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Multistate Standard-Setting Technical Report

## **PRAXIS®** EDUCATIONAL LEADERSHIP: ADMINISTRATION AND SUPERVISION (5412)

**Educational Testing Service** 

Princeton, New Jersey

February 2018

## **EXECUTIVE SUMMARY**

To support the decision-making process of education agencies establishing a passing score (cut score) for the *Praxis*<sup>®</sup> Educational Leadership: Administration and Supervision (5412) test, research staff from Educational Testing Service (ETS) designed and conducted a multistate standard-setting study.

### **PARTICIPATING STATES**

Panelists from 20 states and Washington, DC were recommended by their respective education agencies. The education agencies recommended panelists with (a) experience as either school leaders or college faculty who prepare school leaders and (b) familiarity with the knowledge and skills required of beginning school leaders.

### **RECOMMENDED PASSING SCORE**

ETS provides a recommended passing score from the multistate standard-setting study to help education agencies determine an appropriate operational passing score. For the *Praxis* Educational Leadership: Administration and Supervision test, the recommended passing score<sup>1</sup> is 57 out of a possible 100 raw-score points. The scale score associated with a raw score of 57 is 146 on a 100–200 scale.

<sup>&</sup>lt;sup>1</sup> Results from the two panels participating in the study were averaged to produce the recommended passing score.

To support the decision-making process for education agencies establishing a passing score (cut score) for the *Praxis*<sup>®</sup> Educational Leadership: Administration and Supervision (5412) test, research staff from ETS designed and conducted a multistate standard-setting study in January 2018 in Princeton, New Jersey. Education agencies<sup>2</sup> recommended panelists with (a) experience as either school leaders or college faculty who prepare school leaders and (b) familiarity with the knowledge and skills required of beginning school leaders. Twenty states and Washington, DC (Table 1) were represented by 34 panelists. (See Appendix A for the names and affiliations of the panelists.)

#### Table 1

### Participating Jurisdictions and Number of Panelists

The following technical report contains three sections. The first section describes the content and format of the test. The second section describes the standard-setting processes and methods. The third section presents the results of the standard-setting study.

ETS provides a recommended passing score from the multistate standard-setting study to education agencies. In each jurisdiction, the department of education, the board of education, or a designated educator licensure board is responsible for establishing the operational passing score in accordance with applicable regulations. This study provides a recommended passing score,<sup>3</sup> which

<sup>&</sup>lt;sup>2</sup> States and jurisdictions that currently use any *Praxis* test were invited to participate in the multistate standard-setting study.

<sup>&</sup>lt;sup>3</sup> In addition to the recommended passing score <u>averaged</u> across the two panels, the recommended passing scores for <u>each</u> panel are presented.

represents the combined judgments of two panels of experienced educators. Each jurisdiction may want to consider the recommended passing score but also other sources of information when setting the final *Praxis* Educational Leadership: Administration and Supervision passing score (see Geisinger & McCormick, 2010). A jurisdiction may accept the recommended passing score, adjust the score upward to reflect more stringent expectations, or adjust the score 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 jurisdiction's needs.

Two sources of information to consider when setting the passing score are the standard error of measurement (SEM) and the standard error of judgment (SEJ). The former addresses the reliability of the *Praxis* Educational Leadership: Administration and Supervision test score and the latter, the reliability of panelists' passing-score recommendation. The SEM allows a jurisdiction to recognize that any test score on any standardized test—including a *Praxis* Educational Leadership: Administration and Supervision test score—is not 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 a jurisdiction to gauge the likelihood that the recommended passing score from a particular panel would be similar to the passing 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 passing score consistent with the recommended passing score. The larger the SEJ, the less likely the recommended passing score would be reproduced by another panel.

In addition to measurement error metrics (e.g., SEM, SEJ), each jurisdiction should consider the likelihood of classification errors. That is, when adjusting a passing 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 that he should receive a license/certificate, but his actual level of knowledge/skills indicates otherwise (i.e., the candidate does not possess the required knowledge/skills). A false-negative decision 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 jurisdiction needs to consider which decision error is more important to minimize.

