

A series of blue silhouettes of people in various stages of growth (a crawling baby, a toddler, a young child, an adult, and a graduate) are positioned along a green, upward-curving line that represents a hill or path.

Indiana Department of Education

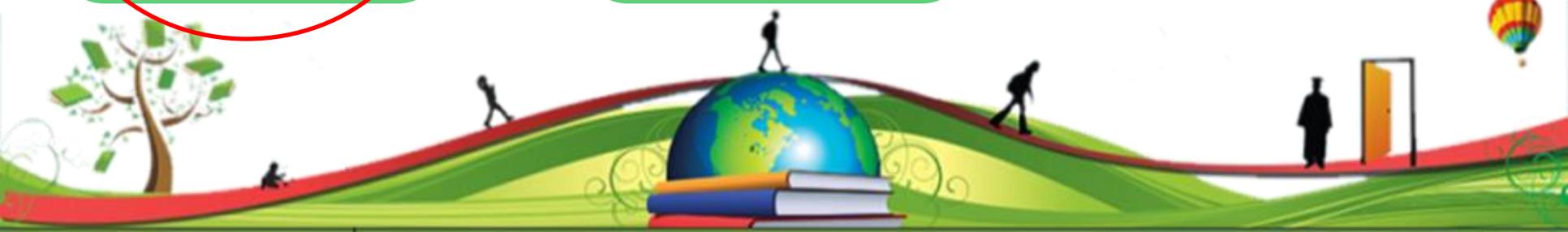
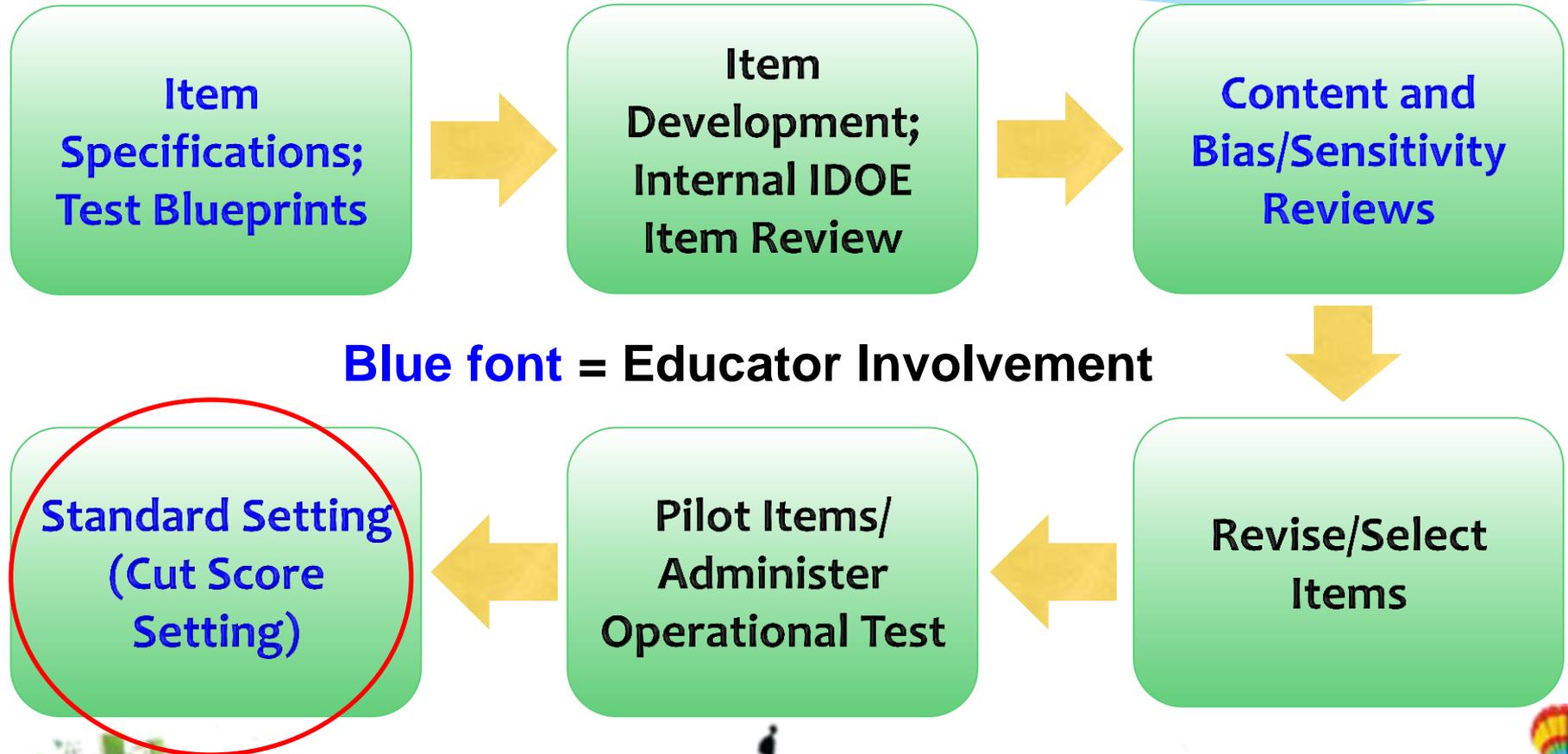
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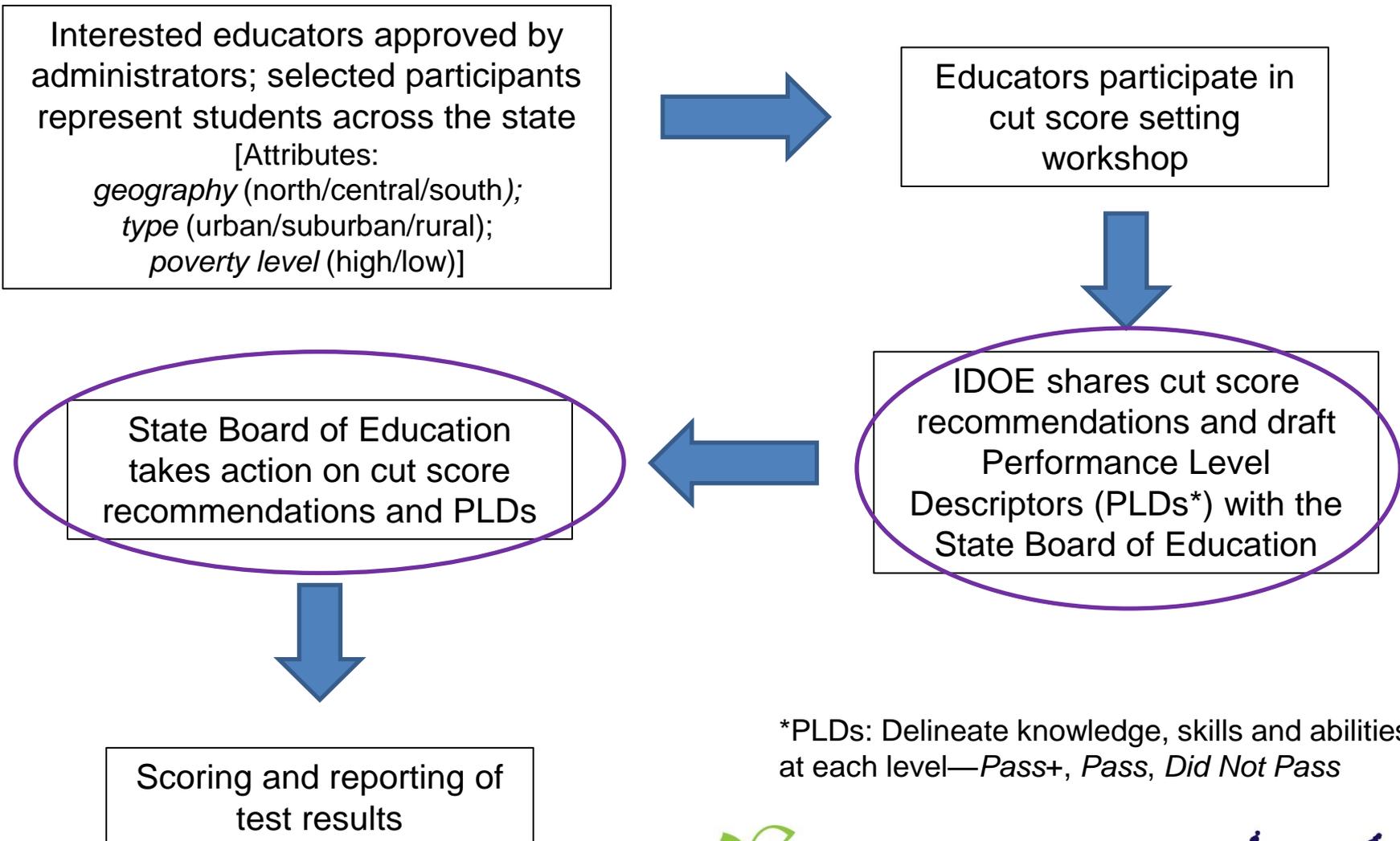
Cut Score Recommendations: ECA College- and Career-Ready Assessment NCSC Alternate Assessment

