APPROVAL OF SCORES FOR THE WASHINGTON COMPREHENSIVE ASSESSMENT OF SCIENCE (WCAS) AND THE WASHINGTON ACCESS TO INSTRUCTION AND MEASUREMENT (WA-AIM)

Prepared for the August 2018 special Board meeting

Policy Considerations

The State Board of Education (SBE) is required under RCW 28A.305.130(4)(b) to identify the scores students must achieve to meet standard on statewide assessments, and the scores high school students must achieve to earn a Certificate of Academic Achievement. At the August 2018 special Board meeting, Deb Came, Assistant Superintendent; Anton Jackson, Director of Assessment Development; and Dawn Cope, Science Assessment Lead, with the Office of the Superintendent of Public Instruction (OSPI), as well as Gary Phillips with AIR, consultant to OSPI, will present recommended threshold scores, defining four achievement levels (Levels 1, 2, 3, and 4), for:

- Washington Comprehensive Assessment of Science (WCAS)
- Washington Access to Instruction and Measurement (WA-AIM) for science
- WA-AIM tenth grade English Language Arts and Math

Key questions may include:

- Do the recommended scores, and the process for determining them, seem reasonable and fair to students?
- How will the recommended scores affect students and the system? Will more or fewer students meet standards than in the past? Are there processes and supports in place that are sufficient to address students who do not meet standard?
- Does the process and the resulting score appropriately reflect the standards and grade level expectations?

This memo provides background information on the WCAS and WA-AIM. In addition, included in the packet is a summary of responses from the ESD Science Coordinators/LASER (Leadership and Assistance for Science Education Reform). Other key question concerning the system are:

- Have the standards been implemented with fidelity across the state so that students have an equitable opportunity to learn the content and demonstrate their knowledge on the assessment?
- What role might the Board have in supporting the system for standards implementation?

Background

WASHINGTON COMPREHENSIVE ASSESSMENT OF SCIENCE (WCAS)

OSPI presented on WCAS and the processes for developing recommended threshold score at the January 2018 Board meeting. Members may wish to review the OSPI presentation from that meeting segment to re-familiarize themselves with the score-setting process.

WCAS is aligned to Next Generation Science Standards and was developed by the state. Multi-state consortia for developing assessments, such as the Smarter Balanced Consortium or the Partnership for the Assessment of Readiness for College and Career (PARCC) that developed assessments aligned with the Common Core State Standards, do not exist for the Next Generation Science Standards. Washington is among the first states to develop and implement a new assessment aligned to Next Generation Science Standards.

Development of the assessment started in Spring of 2015. A limited pilot was conducted in 2016. An embedded field test, with items from the new assessment included in the old assessment, the Measurements of Student Progress (MSP), was conducted in fifth and eighth grades in 2017. Also in 2017, high school field testing was conducted on a voluntary basis.

The assessment was administrated to fifth, eighth, and eleventh graders in the first full implementation in Spring 2018.

Features of the WCAS include:

- Online testing using the same online engine as the Smarter Balanced assessments. (The WCAS is not computer adaptive, unlike the Smarter Balanced assessments.)
- Will take approximately the same amount of time as previous science tests, which may be given in multiple sessions.
    - Grade 5: 90 minutes
    - Grade 8: 110 minutes
    - Grade 11: 120 minutes
- Item types include selected response, technology enhanced (drag and drop, drop-down, simulations, graphing), constructed response (equations, short answers).

More information on the development and implementation of WCAS may be found in OSPI's WCAS Frequently Asked Questions, and January 24, 2018 webinar presentation slides about the Test Design & Item Specifications Release.

At the August 2018 special Board meeting, the Board will consider approving a set of scores for the WCAS: three scores defining four achievement levels (Levels 1, 2, 3, and 4) for each tested grade. Student who score a Level 3 or higher will be considered to have met standard. Next Generation Science Standards are intended to identify the science all K-12 students should know, so a Level 3 or higher is intended to indicate proficiency in the science content all K-12 students should know.

Students in the Class of 2021, eleventh graders in the Spring of 2020, will be first class who will need to meet standard, or pass an alternative, as a requirement for graduation.

WASHINGTON ACCESS TO INSTRUCTION AND MEASUREMENT (WA-AIM)

Under RCW 28A.155.045, students who are not appropriately assessed by the regular high school assessment system, even with accommodations, may earn a certificate of individual achievement (CIA). The certificate may be earned using multiple ways to demonstrate skills and abilities corresponding to

students' individual education programs (IEPs). The student's IEP team makes the determination of whether the state's high school assessment system is appropriate for the student based on the student's learning plan, post-secondary goals, and previous testing history. WA-AIM is an alternate assessment based on alternate achievement standards aligned to Common Core and Next Generation Science Standards for students with significant cognitive challenges.

