition of the Just Qualified Candidate (JQC). The JQC is the test taker who has the minimum level of knowledge and/or skills believed necessary to be a qualified Art teacher. The JQC definition is the operational definition of the

cut score. The goal of the standard-setting process is to identify the test score that aligns with this definition of the JQC.

In Panel 1, the panelists were split into smaller groups, and each group was asked to write down their definition of a JQC. Each group referred to the *Praxis Art: Content and Analysis Test at a Glance*⁷ to guide their definition. Each group posted its definition on chart paper, and a full-panel discussion occurred to reach consensus on a definition (see Appendix C).

In Panel 2, the panelists began with the definition of the JQC developed by the first panel. Given that the multi-state standard setting study was designed to replicate processes and procedures across the two panels, it was important that both panels use consistent JQC definitions to frame their judgments. For Panel 2, the panelists reviewed the JQC definition, and any ambiguities were discussed and clarified. The panelists then were split into smaller groups, and each group developed performance indicators or “can do” statements based on the definition. The purpose of the indicators was to provide clear examples of what might be observed to indicate that the teacher had the defined knowledge. The performance indicators were shared across the group, and discussed and added to the definition. The panel also had an opportunity to suggest minor changes to the initial definition, if doing so added clarity. Panel 2 made two revisions to the JQC definition developed by Panel 1: (a) splitting the first bullet into two separate bullets and (b) replacing one of the examples in the second bullet.

Panelists’ Judgments

A probability-based Angoff method (Brandon, 2004; Hambleton & Pitoniak, 2006) was used for the multiple-choice questions. In this approach, for each question, a panelist decides on the likelihood (probability or chance) that a JQC would answer it correctly. Panelists made their judgments using the following rating scale: 0, .05, .10, .20, .30, .40, .50, .60, .70, .80, .90, .95, 1. The lower the value, the less likely it is that a JQC would answer the question correctly, because the question is difficult for the JQC. The higher the value, the more likely it is that a JQC would answer the question correctly.

For each panel, the panelists were asked to approach the judgment process in two stages. First, they reviewed the definition of the JQC and the question and decided if, overall, the question was

⁷ The test specifications contained in the *Praxis Art: Content and Analysis Test At A Glance* subsumed the specification for the Praxis Art: Content Knowledge (0134) assessment.

difficult for the JQC, easy for the JQC, or moderately difficult/easy. The facilitator encouraged the panelists to consider the following rule of thumb to guide their decision:

- difficult questions for a JQC were in the 0 to .30 range;
- moderately difficult/easy questions for a JQC were in the .40 to .60 range; and
- easy questions for a JQC were in the .70 to 1 range.

The second decision was for panelists to decide how they wanted to refine their judgment within the range. For example, if a panelist thought that a question was easy for a JQC, the initial decision located the question in the .70 to 1 range. The second decision was for the panelist to decide if the likelihood of answering it correctly was .70, .80, .90, .95, or 1.0. The two-stage decision-process was implemented to reduce the cognitive load placed on the panelists. The panelists practiced making their standard-setting judgments on six of the multiple-choice questions.

The panelists engaged in two rounds of judgments. Following Round 1, question-level feedback was provided to the panel. The panelists' judgments were displayed for each question. The panelists' judgments were summarized by the three general difficulty levels (0 to .30, .40 to .60, and .70 to 1), and the panel's average question judgment was provided. Questions were highlighted to show when panelists converged in their judgments (at least two-thirds of the panelists located a question in the same difficulty range) or diverged in their judgments. Panelists were asked to share their rationales for the judgments they made. Following this discussion, panelists were provided an opportunity to change their question-level standard-setting judgments (Round 2).

Other than the definition of the JQC, results from Panel 1 were not shared with the second panel. The question-level judgments and resulting discussions for Panel 2 were independent of judgments and discussions that occurred with Panel 1.

Judgment of Content Specifications

In addition to the two-round standard setting process, each panel judged the importance of the knowledge and/or skills stated or implied in the assessment content specifications for the job of an entry-level Art teacher. These judgments addressed the perceived content-based validity of the assessment. Judgments were made using a four-point Likert scale — *Very Important, Important, Slightly Important,*

and *Not Important*. Each panelist independently judged the knowledge categories and knowledge/skills statements.

Results

Results are presented separately for the two panels. The recommended cut scores for each panel, as well as the average cut score across the two panels, are provided to help state departments of education determine an appropriate cut (or passing) score.

Expert Panels

The standard setting study included two expert panels. The various state departments of education recruited panelists to represent a range of professional perspectives. A description of the panels is presented below. (See Appendix A for a listing of panelists for each panel.)

Panel 1 included 21 teachers, administrators, and college faculty who prepare Art teachers, representing 21 states. In brief, 18 panelists were teachers, one was an administrators or department heads, and two were college faculty. Both of the panelists who were college faculty were currently involved in the training or preparation of Art teachers. Seventeen panelists were White, one was Hispanic or Latino, one was Asian American, one was American Indian or Alaskan Native, and one panelist indicated “other.” Fifteen panelists were female. Nineteen panelists reported being certified Art teachers in their states. Slightly less than half of panelists (9 of the 21 panelists or 43%) had seven or fewer years of experience as an Art teacher, and five had 16 or more years of teaching experience.