**State Board of Education Meeting
September 16, 2015**

Assessment Development Journey



Indiana's Cut Score Setting Process



*PLDs: Delineate knowledge, skills and abilities at each level—*Pass+*, *Pass*, *Did Not Pass*

Standards vs. Standards

- **Content Standards**
 - What students are expected to know and be able to do
- **Performance/Achievement Standards**
 - Also referred to as “cut scores”
 - Delineate separation of performance levels
 - Indiana’s performance levels
 - Did Not Pass
 - Pass
 - Pass Plus

Cut Scores (aka “Standards”)

- A *cut score* is the minimum score a student must achieve on an assessment in order to be placed in a certain performance level. It distinguishes one performance level from the next.
- Two recommended cut scores will be presented to the State Board of Education for review and approval:
 - The cut score that differentiates Did Not Pass performance from Pass performance (the Pass cut)
 - The cut score that differentiates Pass performance from Pass Plus performance (the Pass Plus cut)

Performance Level Descriptors

- Referred to as “PLDs”
- Describe knowledge, skills and abilities at each performance level
 - *Pass+*
 - *Pass*
 - *Did Not Pass*
- Panelists reviewed draft PLDs to help determine cut score recommendations throughout the standard setting process.
- Panelists had the opportunity to fine-tune the draft PLDs as part of the cut score setting process.
- ECA CCRA and NCSC PLDs
 - Presented for State Board of Education review/approval



Indiana's Adopted Definitions

- Indiana Education Roundtable **Passing Score** Definition
“The scores to pass these tests will be set at the levels necessary for students to demonstrate **solid academic performance** on the standards.”
- Indiana Education Roundtable **Pass-Plus** Definition
“The scores to demonstrate ‘pass-plus’ on these tests will be set at the levels necessary for students to demonstrate **exemplary academic performance** on the standards.”



Cut Score Setting Workshop

- Guided by *Bookmark Standard Setting* process
- Educator Participants
 - Represented expertise in content and student populations
 - Statistically represented Indiana's students
 - Based on “attributes”
 - Geographic location (north, central, south)
 - Type of community (urban, suburban, rural)
 - Socioeconomic status (high or low poverty)
 - Three attributes combine to form a “cell.”
 - Sample school cell: south / urban / high poverty
 - 18 cells across Indiana



Cut Score Setting Process

- Cut Score Setting Workshops
 - ECA CCRA: July 28-29; NCSC: August 18-21
 - Process facilitated by vendor (Questar; Measured Progress)
 - Participants studied “Ordered Item Booklets”
 - Items arranged from least to most difficult
 - Based on student performance statistics from the assessments
 - Each participant set 3 rounds of bookmarks
 - Discussion occurred before and after each round; bookmarks always set as individuals
 - Panelists reviewed impact data after Rounds 2 and 3
 - Recommendations from educators include:
 - **Median** of individual bookmark placements (*Pass, Pass+*)
 - **Draft** Performance Level Descriptors (*Did Not Pass, Pass, Pass+*)



Cut Score Setting Review

- Technical Advisory Committee Members
 - ECA CCRA
 - Dr. Bill Auty, Dr. Karla Egan, Dr. Nancy Hahn
 - NCSC
 - Dr. Karla Egan, Dr. Nancy Hahn, Dr. Megan Karvonen
- Observed the Cut Score Settings
 - Appropriate process facilitated by vendors
 - Content-based discussions and recommendations
- Formal TAC meeting with IDOE at end of process
 - Reviewed cut score setting process
 - Analyzed teacher recommendations and results
 - Provided feedback and technical advice to the IDOE regarding cut score recommendations



Purpose of the Assessments

- Purpose of the Assessments: Accountability
 - ECA CCRA
 - CCRA portion of the Spring 2015 End of Course Assessments aligned to 2014 Indiana Academic Standards
 - CCRA portion not part of the graduation examination
 - NCSC
 - NCSC assessment aligned to 2014 Indiana Academic Standards



Assessment Participants

- **ECA CCRA**
 - **English/Language Arts**
 - Students enrolled in a course that counts as the second year of English credit
 - Vast majority of grade 10 Indiana students
 - **Mathematics**
 - Students that have not yet passed the Algebra I ECA
 - Predominantly retest students



Assessment Participants

- **NCSC***
 - English/Language Arts and Mathematics
 - Students with significant cognitive disabilities
 - Determined by Case Conference Committee

*For students who are unable to communicate and therefore cannot engage in the test once the administration begins, the assessment session is “closed” by the examiner.