Legislation in 2017 (ESHB 2224) established that the year that most high school students will take statewide ELA and math assessments will be tenth grade, rather than eleventh grade. Since WA-AIM is the high school state assessment for some students, scores on WA-AIM 10th grade assessments in ELA and Math need to be identified and approved by the Board. In addition, a new WA-AIM science assessment has been developed, so WA-AIM science threshold scores will also need to be identified and approved by the Board.

Threshold and exit exam scores were last approved by the Board for WA-AIM in August 2015. WA-AIM may be used by some students as a graduation alternative for a Certificate of Individual Achievement. Preliminary information from OSPI suggests that the exit exam score for WA-AIM will not need to be adjusted. More information about WA-AIM and the standard-setting process may be found in the August 2015 Board meeting memo and a video created by OSPI to describe the standard-setting process in 2015.

Action

At the August 2018 special Board meeting the Board will consider threshold scores on WCAS, and threshold and graduation scores on WA-AIM for approval.

If you have questions about this memo please contact Linda Drake at linda.drake@k12.wa.us.

SUMMARY OF RESPONSES FOR THE STATE BOARD OF EDUCATION FROM EDUCATIONAL SERVICE DISTRICT SCIENCE COORDINATORS AND LASER DIRECTORS

Compiled by Member Jeff Estes, August 2018

IF the Washington State Science Learning Standards (WSSLS) are to be implemented with fidelity, including a strong emphasis on equity, **THEN** this implementation must include the alignment of key components of our education system in ways that support the vision of ***A Framework for K-12 Science Education*** (National Research Council) and the ***Next Generation Science Standards/NGSS*** (National Research Council, National Science Teachers Association, American Association for the Advancement of Science and 26 lead author states, including WA State), with fidelity to the intent described in the 13 appendices of NGSS. These system components include 1) purpose, 2) policies, 3) programs, 4) practices and 5) partnerships.

Outreach Efforts

In addition to NGSS & Communication "subject matter expert" presentations at its January (Ellen Ebert and Phil Bell), March (Puget Sound area Science Fellows and Ingrid Stegemoeller, Ready Washington) and May (Mike Brown, Mark Cheney & Jackson Jamieson, ESD 105) meetings, an outreach effort, via e-mail, was conducted in June 2018. This outreach was a focus group effort involving those engaged in regional WSSLS/NGSS implementation. The e-mail was sent to nine LASER (Leadership and Assistance for Science Education Reform) leaders. These leaders, serving nine regions of Washington beyond the south central region represented at our May meeting (i.e., Mountain to Harbor/Capital LASER, NC LASER, NE LASER, NW LASER, North Sound LASER, Olympic Peninsula LASER, SE LASER, South Sound LASER and SW LASER) were asked to respond to the same questions to which Mark, Mike and Jamieson responded at our Yakima meeting.

Themes Taken From LASER Director Responses (includes expert testimony from the May SBE meeting in Yakima)

1. **Purpose** - Despite adoption by Washington State of the WSSLS/NGSS standards in 2013, implementation is uneven, even spotty, making the opportunity to learn science well an unrealized goal for many students. Emphasis on ELA and math have robbed time for science from the elementary school day, while the state assessments kept high school efforts in science for all students largely focused on WA's 2009 science standards (i.e. biology) until recently. Whether an issue of time or programmatic focus, the WSSLS/NGSS commitment to "All Standards for All Students" remains an unrealized equity-focused outcome nearly five years after adoption of these science standards. Due to uneven

emphasis on and resource commitment to science, it continues to be a "step child" to ELA and math implementation when it comes to curriculum, professional development, materials & equipment, administrative support and community support (particularly at the elementary level). Given the nature and challenge of three-dimensional learning articulated in *The Framework* and *NGSS* documents, attainment of the standards and [SBE's] commitment to equity within science is at risk. One respondent framed this as a civil right that is not being met.

2. **Policy** – There are examples of local and regional policy decisions/work that enable and help drive the implementation of the science standards with equity, but they are largely individually driven (either by school or district) and have not taken hold across the state system. Some regions (e.g. south central and southwest WA) seem to be making greater inroads, but even they cite implementation problems, particularly at the high school level. Resources (i.e. grants, etc.) seem to be an enabling factor locally/regionally, but more targeted resources are needed to reach scale, whether it be at a local, regional or state scale. Policy work designed to drive equity seems to be still at early stages focusing more on curricular issues (i.e., materials adoption, course pathways, etc.) with efforts to address equity in deeper ways within science (and school institutions) still to be addressed. Many of these respondents clearly identify the lack of policy efforts addressing time and quality of science instruction at the elementary level as a large barrier to WSSLS/NGSS implementation. Others point to existing culture within high schools that are slowing implementation and may require policy levers to accelerate transition to the WSSLS/NGSS. Emphasized in the feedback were the challenges faced by small, poor and rural and remote districts in accessing the knowledge and developing local and/or regional capacity/capabilities to respond to the new emphasis for science learning/teaching represented by the standards.

