

# IM Technical Manual Update – Appendix

## Contents

### Appendix A

A.1 Glossary from 2014–2015

A.2 DIF Plots

A.3 Blueprint Coverage Plots

A.4 FC Item and Tested Nodes Identified

## LIST OF TERMS

**ACHIEVEMENT AND ASSESSMENT INSTITUTE (AAI)** – The unit within the University of Kansas which includes Agile Technology Solutions, the Center for Educational Opportunity Programs, the Center for Educational Testing and Evaluation and the Center for Public Partnerships and Research.

**AGILE TECHNOLOGY SOLUTIONS** – The organization that develops and maintains the KITE System and provides DLM Service Desk support to educators in the field.

**ALTERNATE ACHIEVEMENT STANDARDS** - Alternate or extended content standards that link to college and career readiness standards in general education that reflect the highest academic expectations for students with significant cognitive disabilities.

**ALIGNMENT** – The relationships between the content structures in the DLM assessment system and assessment items. The content of assessment items measure the student’s knowledge, skills, and understandings reflected in the content standards which they are intended to measure.

**ALTERNATE PATHWAY** - an alternate route toward a learning target that a student can travel in order to demonstrate a type knowledge or skill, regardless of physical or sensory disability.

**ANSWER OPTIONS** – response choices in assessment items.

**ASSESSMENT COORDINATOR** – A role, designed by DLM, to describe the state or district person who supports assessment implementation and test administrators.

**CENTER FOR EDUCATIONAL TESTING AND EVALUATION (CETE)** – Part of the University of Kansas' Achievement and Assessment Institute. CETE develops and administers educational testing programs including DLM.

**CLAIM** – A broad statement about what the DLM consortium expects students to learn and to be able to demonstrate within each content area. Each claim is subdivided into two or more conceptual areas.

**COLLEGE- AND CAREER-READINESS STANDARDS**– A set of grade-level academic content standards for grades K-12 that DLM Essential Elements link to at a reduced depth, breadth, and complexity.

**COMPUTER-DELIVERED TESTLET** – A test designed to emphasize student interaction with the content of the testlet, regardless of the means of physical access to the computer. The contents of the testlets are presented directly to the student.

**CONCEPTUAL AREA** – A region within the learning map that contains nodes directly related to Essential Elements and nodes that represent concepts and skills that support the learning of the Essential Elements. Conceptual areas are comprised of clusters of connected concepts and skills and serve as models of how students may acquire and organize their content knowledge. Conceptual areas are considered subparts of the overall claims.

**CONNECTION** – Directional relationship between two nodes. A connection is illustrated with arrows in the map.

**DATA STEWARD** – A role, designed by DLM, to describe the state or district person who manages student and enrollment data, and Educator Portal user accounts.

**DATE/TIME SUPPLEMENTAL FILE** – A system delivered data file that provided date/time stamps for the start and end times of each student test session for each EE assessed.

**DLM MAPS** – A learning map model consisting of numerous nodes and connections representing the multiple learning progressions that cover the development of the cognitive and content-area skills from birth to high-school graduation. DLM Maps also provide access to multiple and alternate routes to achieving the learning targets, making it more inclusive for learners with various disabilities.

**DIAGNOSTIC CLASSIFICATION MODEL (DCM)** – Response model with discrete latent attributes (skills) that are used classify students into one latent class (where each latent class is defined by an attribute profile).

**DISTRICT TEST COORDINATOR (DTC)** – A role in Educator Portal which has the ability to manage user, enrollment, and roster data within the organizational unit.

**DYNAMIC LEARNING MAPS ALTERNATE ASSESSMENT SYSTEM**– An assessment system designed to be accessible by students with the most significant cognitive disabilities, including those who also have hearing or visual disabilities, and/or neuromuscular, orthopedic, or other motor disabilities. The assessment includes computer-based assessments and a web-based dashboard for educators to manage student information. The assessment system also includes professional development to support instruction aligned to the Essential Elements and promote student progress in a learning maps-based environment.

**DYNAMIC LEARNING MAPS CONSORTIUM** – A multi-state consortium that developed the DLM Alternate Assessment System.

**EDUCATOR PORTAL**– An administrative application in KITE where staff and educators manage student data, complete required test administration training, assign instructionally embedded assessments, retrieve resources needed for each assigned testlet, and retrieve reports.

**ENGAGEMENT ACTIVITY** - An activity that precedes a testlet that describes a scenario, taps prior knowledge or experience, and/or introduces the concept to be addressed. In English language arts, the text being read often serves as the engagement activity. In math, the engagement activity provides context for the items.

**ESSENTIAL ELEMENT** – Specific statements of knowledge and skills linked to the grade-level expectations identified in college and career readiness standards. Essential Elements build a bridge from the content in the grade-level standards to academic expectations for students with the most significant cognitive disabilities.

**ESSENTIAL ELEMENT CONCEPT MAP (EECM)** – A graphic organizer using principles of Evidence Centered Design to define ELA and mathematics content specifications for assessment. The EECM uses principles of evidence-centered design and provides information about evidence of EE mastery, key vocabulary and concepts, associated nodes in the learning map, and potential non-cognitive and accessibility barriers when assessing the target behaviors.

**ESSENTIAL ELEMENT LINKAGE LEVEL** – A small section of the learning map that contains one or more nodes that represent critical concepts or skills related to the Essential Element. Linkage levels are always related directly to grade level Essential Elements but extend back to foundational skills at the initial precursor level. There are typically five levels: initial precursor, distal precursor, proximal precursor, target, and

successor. The nodes at the target level are most closely related to the expectation in the Essential Element.