ECA CCRA

ECA CCRA Cut Score Recommendations



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A View of the Data: ECA CCRA

English 10

Recommended Cut Scores: *Pass*

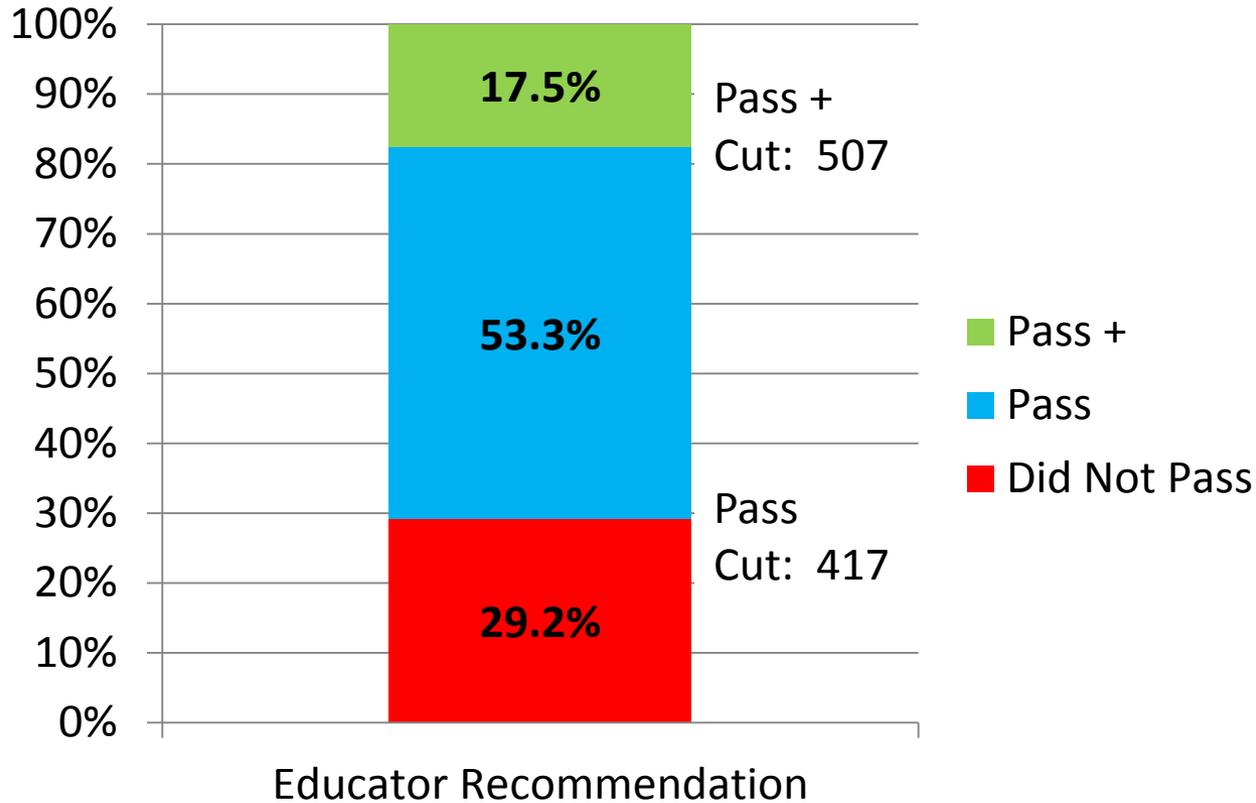
Grade	Educator	Minimum Score	Maximum Score
10	417	250	650

Recommended Cut Scores: *Pass+*

Grade	Educator	Minimum Score	Maximum Score
10	507	250	650



ECA CCRA English 10: Percent of Students by Performance Level



A View of the Data: ECA CCRA

Algebra I

Recommended Cut Scores: *Pass*

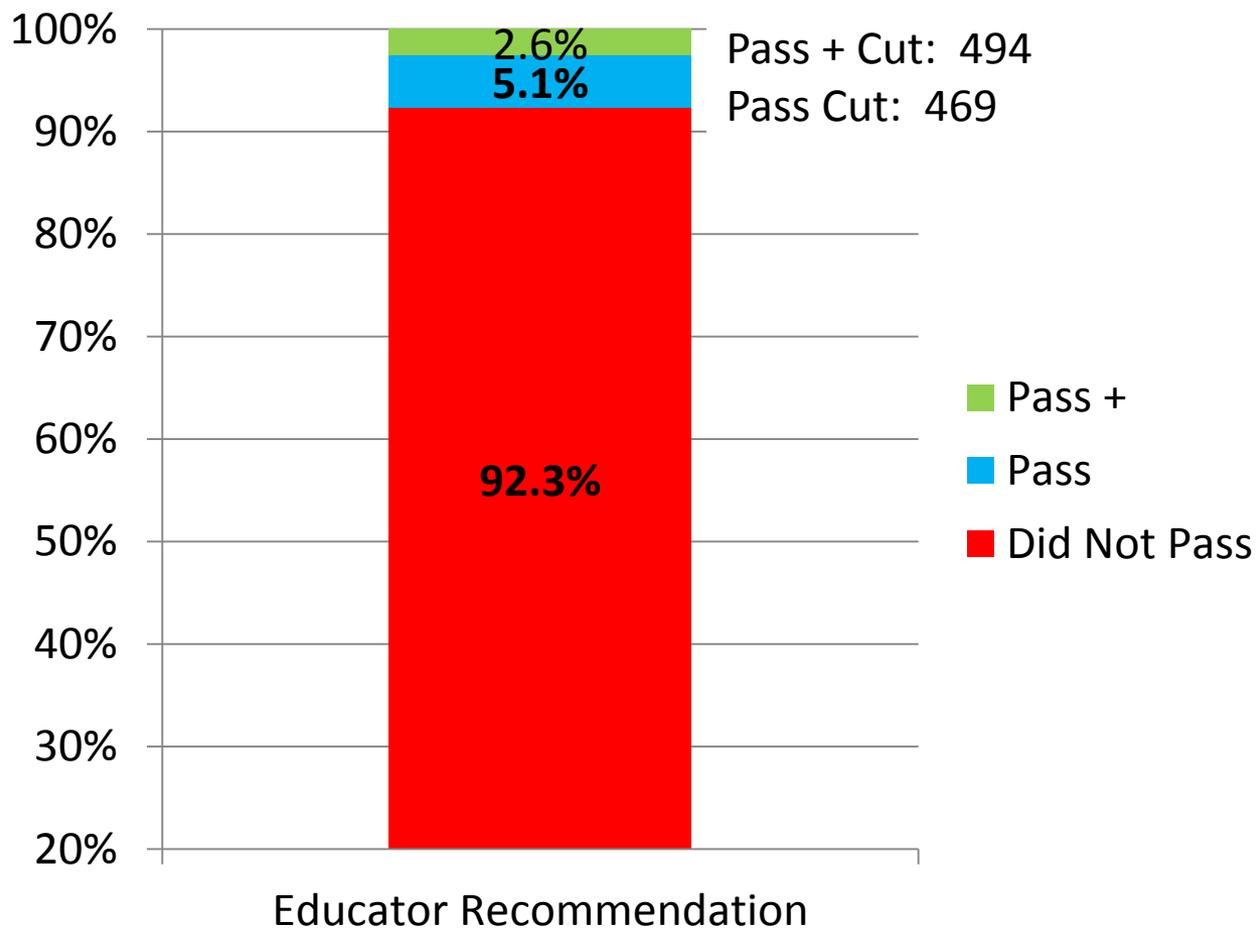
Grade	Educator	Minimum Score	Maximum Score
10	469	150	550