3. **Programs** – The consensus of feedback indicates there is an asset base upon which to build. That is, there are historical efforts in curriculum, professional learning, materials & equipment, and administrative and community support upon which to build. Comments would suggest that some LASER Alliance Directors are more optimistic about the ability of these assets to enable the implementation of the new science standards with fidelity, including equity, than others. The nuances in the responses point toward other components of this aligned system as being key to program implementation, namely 1) the establishment of policies driving change, 2) efforts to change educator practice, 3) science and STEM leadership among administrators, and 4) strategies that successfully include partners around a commonly held vision for K-12 science. There are efforts that are very basic to the challenge of WSSLS implementation as well as those that clearly are engaged in more advanced efforts. Since programmatic efforts are at the heart of what schools deliver, finding ways to increase the robustness of this asset base is key to WSSLS implementation at scale.

4. **Practices & Partners** – Themes that seem to emerge here deal with such issues as 1) teacher/principal leadership, 2) change fatigue and/or resistance to change, 3) relationship management between the education and business communities, and 4) educator and stakeholder knowledge and beliefs about science learning and teaching. There are examples of education-driven (i.e., Science Fellows) and business/community-drive (STEM Networks) efforts related to WSSLS/NGSS implementation. Some regions seem to have

established stronger relationships between such efforts which suggests that there may be some need for cross-training/facilitation (or communications about best practices) around the desirability of aligning their efforts for impact. Do they share a similar vision? Are their missions compatible? Are goals, strategies and actions working toward shared outcomes? Who is responsible for what? How do they make all this work so that the "All Students/All Standards" goal is achieved?

5. **Recommended SBE Actions** – Responses indicate desired SBE actions in its policy, oversight and advocacy roles. From a policy perspective, it is clear that these respondents are asking for a remedy to the lack of instructional time for science at the elementary. All see the focus on ELA and math as a major reason for lack of time for elementary science. Some even go so far as to suggest that there should be a mandate for minutes of elementary science instruction. Responses also show a strong interest in marrying WSSLS/NGSS implementation to two high-level interests of the SBE (i.e., equity and competency-based learning). In other words, they encourage us to connect science to those SBE efforts that transcend a single subject area, suggesting equity and competency-based learning could be demonstrated by concrete examples in science. Can we explicitly connect science to our equity and competency-based programs/crediting agenda? Regarding our oversight responsibilities, one respondent encouraged SBE to be very active in its efforts: "…take up is the absolute necessity for all districts to engage ALL STUDENTS in science and STEM education... [and conduct] outreach to those districts that choose to not focus time and effort on NGSS implementation and implore them from an equity and civil rights perspective!" Most often mentioned in the responses was a request for SBE advocacy for science as it relates to things like time, funding, ESSA accountability measures, Legislative support, improved professional development for administrators and teachers (including the recruitment and preparation of individuals into science/STEM teaching), and communications with the public about the importance of science learning for all students (i.e., Science and its relationship to WA jobs/economic growth, citizenship and personal decision making).

PRELIMINARY SLIDES. FINAL PRESENTATION TO BE DISTRIBUTED ON AUGUST 9

Setting Achievement Levels:

Washington Comprehensive Assessment of Science
&
Washington Access to Instruction & Measurement (Science, HS Math, and HS ELA)

STATE BOARD OF EDUCATION

AUGUST 9, 2018, 1–4:30 P.M.

OSPI BROUILLET CONFERENCE ROOM, OLYMPIA, WA

Presenters

Deb Came, Ph.D., Assistant Superintendent of Assessment and Student Information, OSPI

Anton Jackson, Director of Assessment Development, OSPI

Dawn Cope, Science Assessment Lead, OSPI

Michael Middleton, Director of Select Assessments, OSPI

Gary Phillips, Ph.D., American Institutes for Research (AIR)

Agenda

- Achievement level setting approval process
- Description of achievement level setting events
  - Composition of panel
  - Achievement level setting activities
- Recommendations from achievement level setting panels
- OSPI recommendation to the Board
- Board action

Role of State Board

RCW 28A.305.130 Powers and duties—Purpose

(4) For purposes of statewide accountability:

(b)(i) Identify the scores students must achieve in order to meet the standard on the statewide student assessment. The board shall also determine student scores that identify levels of student performance below and beyond the standard. The board shall set such performance standards and levels in consultation with the superintendent of public instruction and after consideration of any recommendations that may be developed by any advisory committees that may be established for this purpose;

Achievement Level Setting Approval Process: Purpose of Today's Action by the Board

- The Office of Superintendent of Public Instruction is recommending "cut scores" for:
  - Washington Comprehensive Assessment of Science (WCAS) in grades 5, 8, and 11.
  - Washington Access to Instruction & Measurement (WA-AIM) Science in grades 5, 8, and 11.
  - WA-AIM Mathematics & ELA in High School (grade 10).
- Each assessment has three cut scores, separating four levels of student performance:
  - The cut between Level 1 and Level 2
  - The cut between Level 2 and Level 3 (the "proficient" cut)
  - The cut between Level 3 and Level 4
- The Boards' cut scores will be used to report the 2018 results, and will be used in future years until such time as standards are revised or revisited.