**FIRST CONTACT (FC)** – A survey used to collect background information about students who are eligible for DLM assessments. The survey goes beyond basic demographic information and includes questions on topics such as communication, assistive technology devices, motor and sensory impairments, academic performance. Some questions from the First Contact survey are used to determine a student’s entry point, or initialization, into the assessment.

**FOUNDATIONAL SKILLS** – common set of basic skills that precede academic knowledge, including attention, self-regulation, and organization, and provide an understructure for the academic skills.

**FUNGIBLE** – exchangeable, able to be replaced by another identical item. In DLM, all items were assumed to be fungible, or exchangeable, within a linkage level.

**GENERAL RESEARCH FILE (GRF)** – The data file provided to states at the end of each year. It contains student demographic information and assessment results.

**INITIALIZATION** – The process by which existing information about a student is used to determine the point in the map where the student enters the assessment for the first time.

**INSTRUCTIONAL PLAN** – A plan, created through the Educator Portal instructional Tools Interface, which includes a choice of Essential Element and linkage level and leads to assignment of an instructionally embedded assessment.

**INSTRUCTIONALLY EMBEDDED ASSESSMENT** – An assessment that occurs after instruction throughout the year so that testing informs teaching and benefits students' learning.

**INSTRUCTIONAL TOOLS INTERFACE (ITI)** – An interface in Educator Portal which allows a Test Administrator to select an Essential Element and linkage level for a student with the goal of providing instruction and instructionally embedded assessment.

**KANSAS INTERACTIVE TESTING ENGINE (KITE)** - The platform which includes KITE Client and KITE Educator Portal. Two additional applications not seen by students and teachers include platforms for hosting test content and building technology-enhanced items.

**KITE CLIENT** - An online testing interface for students. The KITE Client is available for use on PCs, Macs, Chromebooks, and iPads.

**LEARNING MAP MODEL** – A visual representation of the acquisition of knowledge, skills and understandings. A learning map model visually depicts a networks of sequenced learning targets and may also delineate alternate paths to a learning objective.

**LEARNING PROFILE** – Part of the individual student score report provided at the end of the year. Provides information about student mastery of linkage levels for every Essential Element assessed.

**LINKAGE LEVEL** – A small section of the learning map that contains one or more nodes that represent critical concepts or skills needed to learn the Essential Element. Linkage levels are always related directly to grade level Essential Elements but extend back to foundational skills at the initial precursor level. There are five levels: initial precursor, distal precursor, proximal precursor, target, and successor. The nodes at the target level are most closely related to the expectation in the Essential Element.

**NODE NEIGHBORHOOD**– Consists of the nodes around which a set of testlets is developed.

**NODE** – A node that specifies individual skills and understandings that were drawn from the research in Mathematics and English Language Arts.

**PATHWAY** – The relationship between nodes in the learning map. Synonym for connection.

**PERFORMANCE PROFILE** – Part of the individual student score report provided at the end of the year. The Performance Profile provides information about student mastery of linkage levels mastered across EEs within a conceptual area and overall in the subject.

**PERSONAL NEEDS AND PREFERENCES (PNP) PROFILE** – Student-specific information that tells the DLM test delivery system what the needs are for individual users. The PNP includes information the system needs to make the student’s user interface compatible with his or her accessibility needs. In DLM, the PNP profile includes information about display enhancements, language and braille, assistive technology, and audio and environment supports. Educators who know the student provide the information in the profile.

**PROPOSITION** – Propositions (or in some validity research “claims”) relate directly to the ultimate program goals and specific score purposes of the assessment system, providing the framework within which validity evidence can be judged.

**STUDENT WITH THE MOST SIGNIFICANT COGNITIVE DISABILITIES** – A student who falls within one of the existing categories of disability under IDEA (autism, deaf-blindness, hearing impairment, mental retardation, orthopedic impairment, deafness, emotional disturbance, multiple disability, traumatic brain injury, visual impairment, learning disability, speech and language impairment, other health impaired) whose cognitive impairments may prevent them from attaining grade-level achievement standards, even with the very best instruction.

**TEACHER-ADMINISTERED TESTLET** – A test designed to be administered directly by the Test Administrator outside of the KITE system. The KITE system still delivers the test, but the Test Administrator plays a more direct role than in computer-delivered testlets.

**TECHNICAL LIAISON** – A role, designed by DLM, to describe the state or district person who manages DLM technology requirements for a school or district.

**TEST ADMINISTRATOR** – The person who administers the assessments to students.

**TEST DELIVERY ENGINE (TDE)** – the portal that allows students to log in and complete assigned testlets. See KITE Client.

**TESTLET** – A set of 3–8 items and an engagement activity. Combining multiple items and beginning with an engagement activity increases the instructional relevance of the assessment, and provides a better estimate of the students’ knowledge, skills and abilities than can be achieved by a single test item. Thus, testlets are more reliable and valid indicators of the student’s performance.

**TESTLET SET** – A group of testlets (generally 3-5 testlets) that spans the knowledge, skills, and abilities covered in an Essential Element concept map from initial precursor linkage level through successor linkage level.

**TESTLET INFORMATION PAGE (TIP)** – A secure PDF document which is unique to each testlet and provides specific information to guide the test administrator in preparing for and administering the testlet.

**THEORY OF ACTION** – Summary statement of values that guided the design of the DLM Alternate Assessment System. The DLM Theory of Action was initiated in 2011 and revised and finalized in December 2013. It expresses the belief that high expectations for students with significant cognitive disabilities (SWSCD), combined with appropriate educational supports and diagnostic tools for teachers, result in improved academic experiences and outcomes for students, teachers, and parents.

**TRAINING MODULE** - A training module, available in both self-directed and facilitated formats. Modules cover topics such as instruction, the use of assessment results, and required skills for test administrators.