Recommended Cut Scores: *Pass+*

Grade	Educator	Minimum Score	Maximum Score
10	494	150	550



ECA CCRA Algebra I: Percent of Students by Performance Level



NCSC Cut Score Recommendations

Scale Score cut recommendations are indicated with “TBD” on the following slides and will be updated prior to September 16, 2015.

NCSC English/Language Arts

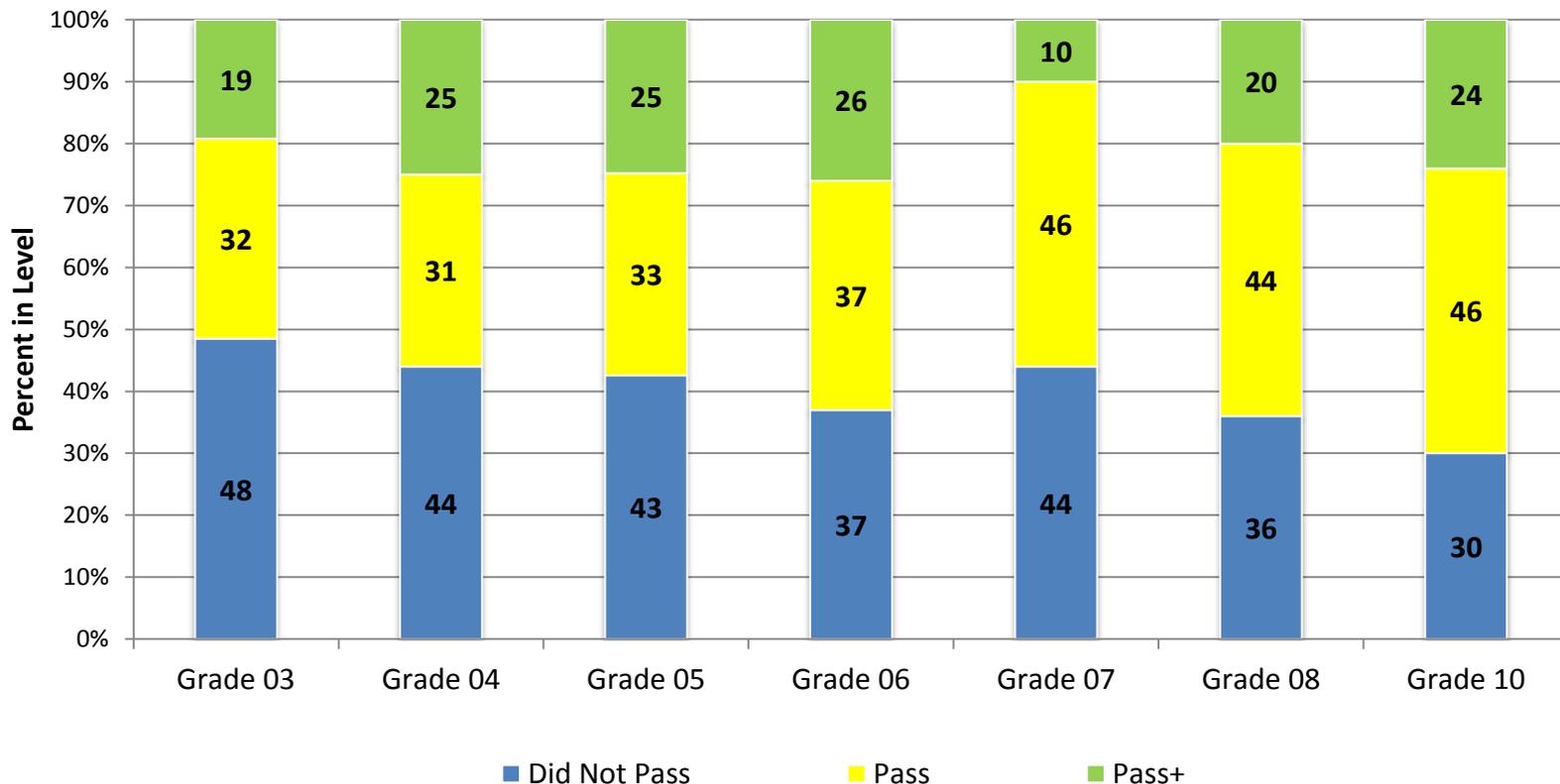
Recommended Cut Scores: *Pass* and *Pass+*

Grade	IDOE <i>Pass / Pass+</i>	Educator <i>Pass / Pass+</i>	Minimum Score	Maximum Score
3	TBD / TBD	TBD / TBD	TBD	TBD
4	TBD / TBD	TBD / TBD	TBD	TBD
5	TBD / TBD	TBD / TBD	TBD	TBD
6	TBD / TBD	TBD / TBD	TBD	TBD
7	TBD / TBD	TBD / TBD	TBD	TBD
8	TBD / TBD	TBD / TBD	TBD	TBD
10	TBD / TBD	TBD / TBD	TBD	TBD