Achievement Level Setting Approval Process: Approval of the Procedures

- The new Achievement Level Setting process in science began in October 2013 when the Next Generation Science Standards (NGSS) were adopted as the new science learning standards.
- The State Board and the Superintendent's national technical advisory committee on assessments (NTAC) reviewed and approved the process to be used for the 2018 WCAS Achievement Level Setting.
- The WA-AIM methodology was reviewed and approved by NTAC and follows the same process used in 2015 and 2016 for previous ELA, Math, and Science cut-score setting.
- New assessments aligned to the new learning standards (WCAS and WA-AIM) were given to students this spring.

Achievement Level Setting Approval Process: WCAS Approval of the Procedures

Date	Event
October 2013	NGSS Adopted
2013–15	NGSS began to be phased in to classrooms state-wide
September 2017	**NTAC reviewed & approved Achievement Level Setting plan**
November 2017	SBE briefed on WCAS & Achievement Level Setting plan
November 2017	Draft Achievement Level Descriptors (ALDs) developed by science educators from around the state.
January 2018	**SBE approved Achievement Level Setting plan**

Achievement Level Setting Approval Process: WCAS Approval of the Procedures

Date	Event
Spring 2018	Students in grades 5, 8, & 11 took the WCAS assessments for the first time.
July 2018	**Alignment Study**
August 2018	Achievement Level Setting • Grade-level panels • Articulation panel • Office of Superintendent of Public Instruction recommendation
August 2018	**SBE sets the cut scores**
September 2018	Scores released

Achievement Level Setting Approval Process: WA-AIM Approval of the Procedures

Date	Event
October 2013	NGSS Adopted
September 2017	NTAC reviewed & approved Achievement Level Setting plan
February 2018	**Alternate Achievement Level Descriptors (AALDs) Draft**
July 2018	Achievement Level Setting • Grade-level panels • Articulation panel • Office of Superintendent of Public Instruction recommendation
July 2018	Alignment Study
August 2018	**SBE sets the cut scores**
September 2018	Scores released

WCAS Achievement Level Setting: Recommendations from multiple sources

Contrasting Groups Study (n=84 teachers; 4,472 students)

- Individual ratings of students by their science teacher before the test

Grade-level panels (n=30 per grade)

- Implemented Achievement Level Setting activities across three days, resulting in a set of recommended cut scores

Articulation panel (n=__ participants from across the grade-level panels)

- Reviewed grade-level panel recommendations, resulting in a recommendation of "____"

WCAS Achievement Level Setting: Composition of grade-level panels

Category	Grade 5	Grade 8	Grade 11
Total number	**30**	**30**	**30**
Classroom teachers			
District level or ESD staff			
Specialized training for working with students with disabilities and/or English learners			
% west of Cascades			
% from districts w/student population at or above the state percentage of white students			
% from districts at or above the state average Free/Reduced meals			

Data forthcoming on the actual participants of the Achievement Level Setting

WA-AIM Science Achievement Level Setting: Composition of grade-level panels

	Grade 5	Grade 8	Grade 11
Total number	**11**	**21**	**10**
Classroom teachers	11	21	10
Specialized training for working with students with disabilities and/or English learners	11	20	9
% west of Cascades	64%	67%	70%
% from districts w/student population at or above the state percentage of white students	64%	67%	70%
% from districts at or above the state average Free/Reduced meals	27%	43%	55%

WA-AIM ELA and Math Achievement Level Setting: Composition of grade-level panels

	HS ELA	HS Math
Total number	**8**	**7**
Classroom teachers	8	7
Specialized training for working with students with disabilities and/or English learners	7	6
% west of Cascades	63%	57%
% from districts w/student population at or above the state percentage of white students	75%	86%
% from districts at or above the state average Free/Reduced meals	86%	86%

WCAS Achievement Level Setting: Summary of Activities August 6–8

Orientation to test development and achievement level setting process

Taking the online WCAS

Examining the Achievement Level Descriptors (ALDs)

Ratings using an Ordered Item Booklet (OIB)