Panel 2 included 21 teachers and college faculty who prepare Art teachers, representing 21 states. In brief, 18 panelists were teachers and three were college faculty. All three of the panelists who were college faculty were currently involved in the training or preparation of Art teachers. Seventeen panelists were White, three were African American, and one was Asian American. Fourteen panelists were female. Eighteen panelists reported being certified Art teachers in their states. Nearly 40% of panelists (8 of the 21 panelists) had seven or fewer years of experience as an Art teacher, and three had 16 or more years of teaching experience.

A fuller demographic description for the members of the two panels is presented in Tables D1 and D2 in Appendix D.

Initial Evaluation Forms.

The panelists completed an initial evaluation after receiving training on how to make question-level judgments. The primary information collected from this form was the panelists indicating if they had received adequate training to make their standard-setting judgments and were ready to proceed. Across both panels, all panelists indicated that they were prepared to make their judgments.

Summary of Standard Setting Judgments by Round.

A summary of each round of standard-setting judgments is presented in Appendix D. The numbers in each table reflect the recommended cut scores — the number of raw points needed to “pass” the assessment — of each panelist for the two rounds. The panel’s average recommended cut score and highest and lowest cut scores are reported, as are the standard deviations (SD) of panelists’ cut scores and the standard errors of judgment (SEJ). The SEJ is one way of estimating the reliability of the judgments. It indicates how likely it would be for other panels of educators similar in make-up, experience, and standard-setting training to the current panels to recommend the same cut score on the same form of the assessment. A comparable panel’s cut score would be within 1 SEJ of the current average cut score 68 percent of the time and within 2 SEJs 95 percent of the time.

Round 1 judgments are made without discussion among the panelists. The most variability in judgments, therefore, is typically present in the first round. Round 2 judgments, however, are informed by panel discussion; thus, it is common to see a decrease both in the standard deviation and SEJ. This decrease — indicating convergence among the panelists’ judgments — was observed for both panels. The Round 2 average total score is the panel’s recommended cut score (passing score).

The panels’ cut score recommendations for the Praxis Art: Content Knowledge (0134) assessment are 72.79 for Panel 1 and 70.33 for Panel 2 (see Tables D3 and D4 in Appendix D). The values were rounded to the next highest whole number to determine the functional recommended cut scores — 73 for Panel 1 and 71 for Panel 2. The values of 73 and 71 represent approximately 66% and 65%, respectively, of the total available 110 raw-score points that could be earned on the assessment. The scaled scores associated with 73 and 71 raw points are 159 and 156, respectively.⁸

⁸ For reference purposes, if the recommended raw cut score was 72 or 70 points, the scaled score would be 158 or 155, respectively.

Table D5 (in Appendix D) present the estimated standard errors of measurement (SEM) around the recommended cut scores for each panel. A standard error represents the uncertainty associated with a test score. The scaled scores associated with 1 and 2 SEMs above and below the recommended cut scores are provided. The standard errors provided are an estimate, given that the Praxis Art: Content Knowledge (0134) assessment has not yet been administered.

In addition to the recommended cut score for each panel, the average cut score across the two panels is provided to help state departments of education determine an appropriate cut (or passing) score for the Praxis Art: Content Knowledge (0134) assessment. The panels' average cut score recommendation for the Praxis Art: Content Knowledge (0134) assessment is 71.56. The value was rounded to 72 (next highest raw score) to determine the functional recommended cut score. The value of 72 represents approximately 65% of the total available 110 raw-score points that could be earned on the assessment. The scaled score associated with 72 raw points is 158. Table D5 (in Appendix D) presents the standard error of measurement (SEM) around the recommended cut score combining the information from the two panels.

Summary of Content Specification Judgments.

Panelists judged the extent to which the knowledge and/or skills reflected by the Praxis Art: Content Knowledge (0134) assessment content specifications were important for entry-level Art teachers. Panelists rated the knowledge categories and knowledge/skills statements on a four-point scale ranging from *Very Important* to *Not Important*. The panelists' ratings are summarized in Table D6 (in Appendix D).

Thirteen of the 16 knowledge categories were judged to be *Very Important* or *Important* by 90% or more of the panelists. The knowledge categories of "*Understanding and Applying the Elements of Art and Principles of Visual Organization*," and "*Knows and Understands Safety, Environment, and Storage Issue*" (81% of the panelists judged as *Very Important*) were seen as the most important for beginning Art teachers. The knowledge category of "*Understanding Materials, Tools and Processes for Videography, Filmmaking, and Installations*" (65% of the panelists judged as *Slightly Important* or *Not Important*) was seen as less important for beginning Art teachers. All but four of the 70 knowledge statements covered by the Praxis Art: Content Knowledge assessment were judged to be *Very Important* or *Important* by at least two-thirds of the panelists.

Summary of Final Evaluations

The panelists completed an evaluation form at the conclusion of their standard setting study. The evaluation form asked the panelists to provide feedback about the quality of the standard-setting implementation and the factors that influenced their decisions. Tables D7 and D8 (in Appendix D) present the results of the final evaluations.

All panelists *agreed* or *strongly agreed* that they understood the purpose of the study and that the facilitator's instructions and explanations were clear. All panelists *agreed* or *strongly agreed* that they were prepared to make their standard setting judgments. Across the two panels, all but one of the panelists *strongly agreed* or *agreed* that the standard-setting process was easy to follow.