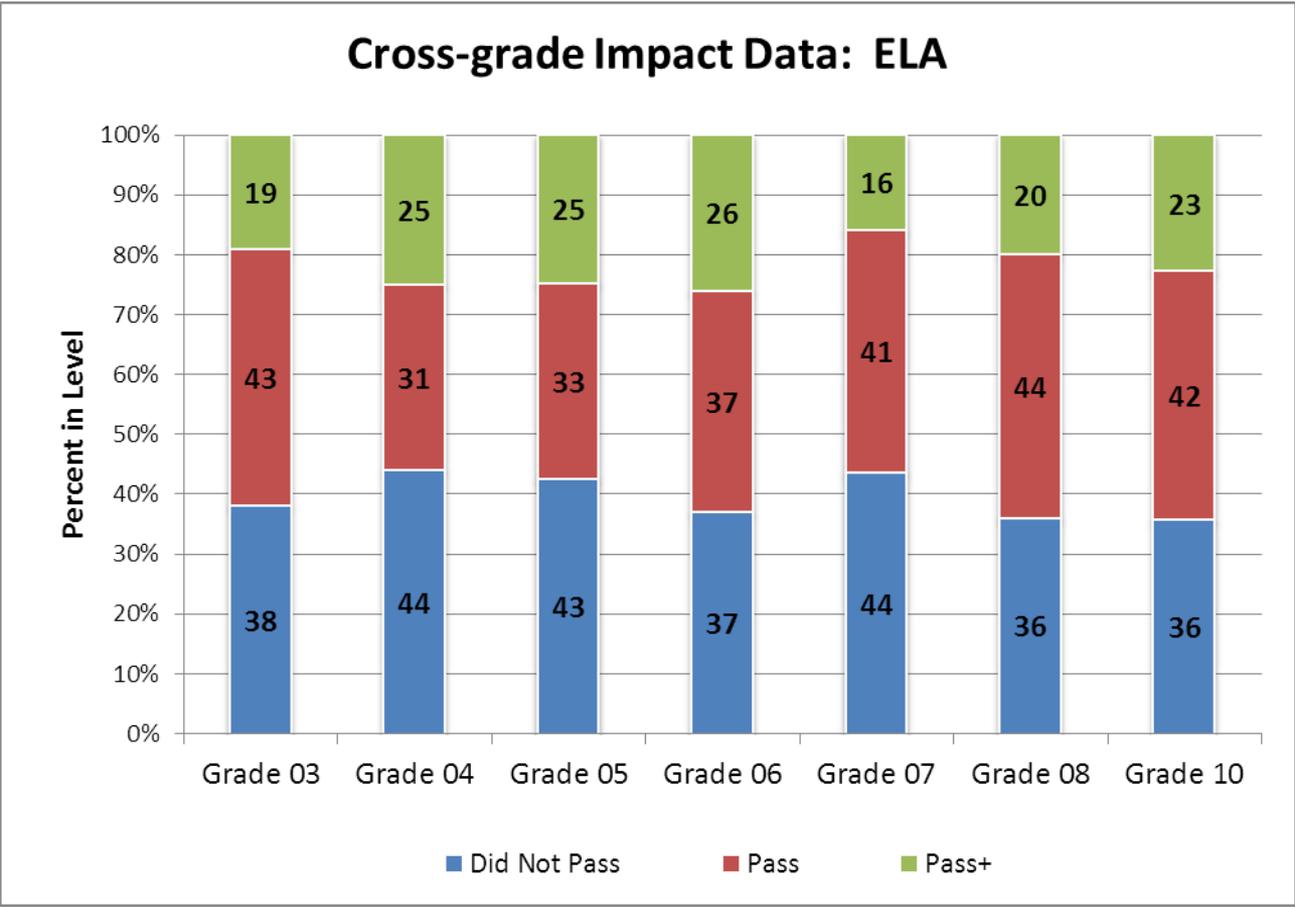


Educator Recommendations: ELA

Cross-grade Impact Data: ELA



IDOE Recommendations: ELA



Closed Test Data Included: ELA

For students who are unable to communicate and therefore cannot engage in the test once the administration begins, the assessment session is “closed” by the examiner.

Bar graphs representing test results including the students for whom the test was closed will be added on this slide prior to September 16, 2015.



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The background of this section features a green, curved line representing a hill. Along this line, there are several small black silhouettes of people in various walking or standing poses, moving from left to right across the hill.

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NCSC Mathematics

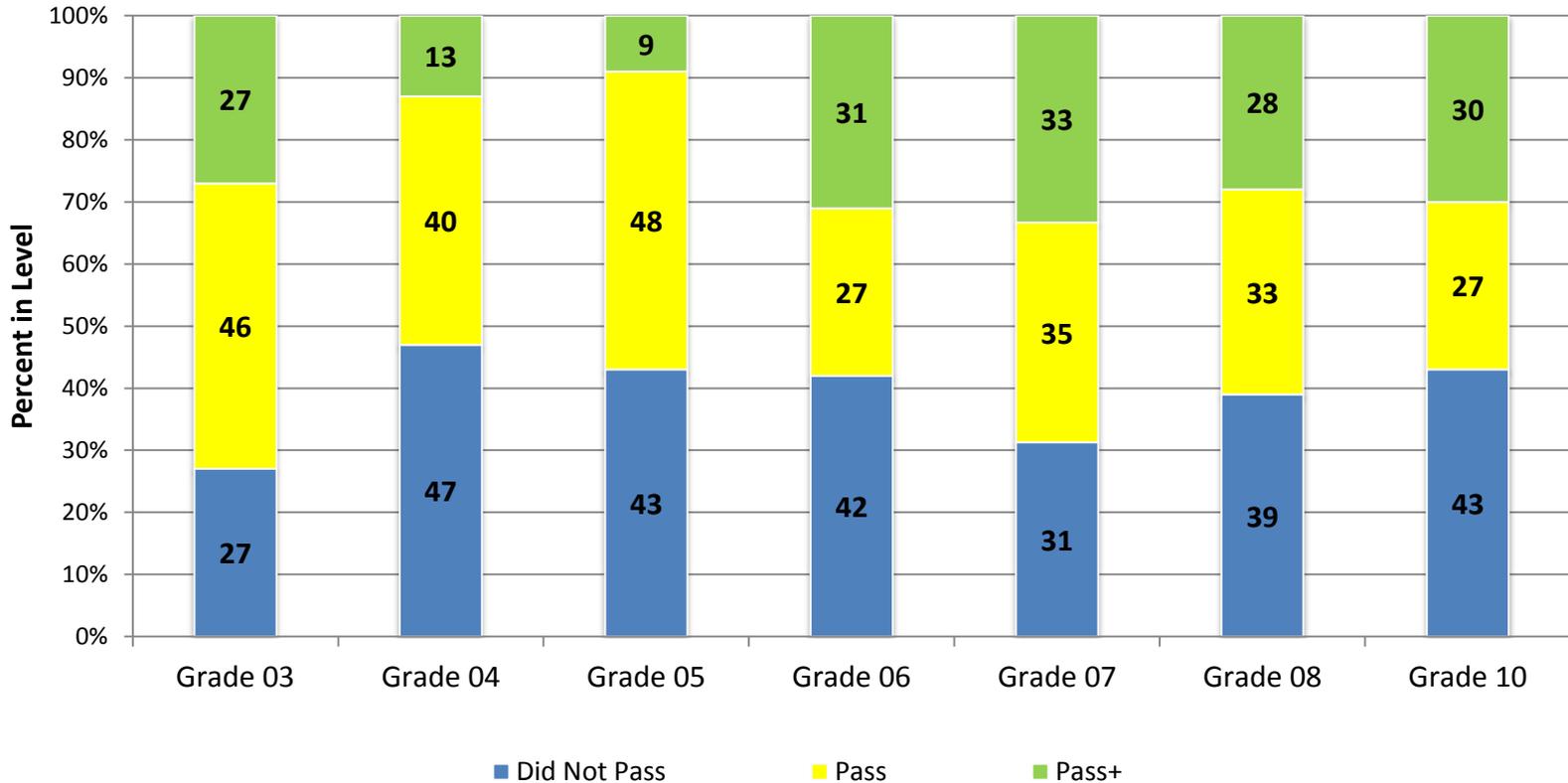
Recommended Cut Scores: *Pass* and *Pass+*