- Round 1 (Data from Contrasting Groups study)
- Round 2 (Impact data: state percent at each item)
- Round 3 (Item difficulty values)

Articulation Panel

WA-AIM Achievement Level Setting: Summary of Activities July 24-26

Orientation to test development and achievement level setting process

Overview of WA-AIM administration

Examining the Alternate Achievement Level Descriptors (AALDs)

Ratings using Profile Sorting Method

- Round 1 (Impact data)
- Round 2 (Contrasting Group Study Data and new Impact Data)
- Synthesis

Articulation Panel

Alternate Achievement Level Descriptor Refinement

WCAS Summary of recommendations from grade-level & articulation panels: **Levels 3 and 4**

Placeholder for graphics of recommendations for % of students in Levels 3 and 4

WA-AIM Summary of recommendations from grade-level & articulation panels: **Levels 3 and 4**

Placeholder for graphics of recommendations for % of students in Levels 3 and 4

Summary of recommendations from grade-level & articulation panels: **all four levels**

Placeholder for graphics of recommendations for % of students in Levels 1 through 4

Proposed Cut Scores

Insert Proposed Scores

Board Action

Questions

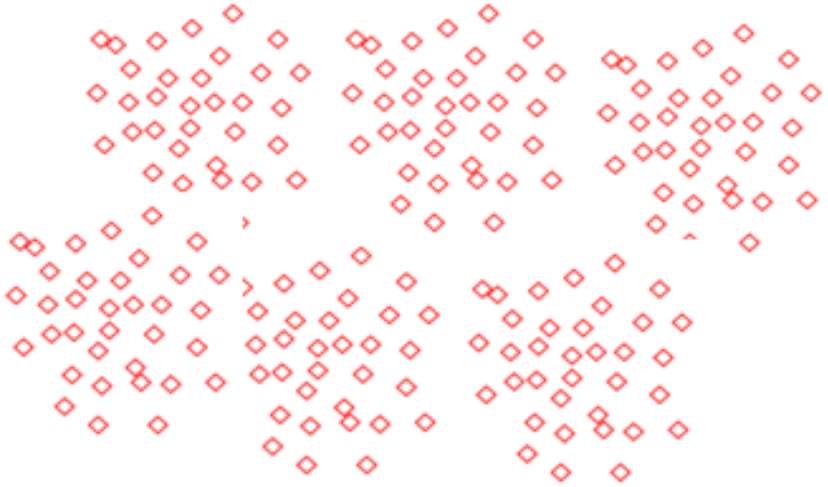
Discussion

Cut score decision

Additional Slides

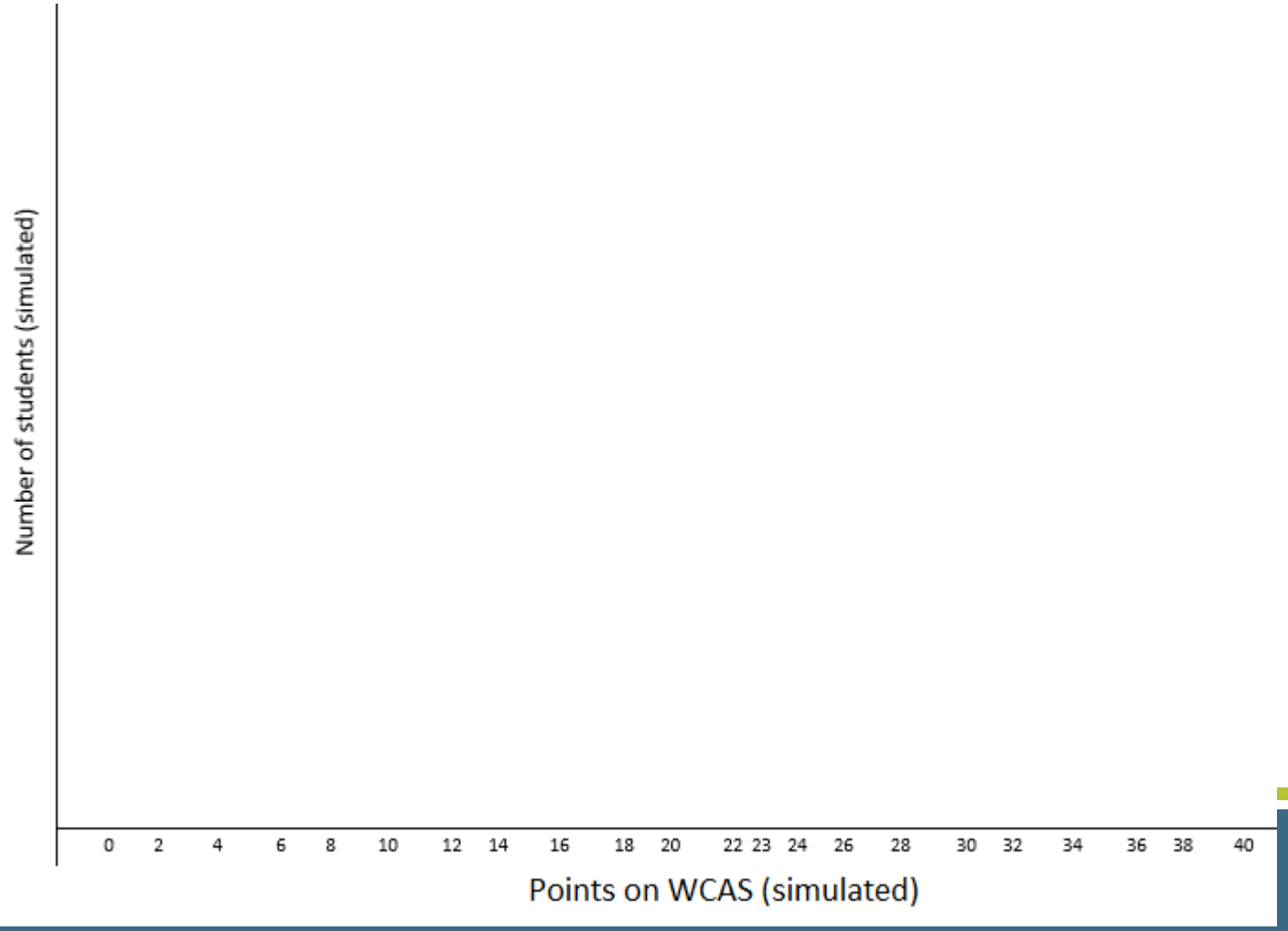
Contrasting Groups Study Example: Students are put into two groups