**VIRTUAL COMMUNITY OF PRACTICE** – An online community for teachers of students with the most significant cognitive disabilities. The community is self-moderated with oversight from faculty and staff at the Center for Literacy and Disability Studies. The community provides instructional resources and supports as well as discussion forums and groups.



## LIST OF ACRONYMS

AA-AAS – Alternate Assessment of Alternate Achievement Standards  
AAI – Achievement and Assessment Institute  
ASL – American Sign Language  
ATS – Agile Technology Solutions  
BRF – Braille-ready files  
BN – Bayes Net  
CA – Conceptual Area  
CCSS – Common Core State Standards  
CCRS – College and Career Readiness Standards  
CETE – Center for Educational Testing and Evaluation  
CLDS – Center for Literacy and Disability Studies  
CPD – Cognitive Process Dimension  
DCM – Diagnostic Classification Model  
DTC – District Test Coordinator  
DIF – Differential Item Functioning  
DLM – Dynamic Learning Maps Alternate Assessment System  
DUA – Data Use Agreement  
ECD – Evidence-centered design  
EE – Essential Element  
EECM – Essential Element Concept Map  
ELA – English Language Arts  
ELL – English language learner  
EP – Educator Portal  
FC – First Contact  
FERPA – Family Educational Rights and Privacy Act  
HOH – Hard of hearing  
IDEA – Individuals with Disabilities Education Act  
IEP – Individualized Education Program  
IM – Integrated Model  
ITI – Instructional Tools Interface  
KITE – Kansas Interactive Testing Engine  
LEA – Local Education Agency  
OSEP – Office of Special Education Programs  
OTL – Opportunity to learn  
PAS – Partner-assisted scanning  
PLD – Performance level descriptor  
PNP – Personal Needs and Preferences Profile  
SEA – State Education Agency