Grade	IDOE <i>Pass / Pass+</i>	Educator <i>Pass / Pass+</i>	Minimum Score	Maximum Score
3	TBD / TBD	TBD / TBD	TBD	TBD
4	TBD / TBD	TBD / TBD	TBD	TBD
5	TBD / TBD	TBD / TBD	TBD	TBD
6	TBD / TBD	TBD / TBD	TBD	TBD
7	TBD / TBD	TBD / TBD	TBD	TBD
8	TBD / TBD	TBD / TBD	TBD	TBD
10	TBD / TBD	TBD / TBD	TBD	TBD

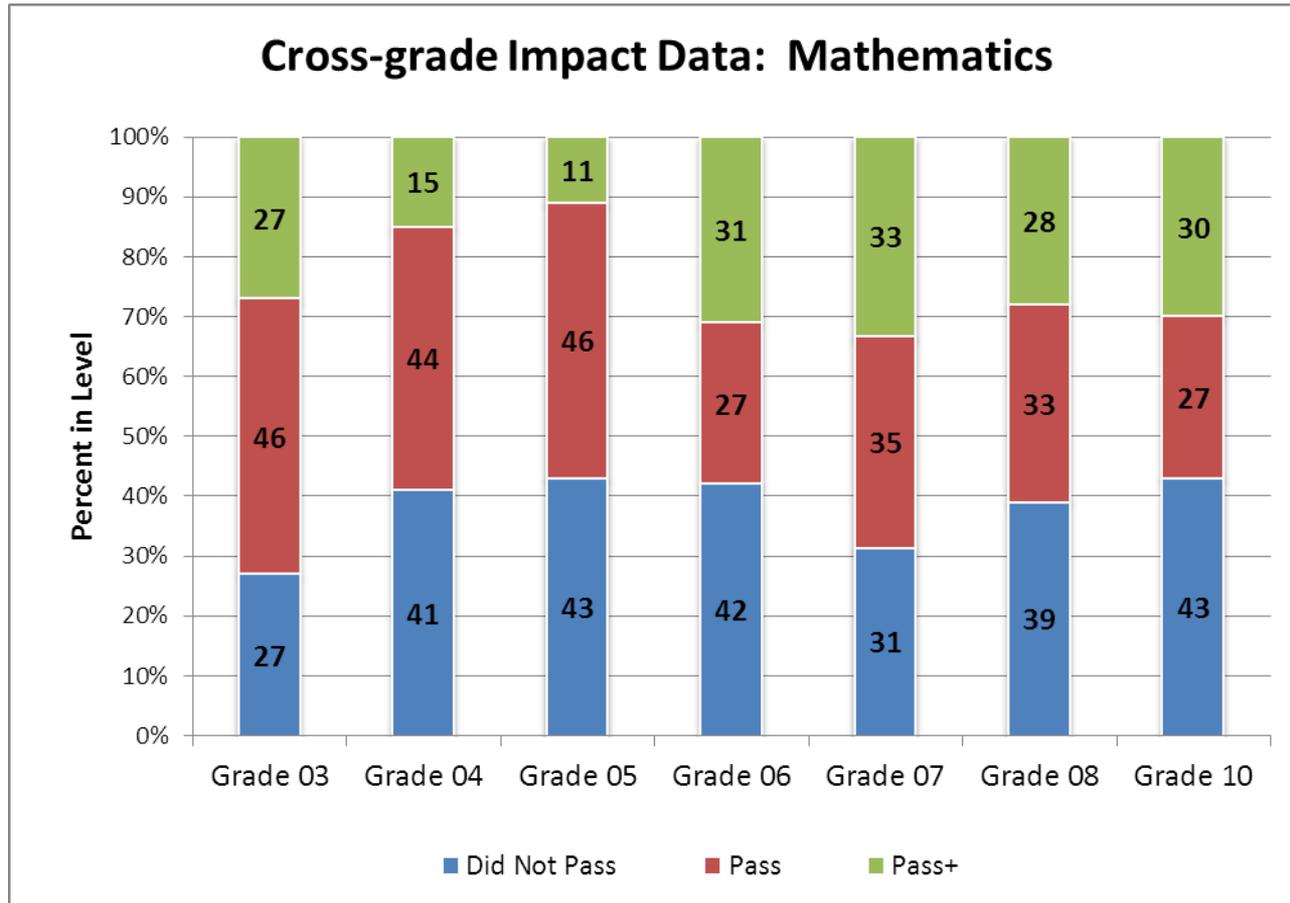


Educator Recommendations: Math

Cross-grade Impact Data: Mathematics



IDOE Recommendations: Math



Closed Test Data Included: Math

For students who are unable to communicate and therefore cannot engage in the test once the administration begins, the assessment session is “closed” by the examiner.

Bar graphs representing test results including the students for whom the test was closed will be added on this slide prior to September 16, 2015.

A series of small, dark blue silhouettes of people in various walking or running poses, arranged along a curved green line that represents a hill or path.

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Indiana Superintendent of Public Instruction

State Board Action Requested

- **Approval of cut score recommendations**
 - ECA College- and Career-Ready Assessment
 - NCSC Alternate Assessment
- **Approval of Performance Level Descriptors (PLDs)**
 - *Pass+*
 - *Pass*
 - *Did Not Pass*



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Indiana Superintendent of Public Instruction

Questions?