# OVERVIEW OF THE *PRAXIS*<sup>®</sup> EDUCATIONAL LEADERSHIP: ADMINISTRATION AND SUPERVISION TEST

The *Praxis®* Study Companion for the Educational Leadership: Administration and Supervision (5412) test (ETS, in press) describes the purpose and structure of the test. In brief, the test measures the extent to which entry-level school leaders demonstrate the standards-relevant knowledge and skills necessary for competent professional practice. The test is aligned to the National Policy Board for Educational Administration (NPBEA) *Professional Standards for Educational Leaders* (NPBEA, 2015) and the draft *National Educational Leadership Preparation* (NELP) building-level standards (UCEA, 2016).

The two-hour forty-five minutes assessment contains 120 selected-response items<sup>4</sup> covering six content areas: *Strategic Leadership* (approximately 20 items), *Instructional Leadership* (approximately 27 items), *Climate and Cultural Leadership* (approximately 22 items), *Ethical Leadership* (approximately 19 items), *Organizational Leadership* (approximately 16 items), and *Community Engagement Leadership* (approximately 16 items).<sup>5</sup> The reporting scale for the *Praxis* Educational Leadership: Administration and Supervision test ranges from 100 to 200 scale-score points.

<sup>&</sup>lt;sup>4</sup> Twenty of the 120 selected-response items are pretest items and do not contribute to a candidate's score.

<sup>&</sup>lt;sup>5</sup> The number of items for each content area may vary slightly from form to form of the test.

## **PROCESSES AND METHODS**

The design of the standard-setting study included two, independent expert panels. Before the study, panelists received an email explaining the purpose of the standard-setting study and requesting that they review the content specifications for the test. This review helped familiarize the panelists with the general structure and content of the test.

For each panel, the standard-setting study began with a welcome and introduction by the meeting facilitators. The facilitators described the test, provided an overview of standard setting, and presented the agenda for the study. Appendix B shows the agenda for the panel meeting.

### **REVIEWING THE TEST**

The standard-setting panelists first took the test and then discussed it. This discussion helped bring the panelists to a shared understanding of what the test does and does not cover, which serves to reduce potential judgment errors later in the standard-setting process.

The test discussion covered the major content areas being addressed by the test. Panelists were asked to remark on any content areas that would be particularly challenging for entry-level school leaders or areas that address content particularly important for entry-level school leaders.

### DEFINING THE JUST QUALIFIED CANDIDATE

Following the review of the test, panelists described the just qualified candidate. The *just qualified candidate description* plays a central role in standard setting (Perie, 2008); the goal of the standard-setting process is to identify the test score that aligns with this description.

Both panels worked together to create a description of the just qualified candidate — the knowledge/skills that differentiate a *just* from a *not quite* qualified candidate. To create this description, they first split into smaller groups to consider the just qualified candidate. Then they reconvened and, through whole-group discussion, created the description of the just qualified candidate to use for the remainder of the study. After the description was completed, panelists were split into two, distinct panels that worked separately for the remainder of the study.

The written description of the just qualified candidate summarized the panel discussion in a bulleted format. The description was not intended to describe all the knowledge and skills of the just

qualified candidate but only highlight those that differentiate a *just* qualified candidate from a *not quite* qualified candidate. The written description was distributed to panelists to use during later phases of the study (see Appendix C for the just qualified candidate description).

### PANELISTS' JUDGMENTS

The standard-setting process for the *Praxis* Educational Leadership: Administration and Supervision test was a probability-based Modified Angoff method (Brandon, 2004; Hambleton & Pitoniak, 2006). In this study, each panelist judged each item on the likelihood (probability or chance) that the just qualified candidate would answer the item 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 the just qualified candidate would answer the item correctly because the item is difficult for the just qualified candidate. The higher the value, the more likely it is that the just qualified candidate would answer the item correctly because the item is difficult for the just qualified candidate. The higher the value, the more likely it is that the just qualified candidate would answer the item correctly.