SWSCD – Students with significant cognitive disabilities

TAC – Technical Advisory Committee

TAM – Test Administration Manual

TDE – Test Delivery Engine

TIP – Testlet Information Page

TTS – Text to speech

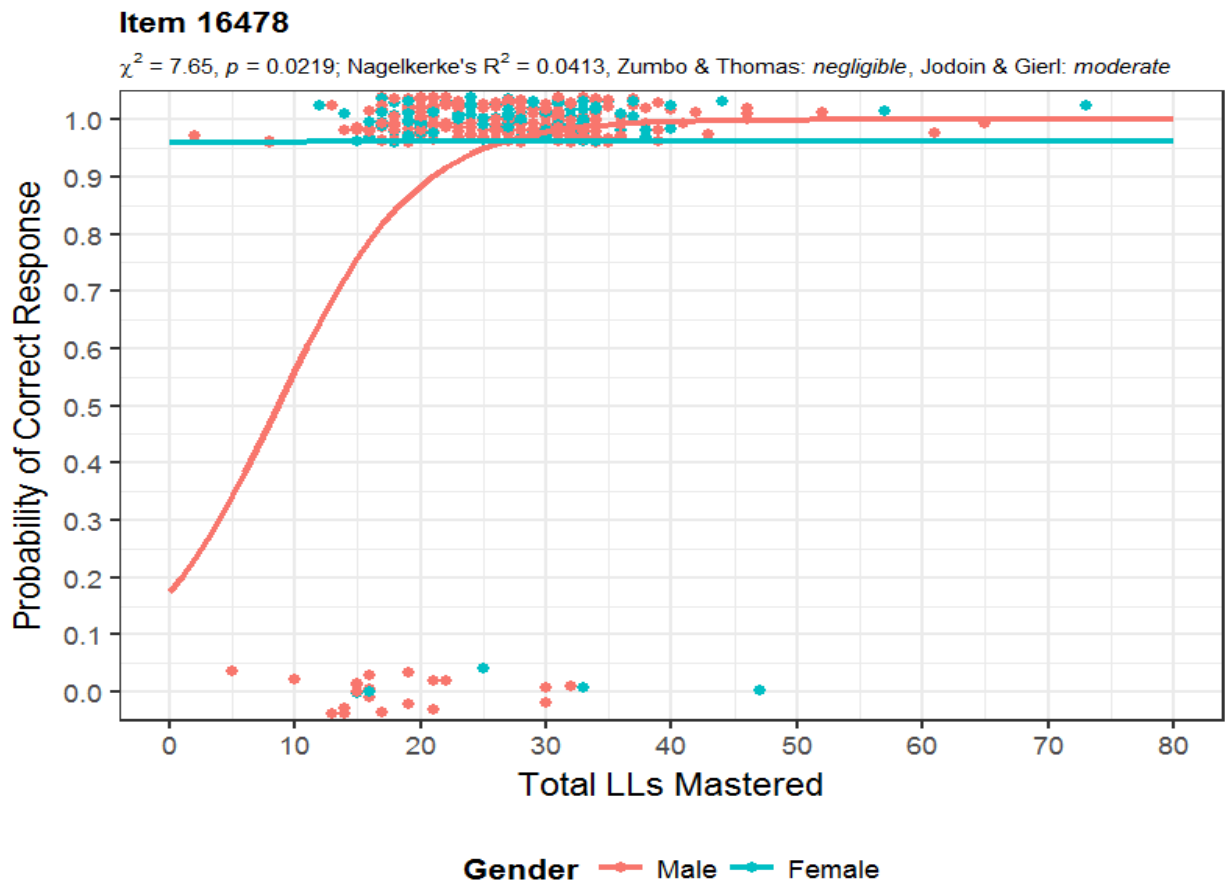
UD – Universal design

UDL – Universal design for learning

YE – Year-end Model

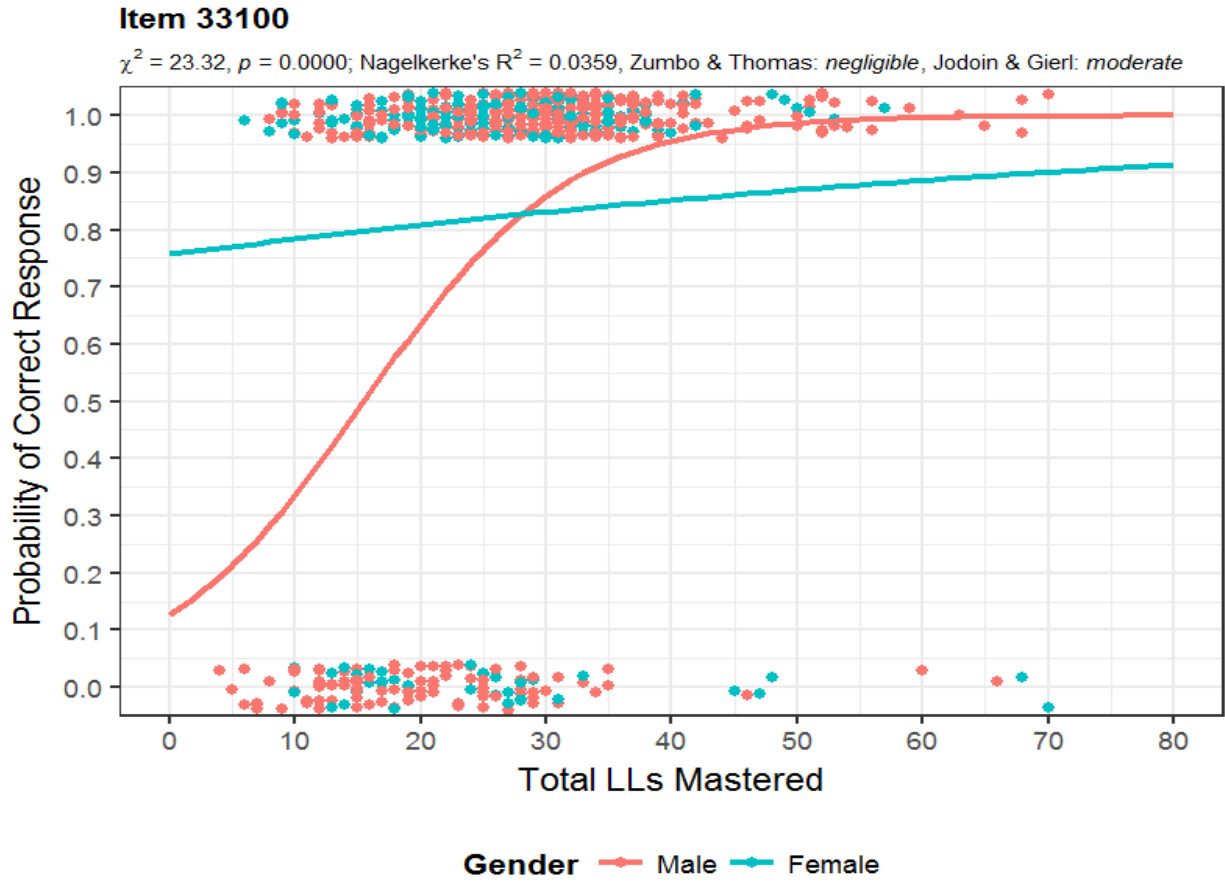
1.1.1 Uniform DIF

1.1.2 Combined Model DIF



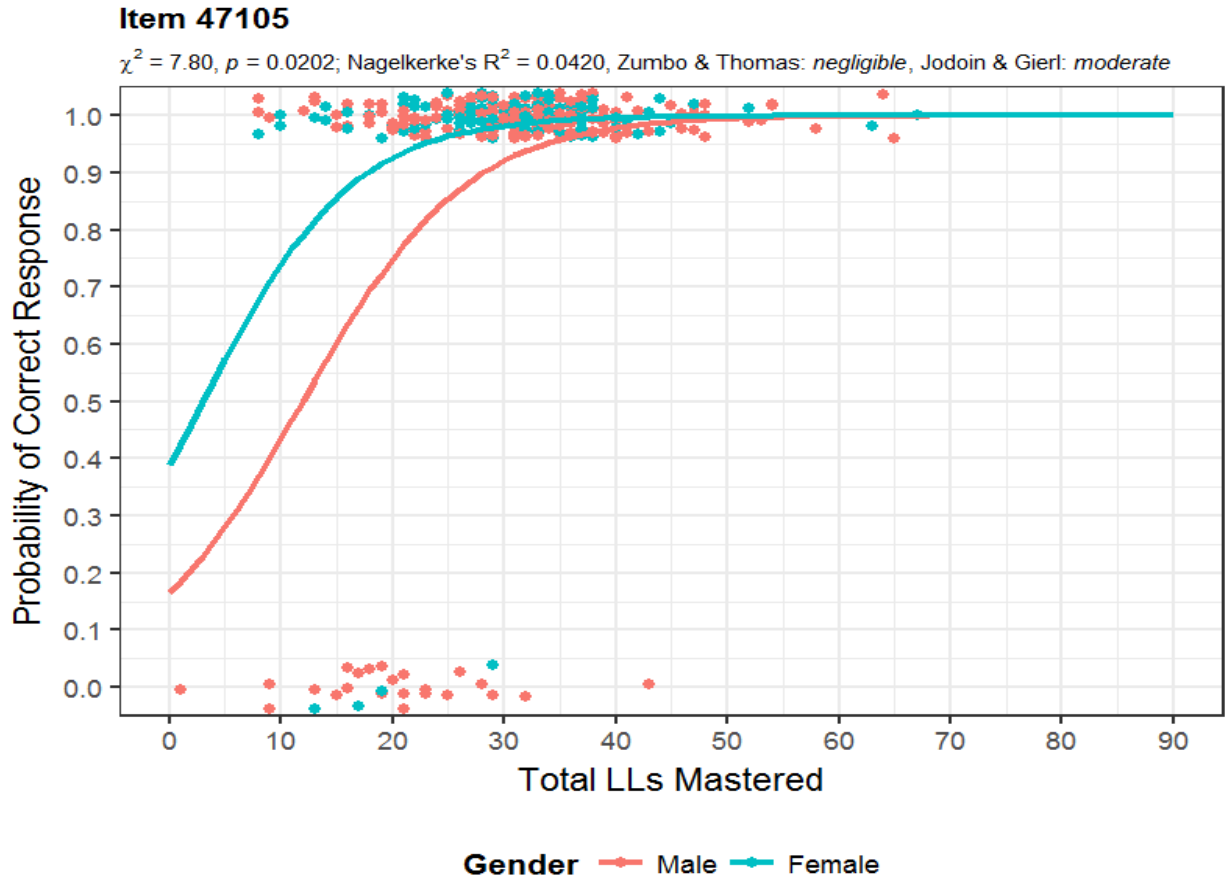
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Figure B1. Combined model logistic regression plot for ELA grade 3 item 16478