All panelists reported that the definition of the JQC was at least *somewhat influential* in guiding their standard-setting judgments; 86% of panelists indicated the definition was *very influential*. All but two of the panelists reported that between-round discussions were at least *somewhat influential* in guiding their judgments. Nearly three-quarters of the panelists (32 of the 42 panelists) indicated that the knowledge/skills required to answer each question as *very influential* in guiding their judgments.

There were similar ratings between the two panels when asked to respond to their level of comfort with their panel's recommended passing score⁹. All panelists indicated they were *very* or *somewhat comfortable* with their recommendation. For both panels, the majority of the panelists indicated that the recommend cut score was *about right* (100% for Panel 1 and 90% for Panel 2). Of the remaining panelists from Panel 2, one indicated the cut score was *too low* and one indicated it was *too high*.

⁹ Panelists indicated their level of comfort with the cut score recommendations for both the Praxis Art: Content Knowledge (0134) and Praxis Art: Content and Analysis (0135) assessments.

Summary

To support the decision-making process for state departments of education with regards to establishing a passing score, or cut score, for a revised assessment in the Praxis Series™ — Art: Content Knowledge (0134) — research staff from Educational Testing Service (ETS) designed and conducted two multi-state standard setting studies¹⁰. The studies also collected content-related validity evidence to confirm the importance of the content specifications for entry-level Art teachers.

The recommended cut scores for each panel, as well as the average cut score across the two panels, are provided to help state departments of education determine an appropriate cut (or passing) score. For the Praxis Art: Content Knowledge (0134) assessment, the average recommended cut score (rounded up) is 72 (on the raw score metric), which represents 65% of total available 110 raw score points (the recommended cut scores for Panels 1 and 2 are 73 and 71, respectively). The scaled score associated with a raw score of 72 is 158.

Panelists judged the extent to which the knowledge and/or skills reflected by the content specifications were important for entry-level Art teachers. The favorable judgments of the panelists provided evidence that the content of the assessment is important for beginning practice.

¹⁰ The two multi-state standard setting studies collected expert judgments for questions comprising both the Praxis Art: Content Knowledge (0134) and Praxis Art: Content and Analysis (0135) assessments. Standard-setting procedures and results presented in the following report only pertain to the Praxis Art: Content Knowledge (0134) assessment. A separate report contains similar information for Praxis Art: Content and Analysis (0135).

References

- Brandon, P.R. (2004). Conclusions about frequently studied modified Angoff standard-setting topics. *Applied Measurement in Education, 17*, 59-88.
- ETS. (In press). *Art: Content Knowledge Test at a Glance*. Princeton, NJ.
- Hambleton, R. K., & Pitoniak, M.J. (2006). Setting performance standards. In R. L. Brennan (Ed.), *Educational Measurement* (4th ed., pp. 433-470). Westport, CT: American Council on Education/Praeger.

Appendix A
Panelists' Names & Affiliations

Praxis Art: Content Knowledge & Praxis Art: Content and Analysis

Panel 1

Panelist

Bonner, Bethany
Brasser, Angela
Brouillette, Charles
Coon, John Mark
Cowles, Mariam
Cullinan, Mary Susan
Gall, Marta
Heid, Karen A.
Hernández-Balcázar, Noemí Verónica
LeCours, Elizabeth
Lindsey, Jennifer
Milliken, Chris
Mock, Stephen
Mojzsis, Katherine
Morin, Derek
Northcutt, Adriana E.
O'Gorman Rhodebeck, Kathleen
Purcell Sacco, Kristine
Roemer, Jordyn M.
Schorsch, Jamie
Tarrell, Robert

Affiliation

Oakdale Elementary School (CT)
Campbellsville Middle & High Schools (KY)
A. E. Phillips Lab School\Louisiana Tech University (LA)
Canton High School (MS)
Cedarville School District (AR)
Colliers Primary (WV)
Macon R-1 School (MO)
University of South Carolina (SC)
Kearns High School (UT)
Hardwick Elementary School (VT)
Mooresville Intermediate School (NC)
Wells Junior High School (ME)
Memphis City Schools (TN)
Sayreville War Memorial High School (NJ)
Kindred Public School (ND)
Trace Crossings School (AL)
Pembroke Hill School (NH)
ACL D Tillotson School (PA)
North County High School (MD)
Oak Hills High School (OH)
Edgewood College (WI)

Praxis Art: Content Knowledge & Praxis Art: Content and Analysis (continued)

Panel 2

Panelist

Aman, Ronald
Armstead, Jacqueline
Csejtey, Stephen
Danenhauer, Audrea
Dieck, Jessica M.
Dunn, Holli J.
Edinger, Ted
England, Marla
Foley, Lisa
Gumbulevich, Jeanette
Hill, Bryan
Kerrigan, Danette
Leach, Randall
Parsons, Juliella
Roberts, Kathryn
Skow, Margaret
Summers, Bridget
Swift, Jason
Wilkie, Kenneth
Winker, Melissa
Yang, Crystal

Affiliation

West Virginia University (WV)
Argyle Middle School (MD)
Akron Public Schools (OH)
Farmington Public Schools (AR)
Hinds County School District (MS)
Kickapoo High School (MO)
Tulip Grove Elementary MNPS (TN)
Barren County Middle School (KY)
Chittenden Central SU (VT)
Waterbury Arts Magnet School (CT)
MLKing Elementary School (DC)
Sacopee Valley Middle School (ME)
J.H. Rose High School (NC)
Tuscaloosa City School System (AL)
Spanish Fork High School (UT)
Rollings Middle School of the Arts\Dorchester District Two (SC)
Lakewood Elementary School (LA)
Plymouth State University (NH)
Riverside School, Princeton (NJ)
Memorial High School (WI)
University of North Dakota (ND)