Panelists were asked to approach the judgment process in two stages. First, they reviewed both the description of the just qualified candidate and the item. Then the panelists estimated what chance a just qualified candidate would have of answering the question correctly. The facilitator encouraged the panelists to consider the following rules of thumb to guide their decision:

- Items in the 0 to .30 range were those the just qualified candidate would have a low chance of answering correctly.
- Items in the .40 to .60 range were those the just qualified candidate would have a moderate chance of answering correctly.
- Items in the .70 to 1 range were those that the just qualified candidate would have a high chance of answering correctly.

Next, panelists decided how to refine their judgment within the range. For example, if a panelist thought that there was a high chance that the just qualified candidate would answer the question correctly, the initial decision would be in the .70 to 1 range. The second decision for the panelist was to judge if the likelihood of answering it correctly is .70, .80, .90, .95 or 1.

After the training, panelists made practice judgments and discussed those judgments and their rationales. All panelists completed a post-training evaluation to confirm that they had received adequate

training and felt prepared to continue; the standard-setting process continued only if all panelists confirmed their readiness.

Following this first round of judgments (*Round 1*), item-level feedback was provided to the panel. The panelists' judgments were displayed for each item and summarized across panelists. Items were highlighted to show when panelists converged in their judgments (at least two-thirds of the panelists located an item in the same difficulty range) or diverged in their judgments.

The panelists discussed their item-level judgments. These discussions helped panelists maintain a shared understanding of the knowledge/skills of the just qualified candidate and helped to clarify aspects of items that might not have been clear to all panelists during the Round 1 judgments. The purpose of the discussion was not to encourage panelists to conform to another's judgment, but to understand the different relevant perspectives among the panelists.

In Round 2, panelists discussed their Round 1 judgments and were encouraged by the facilitator (a) to share the rationales for their judgments and (b) to consider their judgments in light of the rationales provided by the other panelists. Panelists recorded their Round 2 judgments only for items when they wished to change a Round 1 judgment. Panelists' final judgments for the study, therefore, consist of their Round 1 judgments and any adjusted judgments made during Round 2.

Other than the description of the just qualified candidate, results from Panel 1 were not shared with Panel 2. The item-level judgments and resulting discussions for Panel 2 were independent of judgments and discussions that occurred with Panel 1.

## RESULTS

### **EXPERT PANELS**

Table 2 presents a summary of the panelists' demographic information. The panel included 34 panelists representing 20 states and Washington, DC (See Appendix A for a listing of panelists.) Fourteen panelists were principals, two were vice principals, two were superintendents, one was a building-level instructional team leader, 13 were college faculty, and two were college administrators. All thirteen faculty members' job responsibilities included the training of school leaders.

The demographic information by panel is presented in Appendix D (Table D1).

	N	%
Current position		
Principal	14	41
Vice Principal	2	6
Superintendent	2	6
Instructional Team Leader	1	3
College faculty	13	38
College Administrator	2	6
Race		
White	25	74
Black or African American	5	15
Asian or Asian American	1	3
American Indian or Alaskan Native	1	3
Other	2	6
Gender		
Female	17	50
Male	17	50
Are you currently certified as a school leader in your state?		
Yes	19	56
No	0	0
I am not a school leader	15	44
Including this year, how many years of experience do you have as educational leader?	an	
3 years or less	1	3
4 - 7 years	6	18
8 - 11 years	6	18
12 - 15 years	4	12
16 years or more	2	6
I am not a school leader	15	44
lf you are building level school leader, what grade levels are taught	in	
your school?	111	
Elementary	8	24
Middle School	2	6
High School	- 7	21
I am not a school leader	17	50

Table 2Panel Member Demographics (Across Panels)

Table 2 (continued)

Panel Member	<b>Demographics</b>	(Across	Panels)
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	N	%
If you are building-level school leader, which best de school?	escribes the location	of you
Urban	4	12
Suburban	5	15
Rural	8	24
I am not a school leader	17	50
Are you currently involved in the training or preparat leaders?	tion of school	
Yes	15	44
No	0	0
I am not college faculty	19	56
How many years of experience (including this year) do leaders?	o you have preparin	g schoo
3 years or less	0	0
4 - 7 years	0	0
8 - 11 years	4	12
12 - 15 years	3	9
16 years or more	8	24
Not college faculty	19	56

### STANDARD-SETTING JUDGMENTS

Table 3 summarizes the standard-setting judgments (Round 2) of panelists. The table also includes estimates of the measurement error associated with the judgments: the standard deviation of the mean and the standard error of judgment (SEJ). The SEJ is one way of estimating the reliability or consistency of a panel's standard-setting judgments.<sup>6</sup> It indicates how likely it would be for several other panels of educators similar in makeup, experience, and standard-setting training to the current panel to recommend the same passing score on the same form of the test. The confidence intervals created by adding/subtracting two SEJs to each panel's recommended passing score overlap, indicating that they may be comparable.