Predicted to be Level 2 or below

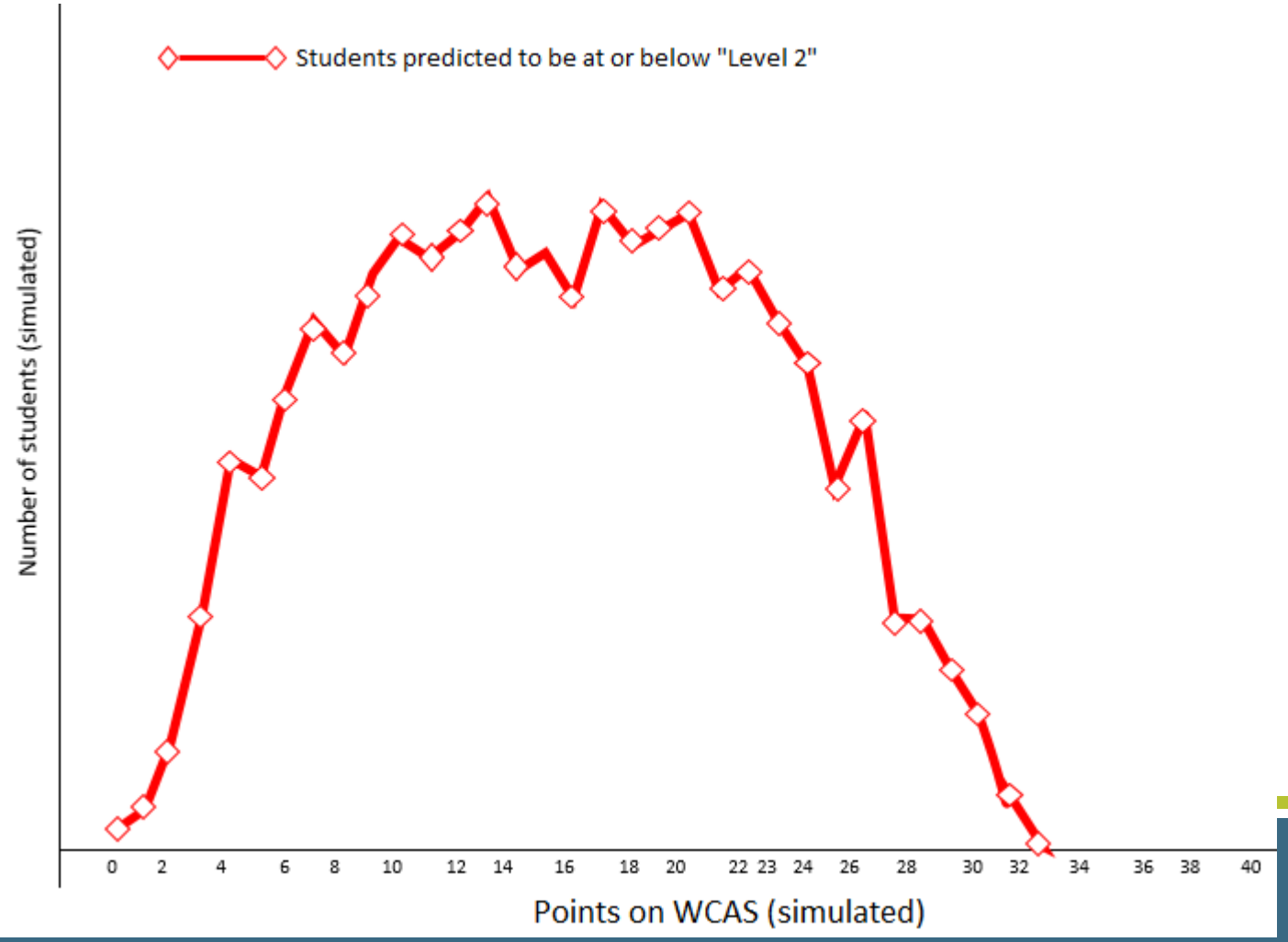


Predicted to be Level 3 or above