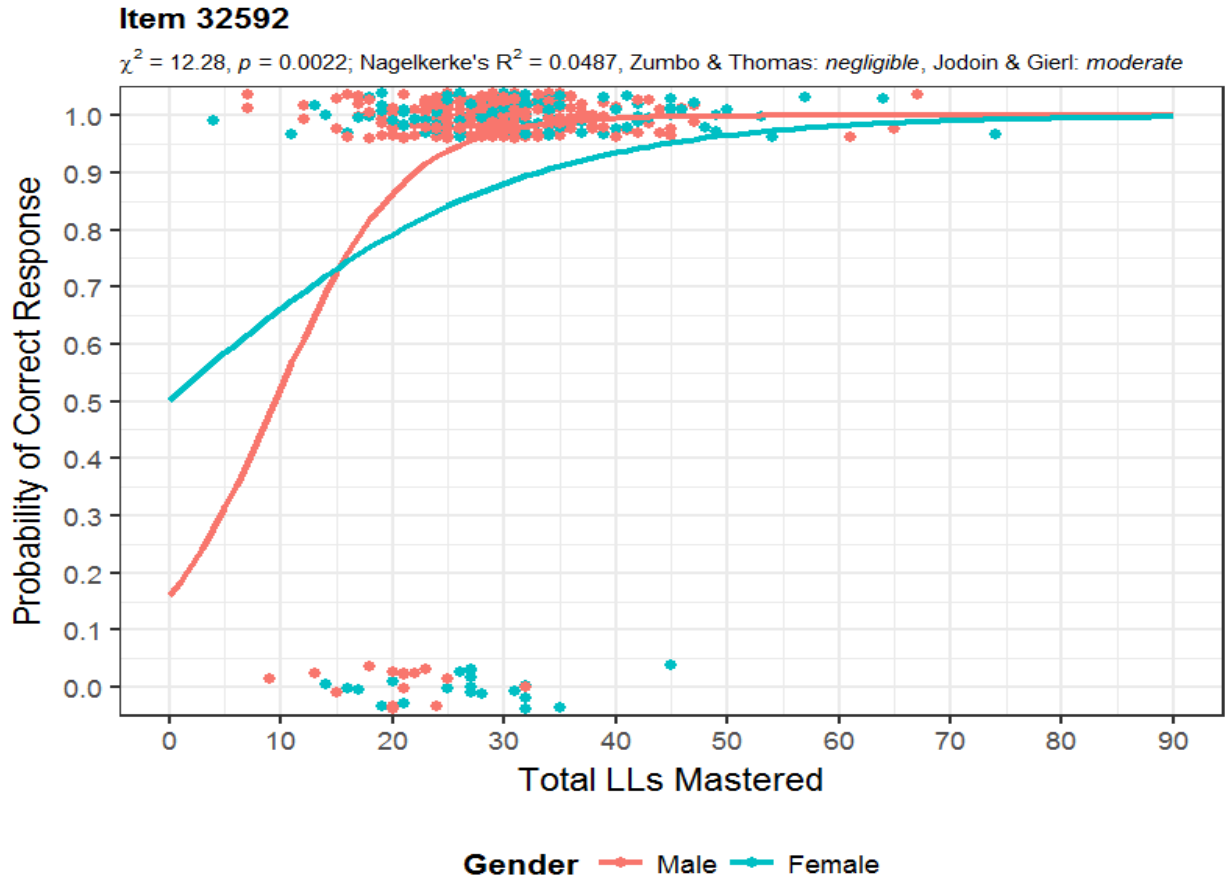
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Figure B2. Combined model logistic regression plot for ELA grade 3 item 33100