Panelist-level results, for Rounds 1 and 2, are presented in Appendix D (Table D2).

# Table 3 Summary of Round 2 Standard-setting Judgments

	Panel 1	Panel 2
Average	55.75	57.05
Lowest	49.60	48.80
Highest	62.80	68.10
ŠD	4.16	5.75
SEJ	1.01	1.39

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 each panel (see Table D2 in Appendix D). The Round 2 average score is the panel's recommended passing score.

The panels' passing score recommendations for the *Praxis* Educational Leadership: Administration and Supervision test are 55.75 for Panel 1 and 57.05 for Panel 2 (out of a possible 100 raw-score points). The values were rounded to the next highest whole number, to determine the functional

<sup>&</sup>lt;sup>6</sup> An SEJ assumes that panelists are randomly selected and that standard-setting judgments are independent. It is seldom the case that panelists are randomly sampled, and only the first round of judgments may be considered independent. The SEJ, therefore, likely underestimates the uncertainty of passing scores (Tannenbaum & Katz, 2013).

recommended passing score — 56 for Panel 1 and 58 for Panel 2. The scale scores associated with 56 and 58 raw points are 144 and 147, respectively.

In addition to the recommended passing score for each panel, the average passing score across the two panels is provided to help education agencies determine an appropriate passing score. The panels' average passing score recommendation for the *Praxis* Educational Leadership: Administration and Supervision test is 56.40 (out of a possible 100 raw-score points). The value was rounded to 57 (next highest raw score) to determine the functional recommended passing score. The scale score associated with 57 raw points is 146.

Table 4 presents the estimated conditional standard error of measurement (CSEM) around the recommended passing score (the average across the two panels). A standard error represents the uncertainty associated with a test score. The scale scores associated with one and two CSEM above and below the recommended passing score are provided. The conditional standard error of measurement provided is an estimate.

 Table 4

 Passing Scores Within 1 and 2 CSEM of the Recommended Passing Score<sup>7</sup>

Recommended pa	ssing score (CSEM)	Scale score equivalent
57	(4.07)	146
-2 CSEM	49	134
-1 CSEM	53	140
+ 1 CSEM	62	153
+ 2 CSEM	66	159

**Note.** CSEM = conditional standard error(s) of measurement.

#### **FINAL EVALUATIONS**

The panelists completed an evaluation at the conclusion of their standard-setting study. The evaluation asked the panelists to provide feedback about the quality of the standard-setting implementation and the factors that influenced their decisions. The responses to the evaluation provided evidence of the validity of the standard-setting process, and, as a result, evidence of the reasonableness of the recommended passing score.

<sup>&</sup>lt;sup>7</sup> The unrounded CSEM value is added to or subtracted from the rounded passing-score recommendation. The resulting values are rounded up to the next-highest whole number and the rounded values are converted to scale scores.

Panelists were also shown the panel's recommended passing score and asked (a) how comfortable they are with the recommended passing score and (b) if they think the score was too high, too low, or about right. A summary of the final evaluation results is presented in Appendix D.

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

All panelists reported that the description of the just qualified candidate was at least *somewhat influential* in guiding their standard-setting judgments; 24 of the 34 panelists indicated the description was *very influential*. All of the panelists reported that between-round discussions were at least *somewhat influential* in guiding their judgments. Two-thirds of the panelists (23 of the 34 panelists) indicated that their own professional experience was *very influential* in guiding their judgments.