Thank You

Dr. Michele Walker, Director
Office of Student Assessment



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Indiana Superintendent of Public Instruction

Memo

To: Cynthia Roach, Senior Director of Accountability and Assessment, Indiana State Board of Education Staff;
Dr. Michele Walker, Director, Office of Student Assessment, Indiana Department of Education

From: Karla Egan, Nancy Hahn, Bill Auty, and Meagan Karvonen

CC: Brian Murphy

Date: September 8, 2015

Re: ISTEP+ CCRA Standard Setting (Algebra I and English 10) and NCSC Alternate Standard Setting

The purpose of this memorandum is to evaluate the appropriateness of the procedures used and the quality of implementation of the standard setting process for:

- 2015 ISTEP+ College- and Career-Ready Assessments (CCRAs) implemented by Questar
- 2015 Indiana NCSC implemented by Measured Progress

Evidence for this memorandum is based on three independent evaluators' on-site observations and review of materials. The evaluators for each standard setting are summarized in Table 1.

Table 1. Evaluation Team for Each Standard Setting Process

	ISTEP+ CCRA	NCSC
Evaluation Team	Dr. Karla Egan Dr. Nancy Hahn Dr. Bill Auty	Dr. Karla Egan Dr. Nancy Hahn Dr. Meagan Karvonen

This memorandum (1) summarizes the way in which panelists were chosen for each standard setting; (2) overviews the unique aspects of the implementation of each standard setting; and (3) evaluates the implementation of both standard setting processes. The vendor for each standard setting should produce a step-by-step technical report of the standard setting process for the Department. This standard setting technical report should summarize the panelist round-by-round recommendations, panelist readiness surveys, and panelist evaluations. This type of detailed analysis is beyond the scope of this memorandum.

Panelist Selection

For both workshops, the Indiana Department of Education (IDOE) purposefully selected panelists to reflect three factors: geographic region, school type (urban, suburban, rural), and poverty level. The IDOE provided a summary of the panelists' demographics. Table 2 shows the distribution of standard setting panelists by geographic region, Table 3 shows the distribution of standard setting panelists by school type, and Table 4 shows the distribution of standard setting panelists by poverty level. The evidence in these tables show that the panelists represented diverse backgrounds that reflect the factors deemed important by IDOE.

Table 2. Distribution of Standard Setting Panelists by Geographic Region

Geographic Region	ECA-CCRA S	NCSC
North	35%	38%
Central	55%	50%
South	10%	12%

Table 3. Distribution of Standard Setting Panelists by School Type

School Type	ECA-CCRA S	NCSC
Urban	20%	45%
Suburban	40%	26%
Rural	40%	29%

Table 4. Distribution of Standard Setting Panelists by Poverty Level

Poverty Level	ECA-CCRA S	NCSC
Low	90%	76%
High	10%	24%

The evaluation teams for each standard setting agreed that, after observing panelist discussions during the standard setting, the selected panelists appeared to be knowledgeable of the content area and of students. As shown in Table 5, over half of the panelists in each standard setting had more than 16 years of experience.

Table 5. Distribution of Standard Setting Panelists by Years of Experience

Years of Experience	ECA-CCRA S	NCSC
0-5	10%	10%
6-10	20%	21%
11-15	10%	17%
16+	60%	52%

All panelists actively participated in all tasks. The training provided the necessary knowledge for panelists to complete their tasks and engaged in academic content discussions. For all panels, no issues of panelists' personal agendas or domination of discussion by an individual or group of individuals were evident. The few issues that arose were comparatively minor and did not substantially affect the validity of the results.

Standard Setting Implementation

A modified Bookmark methodology was used for both the CCRA and NCSC standard setting processes. This is a content-based process that utilizes an ordered item booklet, in which the test questions are ordered from easiest to most difficult. Guided by performance level descriptors, panelists study the ordered test questions and place a cut score that separates the content students should know to enter a performance level (i.e., Does Not Pass, Pass, Pass+) from the content that is more than enough.

For both workshops, IDOE recruited Indiana educators to make recommendations about the content-based cut scores.

Implementation of the ISTEP+ CCRA Standard Setting

The standard setting for Algebra I and English 10 CCRA was held July 28 – 30, 2015 at the Sheraton North Hotel in Indianapolis. The panelists participated in three rounds of rating and discussion within their grade/content area. Dr. Michele Walker welcomed panelists to the process and overviewed the development of the ECAs. Dr. Walker also explained that the panelists would make recommendations that will be approved by the Indiana State Board of Education. Mary Rehm, Questar, provided an overview of the standard setting process. Following orientation and training, panelists split into their rooms to engage in the modified Bookmark process. Within each room, the Questar facilitators, Dr. Joe Orban and Dr. Dorota Staniewska, introduced tasks, facilitated discussion, and trained panelists. The panelists were reminded that their role at the standard setting was to provide content-based recommendations for cut scores based on the Indiana Academic Standards and the performance level descriptors.

The standard setting was conducted using laptops. Each panelist had his/her own laptop on which they studied the ordered item booklet and placed cut scores. The interface for the process was intuitive, and the panelists appeared to use it with ease.

Implementation of the Indiana NCSC Alternate Assessment

The standard setting for the Indiana NCSC Grades 3 through 8 and 10 was held August 18 – 21, 2015 at the Conrad Hotel in downtown Indianapolis. The panelists participated in three rounds of rating and discussion within their grade/content area. As with the ISTEP+ standard setting, Dr. Michele Walker welcomed panelists to the process and overviewed Indiana's test development process. Dr. Walker also explained that the panelists would make recommendations that will be approved by the Indiana State Board of Education. Dr. Susan IZard, Measured Progress, provided an overview of the standard setting process. Dr. Lee LaFond, Measured Progress, provided training on the Bookmark procedure. Following training, the panelists were split into their breakout rooms to engage in the Bookmark process.

The IDOE invited a group of volunteers from the standard setting process to discuss the coherence of the results across grades. Two educators from each content area and grade-band served in this capacity. Within each content area, panelists were shown the results across all grades. If panelists wanted to examine an area of disarticulation in the across-grade results, then the Measured Progress facilitators directed the panelists to consider the content of the OIB and PLDs prior to making changes. This allowed any recommended changes be tied to content. This process was repeated with IDOE staff and TAC members.

Measured Progress provided a team of skilled facilitators for each breakout room. Each facilitator had a script that outlined how the process should be implemented in each room. This ensured that the process was followed with fidelity across all of the rooms. Dr. Izard and Dr. LaFond floated between rooms and answered questions and resolved issues promptly. Throughout the process, members of the evaluation team observed that Measured Progress facilitators routinely guided panelists to use the performance level descriptors and to think of all students when recommending cut scores.