Appendix B
Workshop Agenda

**Praxis Art: Content Knowledge and
Praxis Art: Content and Analysis Assessments
Standard Setting Study**

Day 1

8:00 – 8:15	Welcome and Introduction * Overview of Workshop Events
8:15 – 8:45	Overview of Standard Setting & the Praxis Art Assessments
8:45 – 9:00	Break
9:00 – 10:30	“Take” the Praxis Art Assessments
10:30 – 11:00	Discuss the Praxis Art Assessments
11:00 – 12:00	Define the Knowledge/Skills of a JQC
12:00 – 12:45	Lunch
12:45 – 2:15	Define the Knowledge/Skills of a JQC (continued)
2:15 – 2:30	Break
2:30 – 3:00	Standard Setting Training for CR Questions
3:00 – 3:30	Round 1 Standard Setting Judgments: CR Questions
3:30 – 4:00	Standard Setting Training for MC Questions
4:00 – 5:00	Round 1 Standard Setting Judgments: MC Questions 1- 40
5:00 – 5:15	Collect Materials; End of Day 1

**Praxis Art: Content Knowledge and
Praxis Art: Content and Analysis Assessments
Standard Setting Study**

Day 2

9:00 – 9:05	Overview of Day 2
9:05 – 9:15	Review Standard Setting for MC Questions
9:15 – 10:30	Round 1 Standard Setting Judgments: MC Questions 41- 120
10:30 – 10:45	Break
10:45 – 11:15	Round 1 Feedback & Round 2 Judgments: CR Questions
11:15 – 12:00	Round 1 Feedback & Round 2 Judgments: MC Questions
12:00 – 1:00	Lunch
1:00 – 2:15	Round 1 Feedback & Round 2 Judgments: MC Questions (continued)
2:15 – 3:00	Specification Judgments
3:00 – 3:15	Feedback on Round 2 Recommended Cut Score
3:15 – 3:30	Complete Final Evaluation
3:30 – 3:45	Collect Materials; End of Study

Appendix C

Just Qualified Candidate (JQC) Definitions

**Description of a Just Qualified Candidate
Panel 1**

A JQC ...

1. Knows characteristics of common 2-D and 3-D materials and processes and compare across materials and processes
2. Knows characteristics of common technologies and equipment such as printmaking, photography, film making, and computers
3. Understands safety and health issues related to common materials and processes; applies safety procedures in the classroom
4. Can prepare an exhibition demonstrating an understanding of aesthetic presentation
5. Demonstrates knowledge and application of art vocabulary
6. Knows major trends in Western and Nonwestern art and architecture
7. Knows and understands the chronological timeline and thematic organization of art history
8. Ability to analyze works of art and evaluate them critically across cultures and periods of time
9. Understands the roles of function and purpose of works of art (i.e., reflection)
10. Knows the role of visual literacy and popular culture

**Description of a Just Qualified Candidate
Panel 2**

A JQC ...

1. Knows characteristics of common 2-D and 3-D materials and processes
2. Can compare characteristics of common 2-D and 3-D materials and processes.
3. Knows characteristics of common technologies and equipment such as printmaking, photography, videography, and computer applications
4. Understands safety and health issues related to common materials and processes; applies safety procedures in the classroom
5. Can prepare an exhibition demonstrating an understanding of aesthetic presentation
6. Demonstrates knowledge and application of art vocabulary
7. Knows major trends in Western and Nonwestern art and architecture
8. Knows and understands the chronological timeline and thematic organization of art history
9. Ability to analyze works of art and evaluate them critically across cultures and periods of time
10. Understands the roles of function and purpose of works of art (i.e., reflection)
11. Knows the role of visual literacy and popular culture

Appendix D

Results for Praxis Art: Content Knowledge

Table D1**Panel Member Demographics — Panel 1**

	N	Percent
Current Position		
Teachers	18	86%
Teacher/Administrator	1	5%
College Faculty	2	10%
Race		
White	17	81%
Hispanic or Latino	1	5%
Asian or Asian American	1	5%
American Indian or Alaskan Native	1	5%
Other	1	5%
Gender		
Female	15	71%
Male	6	29%
Are you currently certified as an Art teacher in your state?		
Yes	19	90%
No	2	10%
Are you currently teaching Art in your state?		
Yes	21	100%
No	0	0%
Are you currently supervising or mentoring other Art teachers?		
Yes	9	43%
No	12	57%
How many years of experience do you have teaching Art?		
3 years or less	1	5%
4 - 7 years	8	38%
8 - 11 years	5	24%
12 - 15 years	2	10%
16 years or more	5	24%

Table D1 (continued)**Panel Member Demographics — Panel 1**

	N	Percent
At what K-12 grade level are you currently teaching Art?		
Elementary (K - 5 or K - 6)	8	38%
Middle School (6 - 8 or 7 - 9)	1	5%
Elementary and Middle School	2	10%
High School (9 - 12 or 10 - 12)	5	24%
Middle and High School	2	10%
All Grades	1	5%
Not currently teaching at the K-12 level	2	10%
Which best describes the location of your K-12 school?		
Urban	3	14%
Suburban	10	48%
Rural	6	29%
Not currently working in a K-12 school	2	10%
If you are college faculty, are you currently involved in the training/preparation of Art teachers?		
Yes	2	10%
No	0	0%
Not college faculty	19	90%