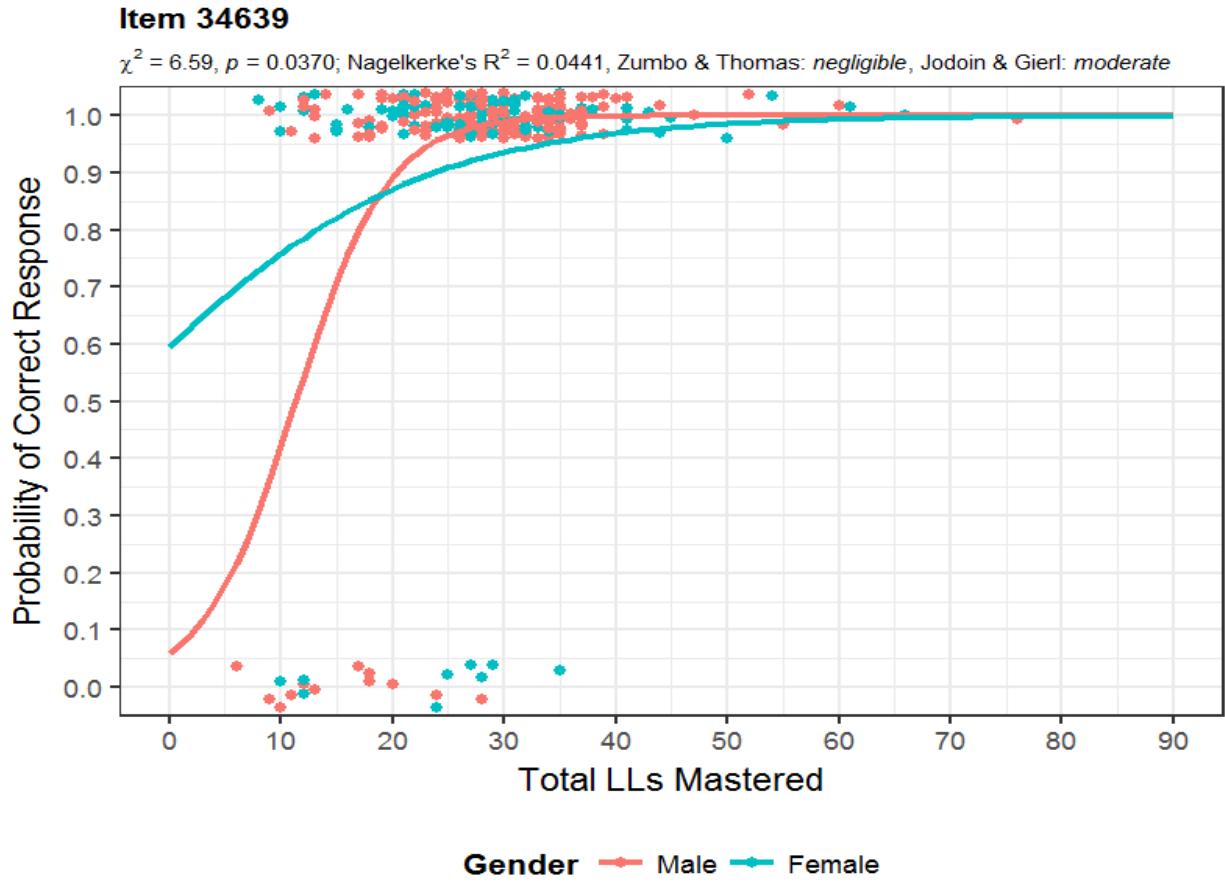
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Figure B3. Combined model logistic regression plot for ELA grade 4 item 47105



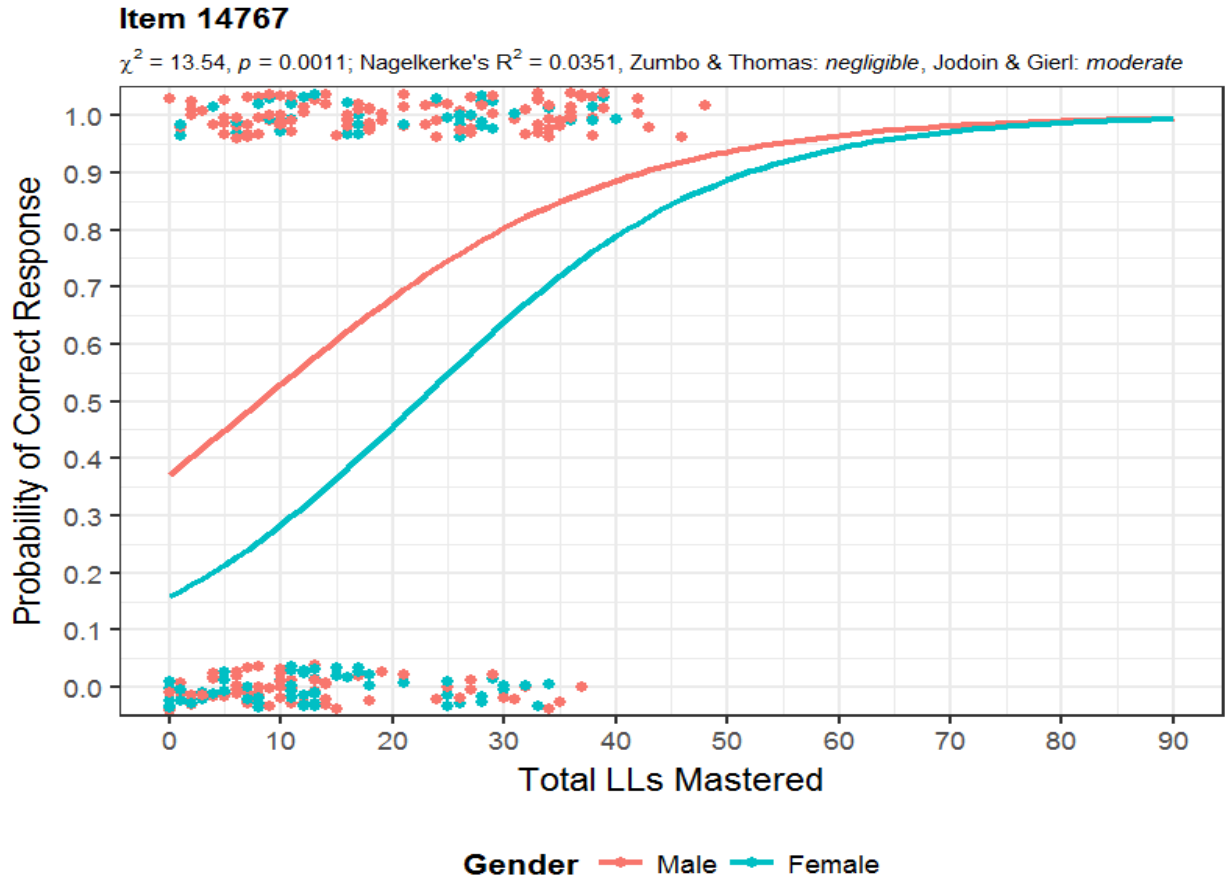
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Figure B4. Combined model logistic regression plot for ELA grade 5 item 32592