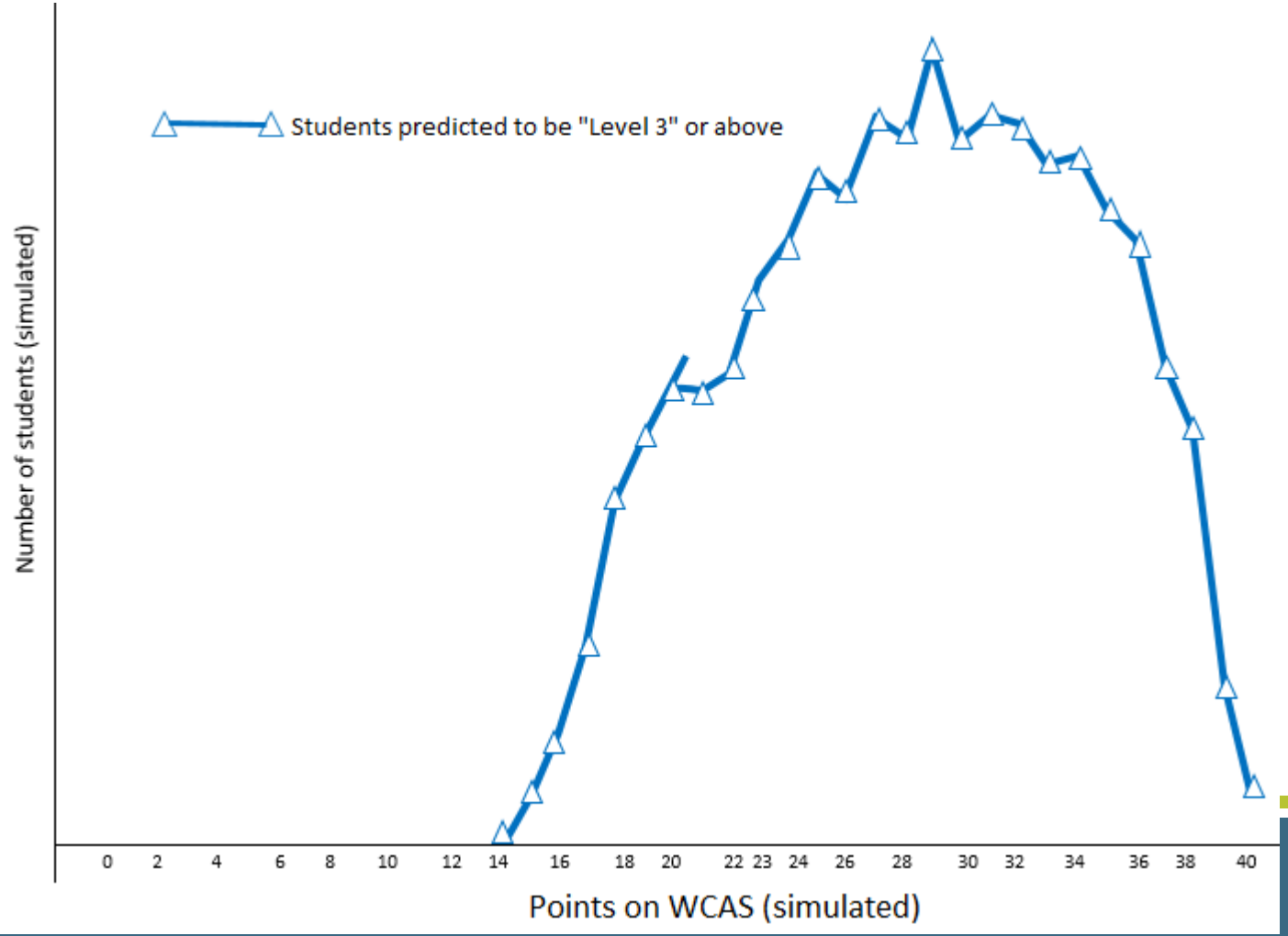
Contrasting Groups Study:
Students matched to the raw points on the WCAS