Evaluation of the Standard Setting Processes

Both vendors implemented the standard setting procedure with fidelity to their original design, and both adhered to best practices and AERA/APA/NCME standards. Table 6 describes each procedure's adherence to best practices in the field of standard setting.

Both evaluation teams observed that panelists were knowledgeable of the content and diligent in their cut score recommendations. At both standard setting events, panelists provided content-related rationales for placement of Bookmarks and did not appear to have a preconceived idea about the placement of Bookmarks. The content-based standard setting activities, overall, were conducted in a manner consistent with sound psychometric practices.

Table 7 shows how each procedure adhered to the AERA/APA/NCME standards. In both cases, the content-based standard setting process met the criteria represented in the *Standards for Educational and Psychological Testing*.

Limitations

There are limitations for interpreting this evaluation report. Only the procedural evidence of validity of the standard setting process was evaluated in this report. This is only one piece of information that should be collected when gathering validity evidence to support the proposed cut score. Procedural evidence is important, and it provides support that the process used to establish cut scores was reasonable and implemented with fidelity to professional standards. While procedural evidence is necessary, it is not sufficient in establishing validity evidence for a proposed cut score. As with any assessment system, additional studies should be planned to examine the internal and external validity evidence to support the interpretations and use of the ISTEP CCRA and the Indiana NCSC.

Conclusions

Based on observations and review of standard setting materials, it is the opinion of the evaluation teams that the standard setting process implemented by Questar for the ISTEP CCRA and the standard setting implemented by Measured Progress for the Indiana NCSC was executed in accordance with best practices and industry standards in the field of psychometrics.

Table 6. Adherence of the Standard Setting Process to Best Practices

	Best Practice	ISTEP+ CCRA Standard Setting Evaluation	Indiana NCSC Standard Setting Evaluation
Panels	Panels should be recruited so that they are representative of important demographic groups, and they should be knowledgeable of the content area and of students. Panels should also be sufficiently large.	Serious attention was given to create panels that were representative of Indiana based on three factors: geographic region, school type (urban, suburban, rural), and poverty level. The panelists consisted of approximately 10 panelists each. Within each content area, the panelists worked as a single group to set cut scores. It is preferable, but not required, to divide the group into small groups. This provides a mechanism for checking generalizability of the performance standards (Hambleton, Pitoniak, & Copella, 2012). Observations confirmed that all of the panelists were knowledgeable of the content and were diligent in setting the standards.	The same method of panelist selection was used for the Indiana NCSC standard setting as for the ISTEP+ CCRA standard setting. The panels appeared to be sufficiently diverse. The panels consisted of four to six panelists each. In the future, IDOE should consider larger panels. Observations confirmed that all of the panelists were knowledgeable of the content and were diligent in setting the standards.
Method	The standard setting method should be appropriate for the type of test administered and the understandability of the judgment task.	The Bookmark method was appropriate for use with the ISTEP+, which was a mixture of item types. The judgment task appeared to be understandable for panelists. In the future, we recommend that Questar	Again, the Bookmark method was used. It was appropriate for the NCSC test, which consists of selected-response items. The Measured Progress team provided training and regularly checked in with panelists to ensure understanding

Best Practice	ISTEP+ CCRA Standard Setting Evaluation	Indiana NCSC Standard Setting Evaluation
	conduct more extensive training for all standard setting tasks.	of the standard setting task.
<p>Implementation There are various aspects of implementation that must be considered when evaluating a standard setting. These include: (a) training; (b) using PLDs, (c) taking the test; (d) using an iterative process; (e) providing opportunity for discussion; and (f) presenting impact data. In addition, the method should be efficient, allow transparency in the computation of cut scores, and provide time for evaluations.</p>	<p>The purpose of the assessment and the uses of the test scores were explained to panelists during the opening session. Panelists were exposed to the assessment and how it was scored. The panelists engaged in an iterative process and used the descriptions of the performance categories effectively. They were shown impact data following the second round and again in the final round. The method was implemented efficiently, and panelists completed evaluations.</p> <p>While the standard setting process followed best practices in standard setting implementation and the evaluation team agrees that it was a sound process, there is room for improvement in future standard settings. In the future, we suggest taking the test as it was administered to students instead of in the ordered item booklet. We also suggest that exemplar responses are provided for constructed-response items.</p>	<p>The standard setting followed best practices in implementation. The panelists were provided with ample training and time for questions. The panelists extensively studied the PLDs and came back to them when recommending cut scores. The panelists were administered the test in the same manner as the students were administered the test. An iterative process was used, and panelists were shown impact data following the second round and again in the final round. Panelists completed evaluations.</p> <p>Following the standard setting, an articulation committee met to examine the coherence of the system of cut scores. This is an important component of modern standard setting where cut scores are set in contiguous grades. This provides panelists with an opportunity to examine the consistency of recommendations across grades.</p>

Table 7. Adherence of the Standard Setting Process to AERA/APA/NCME Standards

Standard	Text of Standard	ISTEP+ CCRA Standard Setting Evaluation	Indiana NCSC Standard Setting Evaluation
5.21	When proposed score interpretation involves one or more cut scores, the rationale and procedures used for establishing cut scores should be documented clearly.	Standard 5.21 was fulfilled through Questar’s standard setting design in which the rationale and procedures were first documented. During the opening session, the rationale and procedures were explained to panelists.	Standard 5.21 was fulfilled through Measured Progress’ standard setting design in which the rationale and procedures were first documented. During the opening session, the rationale and procedures were explained to panelists.
5.22	When cut scores defining pass-fail or proficiency levels are based on direct judgments about the adequacy of an item or test performances, the judgmental process should be designed so that the participants providing the judgments can bring their knowledge and experience to bear in a reasonable way.	As explained in the previous section, the Bookmark procedure provided a reasonable means for panelists to share their knowledge and experience through group discussions and to make judgments in an intuitive manner. This should be verified through examination of the panelist evaluations.	Again, the Bookmark procedure provided a reasonable means for panelists to share their knowledge and experience through group discussions and to make judgments in an intuitive manner. Again, this should be verified through examination of the panelist evaluations.
5.23	When feasible and appropriate, cut scores defining categories and distinct substantive interpretations should be informed by sound empirical data concerning the relation of test performance to the relevant criteria.	Empirical data was presented to panelists based on Round 2 recommendations. This data was based on the Spring 2015 implementation of the ISTEP CCRA’s. Panelists were again shown impact data based on their final cut scores.	Empirical data was presented to panelists based on Round 2 recommendations. This data was based on the Spring 2015 implementation of the Indiana NCSC. Panelists were again shown impact data based on their final cut scores.