n = 283

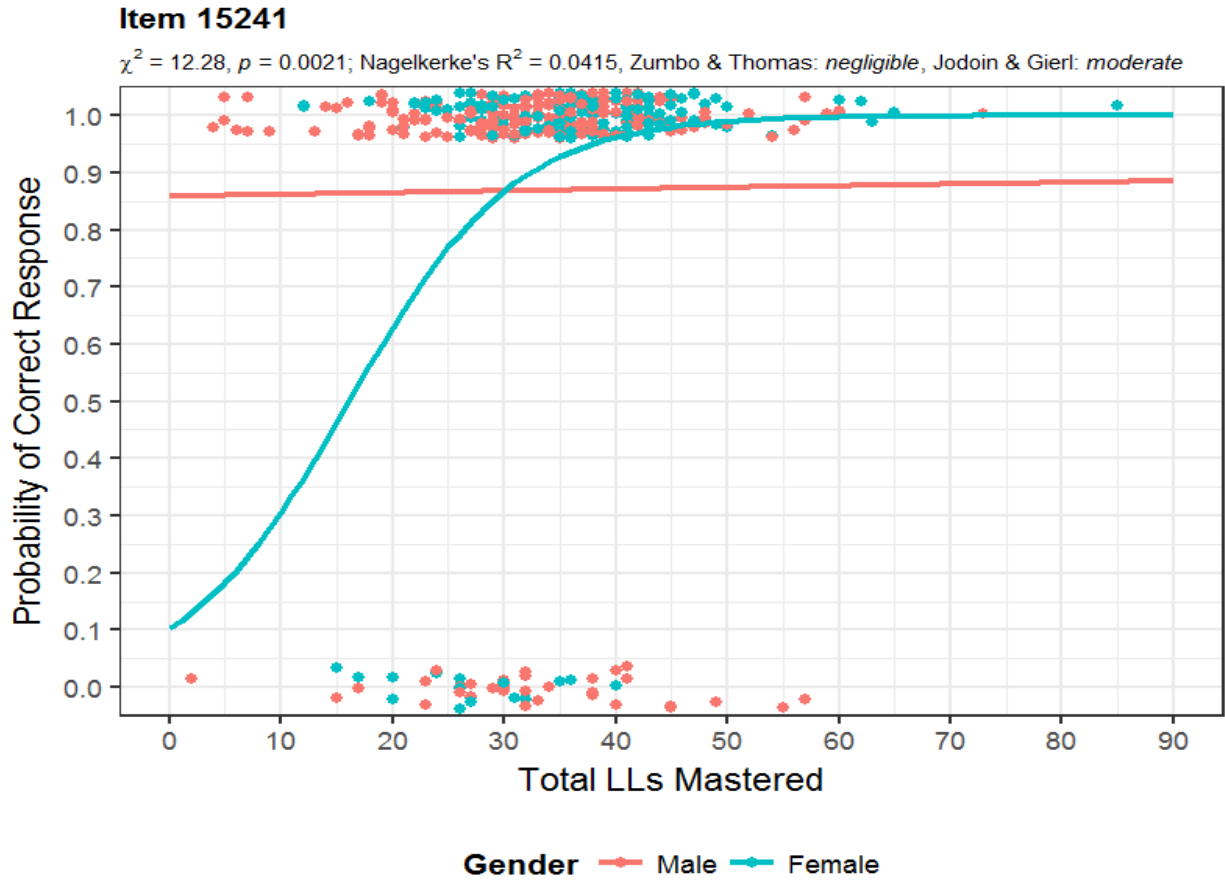
Figure B5. Combined model logistic regression plot for ELA grade 5 item 34639