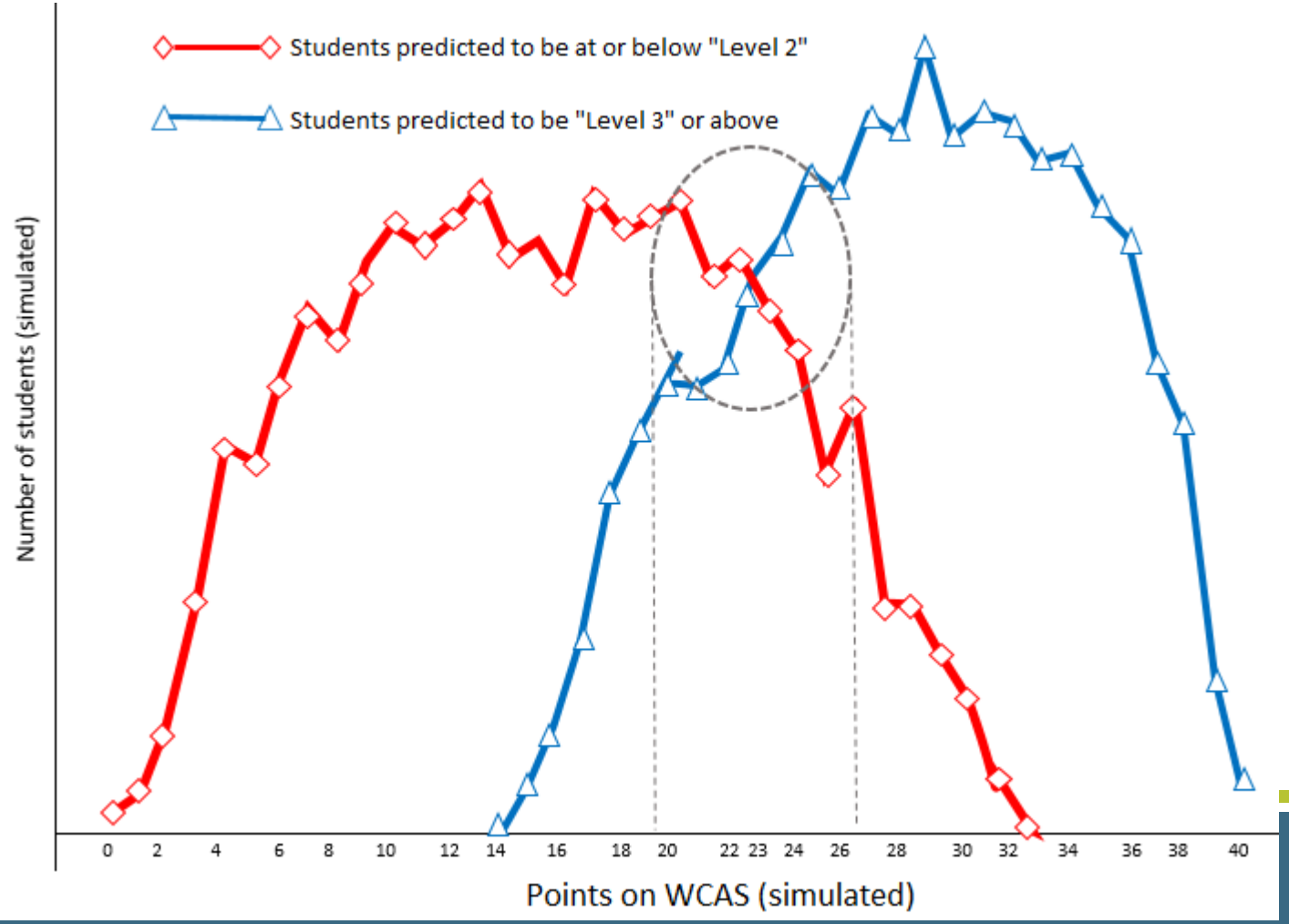
Contrasting Groups Study:
Students predicted to be Level 2 or below



Contrasting Groups Study:
Students predicted to be Level 3 or above



Contrasting Groups Study: Intersection where Level 2 separates from Level 3



Contrasting Groups Study: Results and use

The place where the two distributions merge represents a possible separation point between “Level 2” and “Level 3” (the “proficient” cut)

The range indicated by the real study results was given to the Grade-level Panels in terms of a page-range in the OIB before they made their Round 1 ratings.

3 Rounds of Ratings

Round 1: panel had Contrasting Groups range

Round 2: panel had impact data information

Round 3: panel had item difficulty information