All but one of the panelists indicated they were at least *somewhat comfortable* with the passing score they recommended; 25 of the 34 panelists were *very comfortable*. Thirty-one of the 34 panelists indicated the recommended passing score was *about right*; the remaining three panelists indicated that the passing score was *too low*.

## SUMMARY

To support the decision-making process for education agencies establishing a passing score (cut score) for the *Praxis* Educational Leadership: Administration and Supervision test, research staff from ETS designed and conducted a multistate standard-setting study.

ETS provides a recommended passing score from the multistate standard-setting study to help education agencies determine an appropriate operational passing score. For the *Praxis* Educational Leadership: Administration and Supervision test, the recommended passing score<sup>8</sup> is 57 out of a possible 100 raw-score points. The scale score associated with a raw score of 57 is 146 on a 100–200 scale.

<sup>&</sup>lt;sup>8</sup> Results from the two panels participating in the study were averaged to produce the recommended passing score.

## REFERENCES

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# APPENDIX A

# PANELISTS' NAMES & AFFILIATIONS

Panelist Affiliation Sousan Arafeh Southern Connecticut State University (CT) Eastern Kentucky University (KY) Carrie Ballinger Jesse Boyd King George County Schools (VA) Patricia Brandon-Pride D.C. Public Schools (DC) Harrie Buecker University of Louisville (KY) Dennis Bunch The University of Mississippi (MS) John Burke Haysville USD 261/Newman University (KS) Kyley Cumbow Georgia Morse Middle School, Pierre (SD) Nicolle Currie Rural Point Elementary School/Hanover County Public Schools (VA) Lori DeSimone North Providence School Department (RI) Kevin DiCostanzo Delaware Department of Education/Milford School District (DE) Docia Generette Shelby County Schools (TN) Norfolk State University (VA) Angela Goodloe Lisa Grillo Howard University School of Education (DC) Clarence Horn Fort Hays State University (KS) Matt Kiser Homewood City Schools, Edgewood Elementary School (AL) Carmelita Lamb University of Mary, Bismarck (ND) James McIntyre University of Tennessee (TN) Justin S. N. Mew Henry J. Kaiser High School (HI) Amy Mitchell Washington County School District (UT) Janice Page Johnson Greenville Public School District (MS) Wayne Sate College (NE) Craig Pease

**Participating Panelists With Affiliation** 

<u>Panelist</u>	Affiliation
Christopher Pritchett	Troy University (AL)
Taylor Raney	University of Idaho (ID)
Christopher Rau	Regional School District #10 (CT)
Russ Riehl	Simle Middle School, Bismarck Public schools (ND)
Bess Scott	Doane University (NE)
Daniel Shea	Hood College (MD)
Mark Shumate	Greewood Public Schools (AR)
Stefanie Smithey	Carroll Smith Elementary School (AR)
Karen Soper	Manti Elementary School (UT)
Thomas Traver	Dallas School District (PA)
Eugenia Webb-Damron	Marshall University (WV)
Anthony C. Wright	Wilmington University (DE)

Participating Panelists With Affiliation (continued)

# APPENDIX B

# STUDY AGENDA

## AGENDA

### **Praxis<sup>®</sup> Educational Leadership: Administration and Supervision (5412)** Standard-Setting Study Day 1

,	
	Welcome and Introduction
	Overview of Standard Setting and the Praxis Test
	Review the Praxis Test
	Discuss the Praxis Test
	Define the Knowledge/Skills of a Just Qualified Candidate
	Standard-Setting Training
	Round 1 Standard Setting Judgments
	Collect Materials; End of Day 1
Day 2	
	Overview of Day 2
	Round 1 Feedback and Round 2 Judgments
	Feedback on Round 2 Recommended Cut Score
	Complete Final Evaluation
	Collect Materials; End of Study

# APPENDIX C

JUST QUALIFIED CANDIDATE DESCRIPTION

#### Description of the Just Qualified Candidate<sup>9</sup>

### A just qualified candidate ...

- I. Strategic Leadership
  - 1. Knows multiple sources are needed for data analysis to inform continuous improvement
  - 2. Knows how local/state/federal policies impact school operations
  - 3. Understands the value of engaging stakeholders with diverse perspectives
  - 4. Knows that there is value in having and implementing a mission, a vision, goals and core values
- II. Instructional Leadership
  - Familiar with how to use student/teacher data to drive differentiated professional development needs
  - 2. Is familiar with the need for alignment of curriculum and instruction, student assessments, professional development, and reporting tools with content standards
  - 3. Understands the use of valid assessments to improve instruction and student achievement