Table D2**Panel Member Demographics — Panel 2**

	N	Percent
Current Position		
Teachers	18	86%
College Faculty	3	14%
Race		
White	17	81%
Black or African American	3	14%
Asian or Asian American	1	5%
Gender		
Female	14	67%
Male	7	33%
Are you currently certified as an Art teacher in your state?		
Yes	18	86%
No	3	14%
Are you currently teaching Art in your state?		
Yes	21	100%
No	0	0%
Are you currently supervising or mentoring other Art teachers?		
Yes	10	48%
No	11	52%
How many years of experience do you have teaching Art?		
3 years or less	2	10%
4 - 7 years	6	29%
8 - 11 years	6	29%
12 - 15 years	4	19%
16 years or more	3	14%

Table D2 (continued)**Panel Member Demographics — Panel 2**

	N	Percent
At what K-12 grade level are you currently teaching Art?		
Elementary (K - 5 or K - 6)	8	38%
Middle School (6 - 8 or 7 - 9)	3	14%
Elementary and Middle School	1	5%
High School (9 - 12 or 10 - 12)	5	24%
Middle and High School	1	5%
Not currently teaching at the K-12 level	3	14%
Which best describes the location of your K-12 school?		
Urban	8	38%
Suburban	7	33%
Rural	3	14%
Not currently working in a K-12 school	3	14%
If you are college faculty, are you currently involved in the training/preparation of Art teachers?		
Yes	3	14%
No	0	0%
Not college faculty	18	86%

Table D3**Cut score Summary by Round of Judgments — Panel 1**

Panelist	Round 1	Round 2
1	68.75	72.30
2	74.30	74.45
3	69.55	71.55
4	54.05	54.05
5	61.35	62.55
6	58.55	59.05
7	72.50	73.70
8	75.15	75.15
9	73.85	74.75
10	72.65	70.00
11	72.15	72.15
12	72.95	73.05
13	82.65	82.75
14	75.65	74.10
15	81.10	80.40
16	75.70	75.40
17	72.25	73.25
18	93.00	93.20
19	69.35	70.65
20	68.40	68.00
21	78.65	78.10
Average	72.50	72.79
SD	8.30	8.08
SEJ	1.81	1.76
Highest	93.00	93.20
Lowest	54.05	54.05

Table D4**Cut score Summary by Round of Judgments — Panel 2**

Panelist	Round 1	Round 2
1	73.05	72.55
2	68.75	71.40
3	68.30	70.20
4	84.75	84.20
5	61.80	66.70
6	59.60	62.65
7	75.75	75.55
8	78.80	78.00
9	53.70	56.50
10	76.30	74.60
11	67.85	71.45
12	55.10	56.20
13	66.55	66.45
14	68.00	67.80
15	66.60	67.65
16	75.30	79.50
17	61.40	61.30
18	79.10	77.90
19	69.05	69.85
20	63.25	66.75
21	80.95	79.65
Average	69.24	70.33
SD	8.41	7.48
SEJ	1.84	1.63
Highest	84.75	84.20
Lowest	53.70	56.20

Table D5**Cut Scores within 1 and 2 SEMs of the Recommended Cut Score****(a) Panel 1**

Recommended Cut Score (SEM)		Scale Score Equivalent
	73 (4.98)	159
- 2 SEMs	64	147
-1 SEM	69	154
+1 SEM	78	166
+ 2 SEMs	83	172

(b) Panel 2

Recommended Cut Score (SEM)		Scale Score Equivalent
	71 (5.04)	156
- 2 SEMs	61	144
-1 SEM	66	150
+1 SEM	77	164
+ 2 SEMs	82	171

(c) Combined Across Panels

Recommended Cut Score (SEM)		Scale Score Equivalent
	72 (5.01)	158
- 2 SEMs	62	145
-1 SEM	67	151
+1 SEM	78	166
+ 2 SEMs	83	172

Note. Consistent with the recommended cut score, the cut scores at the different SEMs have been rounded to the next highest whole number.

Table D6

Specification Judgments — Combined Across Panels

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
I. A. ART MAKING - GENERAL								
• Understands and applies the elements of art and principles of visual organization as applied to two-dimensional and three-dimensional media¹¹.	34	81%	7	17%	0	0%	0	0%
• Identifies elements and principles of design in visual stimuli	34	81%	8	19%	0	0%	0	0%
• Explains relationships of elements to principles	23	55%	17	40%	2	5%	0	0%
• Distinguishes uses of elements and principles in two-dimensional and three-dimensional art	26	62%	15	36%	1	2%	0	0%
• Knows various historical methods and contemporary approaches to creating art.	12	29%	26	62%	4	10%	0	0%
• Defines/identifies both historical and contemporary methods	10	24%	24	57%	8	19%	0	0%

¹¹ One or more panelists did not rate this knowledge/skill category or statement.

Table D6 (continued)

Specification Judgments — Combined Across Panels

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
I. B. ART MAKING – MEDIA AND PROCESSES								
• Knows and understands safety, environmental, and storage issues related to the use of art materials and art processes.	34	81%	8	19%	0	0%	0	0%
• Identifies dangerous materials and their effects	35	83%	7	17%	0	0%	0	0%
• Categorizes dangerous materials and their effects	23	55%	15	36%	4	10%	0	0%
• Describes proper ventilation, storage, and disposal procedures based on the medium	26	62%	16	38%	0	0%	0	0%
• Demonstrates knowledge of MSDS sheets	14	33%	22	52%	5	12%	1	2%
• Demonstrates understanding of safety procedures and precautions for using artist’s materials and tools	33	79%	9	21%	0	0%	0	0%
• Demonstrates knowledge of health issues related to the use of artists’ materials and tools	28	67%	12	29%	2	5%	0	0%
• Knows and understands how to use a variety of drawing, painting, and printmaking materials and processes¹².	25	60%	15	36%	0	0%	0	0%
• Identifies characteristics of materials	26	62%	16	38%	0	0%	0	0%
• Identifies similarities and differences among materials	18	43%	21	50%	3	7%	0	0%
• Knows vocabulary related to drawing, painting, and printmaking materials and processes	24	57%	17	40%	1	2%	0	0%
• Describes drawing, painting, and printmaking processes	19	45%	22	52%	1	2%	0	0%
• Solves problems and evaluates possible solutions	23	55%	17	40%	2	5%	0	0%

¹² One or more panelists did not rate this knowledge/skill category or statement.

Table D6 (continued)

Specification Judgments — Combined Across Panels

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
• Compares materials and techniques, and analyzes the compatibility of materials and techniques	11	26%	24	57%	7	17%	0	0%
• Recognizes or identifies processes through reproductions	10	24%	23	55%	9	21%	0	0%
• Knows and understands how to use digital photography and image processes.	8	19%	29	69%	5	12%	0	0%
• Demonstrates basic camera knowledge (camera parts, vocabulary)	12	29%	25	60%	5	12%	0	0%
• Demonstrates knowledge of common editing and imaging software	5	12%	27	64%	10	24%	0	0%
• Demonstrates knowledge of uploading, downloading, storing common file types, transferring and printing images	10	24%	28	67%	4	10%	0	0%
• Knows and understands how to use the process of creating digital images	7	17%	23	55%	12	29%	0	0%
• Understand materials, tools and processes for videography, filmmaking, and installations	4	10%	11	26%	23	55%	4	10%
• Identifies/describes materials, tools, and processes for videography, filmmaking and installations	3	7%	11	26%	24	57%	4	10%
• Knows and understands how to use sculptural materials and processes.	21	50%	21	50%	0	0%	0	0%
• Identifies characteristics of materials	20	48%	22	52%	0	0%	0	0%
• Identifies similarities and differences among materials	14	33%	25	60%	3	7%	0	0%
• Knows vocabulary related to sculptural materials and processes	21	50%	21	50%	0	0%	0	0%
• Describes sculptural processes	17	40%	24	57%	1	2%	0	0%

Table D6 (continued)

Specification Judgments — Combined Across Panels

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
• Solves problems and evaluates possible solutions	23	55%	16	38%	3	7%	0	0%
• Compares materials and techniques, and analyzes the compatibility of materials and techniques	11	26%	23	55%	8	19%	0	0%
• Recognizes or identifies processes through reproductions	10	24%	20	48%	12	29%	0	0%
• Knows and understands how to use a variety of fiber art materials and processes¹³.	5	12%	26	62%	8	19%	2	5%
• Identifies characteristics of materials	3	7%	31	74%	7	17%	1	2%
• Identifies similarities and differences among materials	3	7%	26	62%	11	26%	2	5%
• Knows vocabulary related to fiber materials and processes	8	19%	20	48%	13	31%	1	2%
• Describes fiber processes	3	7%	24	57%	13	31%	2	5%
• Solves problems and evaluates possible solutions	9	21%	21	50%	10	24%	2	5%
• Compares materials and techniques, and analyzes the compatibility of materials and techniques	4	10%	23	55%	13	31%	2	5%
• Recognizes or identifies processes through reproductions ¹³	3	7%	23	55%	12	29%	3	7%

¹³ One or more panelists did not rate this knowledge/skill category or statement.

Table D6 (continued)

Specification Judgments — Combined Across Panels

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
<ul style="list-style-type: none"> • Understands the physical aspects and effective ways of presenting art work for display purposes. 	20	48%	18	43%	4	10%	0	0%
<ul style="list-style-type: none"> <ul style="list-style-type: none"> • Identifies and recognizes methods of mounting and matting work in ways appropriate to the medium 	17	40%	22	52%	3	7%	0	0%
<ul style="list-style-type: none"> <ul style="list-style-type: none"> • Identifies and describes methods of displaying three-dimensional work 	19	45%	16	38%	7	17%	0	0%
<ul style="list-style-type: none"> <ul style="list-style-type: none"> • Describes appropriate ways of using exhibition spaces 	15	36%	21	50%	6	14%	0	0%
II. A. HISTORICAL & THEORETICAL FOUNDATION OF ART – MATERIALS & PROCESSES								
<ul style="list-style-type: none"> • Understands the following materials within an art historical context: Painting, Drawing, Printmaking, Sculpture, Architecture, Photography, Fiber Arts, Crafts. 	26	62%	16	38%	0	0%	0	0%
<ul style="list-style-type: none"> <ul style="list-style-type: none"> • Identifies characteristics of materials, processes, and techniques within an art historical context 	18	43%	24	57%	0	0%	0	0%
<ul style="list-style-type: none"> <ul style="list-style-type: none"> • Identifies similarities and differences among materials, processes, and techniques (e.g., evolution over time) 	15	36%	25	60%	2	5%	0	0%
<ul style="list-style-type: none"> <ul style="list-style-type: none"> • Knows vocabulary related to two-dimensional and three-dimensional media and processes within an art historical context 	24	57%	18	43%	0	0%	0	0%
<ul style="list-style-type: none"> <ul style="list-style-type: none"> • Recognizes or identifies processes within an art historical context through reproductions 	13	31%	27	64%	2	5%	0	0%