### III. Climate and Cultural Leadership

- 1. Understands the importance of fostering a supportive, collaborative, respectful working environment
- 2. Understands the need for equitable access to learning opportunities
- 3. Understands the need to implement policies and procedures in a fair, unbiased, and culturally-responsive manner
- 4. Understands the need to create and sustain a school environment to meet the academic, emotional, social, and physical needs of students
- IV. Ethical Leadership
  - 1. Understands, models, and promotes integrity and ethical leadership
  - 2. Knows how to maintain standards and accountability for ethical and legal behavior among faculty, staff and students

<sup>&</sup>lt;sup>9</sup> Description of the just qualified candidate focuses on the knowledge/skills that differentiate a *just* from a *not quite* qualified candidate.

## Description of the Just Qualified Candidate<sup>10</sup> (continued)

### A just qualified candidate ...

- V. Organizational Leadership
  - 1. Knows how to interpret and apply district policies to monitor and sustain the operation of the school
  - 2. Is familiar with the allocation of fiscal and personnel resources to support students' needs
  - 3. Knows how to develop and widely communicate a system of support for student welfare and safety
- VI. Community Engagement Leadership
  - 1. Understands the importance of engaging families in educational decision-making through two-way communication and collaborative partnerships
  - 2. Is familiar with the need to solicit, identify, and value diverse perspectives
  - 3. Knows the importance of developing mutually beneficial school-community relationships
  - 4. Is familiar with how to seek community resources
- VII. Analysis
  - 1. Familiar with the need for a coherent, collaborative, and comprehensive school plan that will enable learning and success for all students

<sup>&</sup>lt;sup>10</sup> Description of the just qualified candidate focuses on the knowledge/skills that differentiate a *just* from a *not quite* qualified candidate.

# APPENDIX D

# RESULTS

Panel 1 Panel 2 N % N % **Current position** Principal Vice Principal Superintendent Instructional Team Leader College Faculty College Administrator Race White Black or African American Asian or Asian American American Indian or Alaskan Native Other Gender Female Male Are you currently certified as a school leader in your state? Yes No I am not a school leader Including this year, how many years of experience do you have as an educational leader? 3 years or less 4 - 7 years 8 - 11 years 12 - 15 years 16 years or more I am not a school leader If you are building level school leader, what grade levels are taught in your school? Elementary Middle School High School I am not a school leader

Table D1Panel Member Demographics (by Panel)

Table D1 (continued)

Panel Member Demographics (by Panel)

	Pa	anel 1	Pa	nel 2
	N	%	N	%
If you are building -level school leader, which best d	lescribes the loca	tion of yo	ur school	?
Urban	1	6	3	18
Suburban	3	18	2	12
Rural	5	29	3	18
I am not a school leader	8	47	9	53
Are you currently involved in the training or prepa	ration of school l	eaders?		
Yes	8	47	7	41
No	0	0	0	0
I am not college faculty	9	53	10	59
How many years of experience (including this year)	do you have prej	paring scl	nool leade	ers?
3 years or less	0	0	0	0
4 - 7 years	0	0	0	0
8 - 11 years	3	18	1	6
12 - 15 years	2	12	1	6
16 years or more	3	18	5	29
Not college faculty	9	53	10	59