Table D6 (continued)

Specification Judgments — Combined Across Panels

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
II. B. HISTORICAL & THEORETICAL FOUNDATION OF ART – THE WESTERN TRADITION IN ART HISTORY								
<ul style="list-style-type: none"> • Recognizes stylistic traits of art and architecture from each of the following time periods: Prehistory; Ancient Near East; Ancient Greece and Rome; Early Christian, Byzantine and Medieval periods; the Renaissance; the Baroque; 18th through 20th centuries in Europe and North America; contemporary art. 	24	57%	17	40%	1	2%	0	0%
<ul style="list-style-type: none"> • Identifies the styles of works of art and architecture 	20	48%	22	52%	0	0%	0	0%
<ul style="list-style-type: none"> • Categorizes art and architecture according to style and/or period 	17	40%	22	52%	3	7%	0	0%
<ul style="list-style-type: none"> • Identifies major works of art and architecture by title, style, and/or artist, as appropriate 	17	40%	21	50%	4	10%	0	0%
<ul style="list-style-type: none"> • Analyzes/explains the influence of art periods or schools on later work 	15	36%	26	62%	1	2%	0	0%
<ul style="list-style-type: none"> • Analyzes compositional elements and principles of design in works of art and architecture 	21	50%	20	48%	1	2%	0	0%
<ul style="list-style-type: none"> • Recognizes the impact of major artistic and technological innovations on the stylistic traits of art 	15	36%	25	60%	2	5%	0	0%

Table D6 (continued)

Specification Judgments — Combined Across Panels

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
<ul style="list-style-type: none"> • Understands the content, context, and/or purpose of art and architecture from each of the following time periods: Prehistory; Ancient Near East; Ancient Greece and Rome; Early Christian, Byzantine and Medieval periods; the Renaissance; the Baroque; 18th through 20th centuries in Europe and North America; contemporary art¹⁴. 	20	48%	21	50%	0	0%	0	0%
<ul style="list-style-type: none"> • Explains the purposes of works of art from various time periods 	15	36%	25	60%	2	5%	0	0%
<ul style="list-style-type: none"> • Decodes/analyzes the narrative or intended content of a work of art 	14	33%	25	60%	3	7%	0	0%
<ul style="list-style-type: none"> • Analyzes/explains the interrelationships between art and social factors, cultural context, and events 	17	40%	23	55%	2	5%	0	0%
<ul style="list-style-type: none"> • Explains the impact of major artistic and technological innovations on the content, context, and purposes of art 	17	40%	20	48%	5	12%	0	0%
<ul style="list-style-type: none"> • Acquires and evaluates information about art and artists from various sources 	18	43%	19	45%	5	12%	0	0%

¹⁴ One or more panelists did not rate this knowledge/skill category or statement.

Table D6 (continued)

Specification Judgments — Combined Across Panels

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
II. C. HISTORICAL & THEORETICAL FOUNDATION OF ART – ART BEYOND THE WESTERN TRADITION								
• Knows and understands the general visual characteristics of art and architecture from Asia, Africa, the Americas, the South Pacific region.	16	38%	26	62%	0	0%	0	0%
• Classifies works of art and architecture by regions/cultures ¹⁵	13	31%	27	64%	1	2%	0	0%
• Describes/analyzes works of art and architecture using compositional elements and principles of design	18	43%	23	55%	1	2%	0	0%
• Describes/analyzes the interrelationships between art from beyond the Western traditions and art from the Western tradition	12	29%	25	60%	5	12%	0	0%
• Identifies major works of art and architecture by title, style, and/or artist, as appropriate	12	29%	20	48%	10	24%	0	0%

¹⁵ One or more panelists did not rate this knowledge/skill category or statement.

Table D6 (continued)

Specification Judgments — Combined Across Panels

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
<ul style="list-style-type: none"> • Understands the general content, context, and purposes of art from Asia, Africa, the Americas, the South Pacific region¹⁶. 	17	40%	23	55%	1	2%	0	0%
<ul style="list-style-type: none"> • Explains the content and/or purpose (as appropriate) of frequently referenced works of art from various locations and cultures¹⁶ 	15	36%	24	57%	2	5%	0	0%
<ul style="list-style-type: none"> • Identifies the general role of a work of art in its culture 	19	45%	21	50%	2	5%	0	0%
<ul style="list-style-type: none"> • Explains how the context in which a work of art is created conveys information about various lifestyles and belief systems 	18	43%	21	50%	2	5%	1	2%
<ul style="list-style-type: none"> • Acquires and evaluates information about art and artists from various sources 	19	45%	15	36%	8	19%	0	0%
II. D. HISTORICAL & THEORETICAL FOUNDATION OF ART – RESPONDING TO ART								
<ul style="list-style-type: none"> • Understands the major theories of art and aesthetics. 	17	40%	24	57%	1	2%	0	0%
<ul style="list-style-type: none"> • Describes the major characteristics of various theories of art and aesthetics 	14	33%	23	55%	5	12%	0	0%
<ul style="list-style-type: none"> • Distinguishes among the major theories of art and aesthetics 	12	29%	25	60%	5	12%	0	0%
<ul style="list-style-type: none"> • Compares and contrasts the differences/similarities among theories of art and aesthetics 	10	24%	26	62%	6	14%	0	0%
<ul style="list-style-type: none"> • Interprets and evaluates works of art based on theories of art and aesthetics (as opposed to personal opinion) 	17	40%	22	52%	3	7%	0	0%