	Par	nel 1	Pane	el 2
Panelist	Round 1	Round 2	Round 1	Round 2
1	51.45	52.25	64.10	63.50
2	53.80	53.80	54.30	54.20
3	49.60	49.60	49.10	48.80
4	61.25	59.85	61.00	59.50
5	49.35	50.90	50.90	51.10
6	63.60	60.50	45.30	53.50
7	58.55	60.15	51.80	53.50
8	62.90	62.80	71.45	64.35
9	51.70	53.00	60.55	60.20
10	49.30	51.50	50.30	50.70
11	50.20	51.20	68.40	68.10
12	55.40	54.40	50.70	50.90
13	55.90	56.90	57.55	57.55
14	59.10	58.80	59.30	59.90
15	62.30	61.40	58.55	59.55
16	57.60	55.50	51.40	51.50
17	55.10	55.20	63.10	63.00
Average	55.71	55.75	56.93	57.05
Lowest	49.30	49.60	45.30	48.80
Highest	63.60	62.80	71.45	68.10
ŠD	4.99	4.16	7.29	5.75
SEJ	1.21	1.01	1.77	1.39

Table D2Passing Score Summary by Round of Judgments

# Table D3Final Evaluation: Panel 1

	Strongly agree		А	Agree		Disagree		ongly agree
	N	%	N	%	N	%	N	%
I understood the purpose of this study.	16	94	1	6	0	0	0	0
The instructions and explanations provided by the facilitators were clear.	13	76	4	24	0	0	0	0
The training in the standard-setting method was adequate to give me the information I needed to complete my assignment.	15	88	2	12	0	0	0	0
The explanation of how the recommended cut score is computed was clear.	14	82	3	18	0	0	0	0
The opportunity for feedback and discussion between rounds was helpful.	15	88	2	12	0	0	0	0
The process of making the standard-setting judgments was easy to follow.	14	82	3	18	0	0	0	0
I understood how to use the survey software.	14	82	3	18	0	0	0	0

### Table D3 (continued)

### Final Evaluation: Panel 1

How influential was each of the following factors in guiding your	influential in			Somewhat Not influential influential				
standard-setting judgments?	N	%	N	%	N	%		
• The definition of the just qualified candidate	12	71	5	29	0	0		
• The between-round discussions	11	65	6	35	0	0		
• The knowledge/skills required to answer each test question	14	82	3	18	0	0		
<ul> <li>The cut scores of other panel members</li> <li>My own professional experience</li> </ul>	5	29	12	71	0	0		
	9	53	8	47	0	0		
		Very fortable		newhat fortable		mewhat mfortable		Very nfortable
	N	%	N	%	N	%	N	%
• Overall, how comfortable are you with the panel's recommended cut score?	12	71	4	24	1	6	0	0
	To	oo low	Abo	ut right	Тс	oo high		
	N	%	N	%	N	%		
• Overall, the recommended cut score is:	3	18	14	82	0	0		

# Table D4Final Evaluation: Panel 2

	Strongly agree		Agree		Disagree		Strongly disagree	
	N	°%	N	<b>%</b>	N	ິ%	N	ິ%
I understood the purpose of this study.	17	100	0	0	0	0	0	0
The instructions and explanations provided by the facilitators were clear.	14	82	3	18	0	0	0	0
The training in the standard-setting method was adequate to give me the information I needed to complete my assignment.	14	82	3	18	0	0	0	0
The explanation of how the recommended cut score is computed was clear.	12	71	5	29	0	0	0	0
The opportunity for feedback and discussion between rounds was helpful.	15	88	2	12	0	0	0	0
The process of making the standard- set`ting judgments was easy to follow.	13	76	4	24	0	0	0	0
I understood how to use the survey software.	16	94	1	6	0	0	0	0

### Table D4 (continued)

Final Evaluation: Panel 2

How influential was each of the following factors in guiding your	Very influential		Somewhat influential		Not influential			
standard-setting judgments?	N	%	N	%	N	%		
• The definition of the just qualified candidate	12	71	5	29	0	0		
• The between-round discussions	8	47	9	53	0	0		
• The knowledge/skills required to answer each test question	14	82	3	18	0	0		
• The cut scores of other panel members	6	35	11	65	0	0		
• My own professional experience	14	82	3	18	0	0		
	Very comfortable		Somewhat comfortable		Somewhat uncomfortable		Very uncomfortable	
	N	%	N	%	N	%	N	%
• Overall, how comfortable are you with the panel's recommended cut score?	13	76	4	24	0	0	0	0
	Too low		About right		Too high			
	N	%	N	%	N	%		
• Overall, the recommended cut score is:	0	0	17	100	0	0		