¹⁶ One or more panelists did not rate this knowledge/skill category or statement.

Table D6 (continued)

Specification Judgments — Combined Across Panels

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
<ul style="list-style-type: none"> • Understands the relationship between art and critical response¹⁷. 	23	55%	16	38%	1	2%	0	0%
<ul style="list-style-type: none"> • Demonstrates knowledge of critical reactions to well-known works and/or art movements¹⁷ 	14	33%	23	55%	4	10%	0	0%
<ul style="list-style-type: none"> • Recognizes/uses multiple viewpoints in examining a work of art 	24	57%	16	38%	2	5%	0	0%
<ul style="list-style-type: none"> • Recognizes the way personal experience affects interpretation of art 	25	60%	15	36%	2	5%	0	0%
<ul style="list-style-type: none"> • Recognizes and discusses how meaning is created in art (e.g., through symbols, iconography, formal elements and principles) 	28	67%	11	26%	3	7%	0	0%

¹⁷ One or more panelists did not rate this knowledge/skill category or statement.

Table D7**Final Evaluation — Panel 1**

	Strongly Agree		Agree		Disagree		Strongly Disagree	
	N	Percent	N	Percent	N	Percent	N	Percent
• I understood the purpose of this study.	17	81%	4	19%	0	0%	0	0%
• The instructions and explanations provided by the facilitators were clear.	21	100%	0	0%	0	0%	0	0%
• The training in the standard setting method was adequate to give me the information I needed to complete my assignment.	20	95%	1	5%	0	0%	0	0%
• The explanation of how the recommended cut score is computed was clear.	15	71%	6	29%	0	0%	0	0%
• The opportunity for feedback and discussion between rounds was helpful.	16	76%	5	24%	0	0%	0	0%
• The process of making the standard setting judgments was easy to follow.	13	62%	7	33%	0	0%	1	5%

Table D7 (continued)

Final Evaluation — Panel 1

How influential was each of the following factors in guiding your standard setting judgments?	Very Influential		Somewhat Influential		Not Influential			
	N	Percent	N	Percent	N	Percent		
• The definition of the JQC	20	95%	1	5%	0	0%		
• The between-round discussions	9	43%	11	52%	1	5%		
• The knowledge/skills required to answer each test question	17	81%	4	19%	0	0%		
• My own professional experience	10	48%	9	43%	2	10%		
	Very Comfortable		Somewhat Comfortable		Somewhat Uncomfortable		Very Uncomfortable	
	N	Percent	N	Percent	N	Percent	N	Percent
• Overall, how comfortable are you with the panel's recommended cut scores?	18	86%	3	14%	0	0%	0	0%
	Too Low		About Right		Too High			
	N	Percent	N	Percent	N	Percent		
• Overall, the recommended cut score is:	0	0%	21	100%	0	0%		

Table D8**Final Evaluation — Panel 2**

	Strongly Agree		Agree		Disagree		Strongly Disagree	
	N	Percent	N	Percent	N	Percent	N	Percent
• I understood the purpose of this study.	21	100%	0	0%	0	0%	0	0%
• The instructions and explanations provided by the facilitators were clear.	20	95%	1	5%	0	0%	0	0%
• The training in the standard setting method was adequate to give me the information I needed to complete my assignment.	19	90%	2	10%	0	0%	0	0%
• The explanation of how the recommended cut score is computed was clear.	15	71%	6	29%	0	0%	0	0%
• The opportunity for feedback and discussion between rounds was helpful.	18	86%	3	14%	0	0%	0	0%
• The process of making the standard setting judgments was easy to follow.	18	86%	3	14%	0	0%	0	0%

Table D8 (continued)

Final Evaluation — Panel 2

How influential was each of the following factors in guiding your standard setting judgments?	Very Influential		Somewhat Influential		Not Influential			
	N	Percent	N	Percent	N	Percent		
• The definition of the JQC	16	76%	5	24%	0	0%		
• The between-round discussions	13	62%	7	33%	1	5%		
• The knowledge/skills required to answer each test question	15	71%	6	29%	0	0%		
• My own professional experience	13	62%	8	38%	0	0%		
	Very Comfortable		Somewhat Comfortable		Somewhat Uncomfortable		Very Uncomfortable	
	N	Percent	N	Percent	N	Percent	N	Percent
• Overall, how comfortable are you with the panel's recommended cut scores?	14	67%	7	33%	0	0%	0	0%
	Too Low		About Right		Too High			
	N	Percent	N	Percent	N	Percent		
• Overall, the recommended cut score is:	1	5%	19	90%	1	5%		