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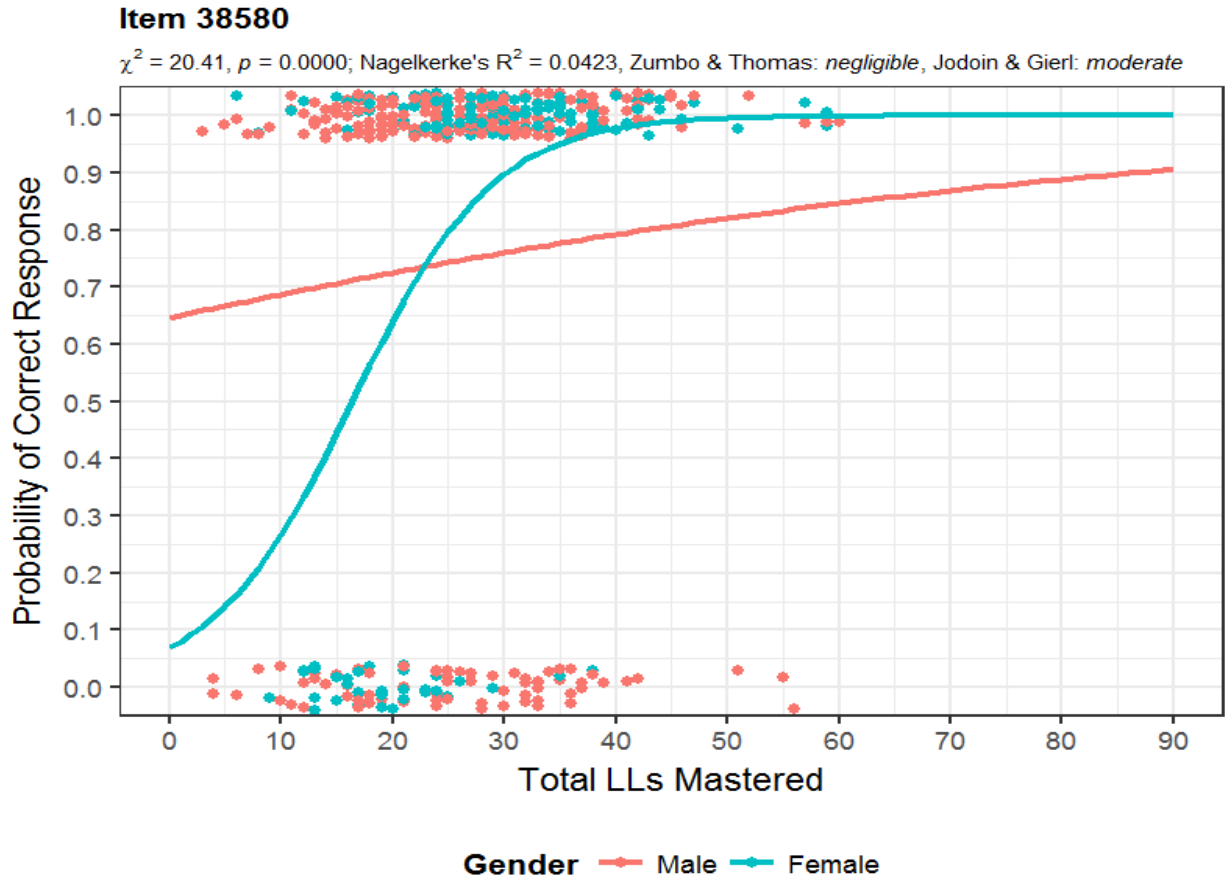
Figure B6. Combined model logistic regression plot for ELA grade 7 item 14767





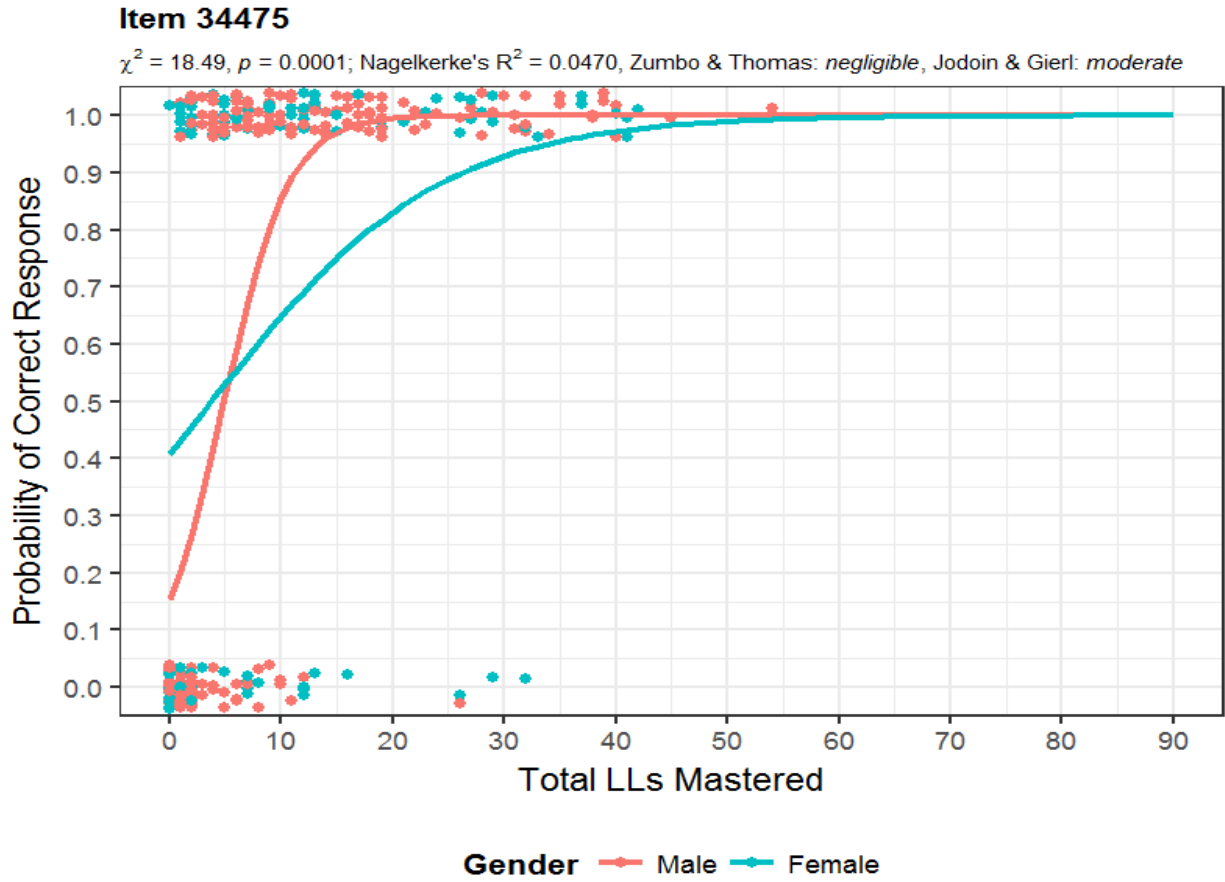
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Figure B7. Combined model logistic regression plot for ELA grade 8 item 15241



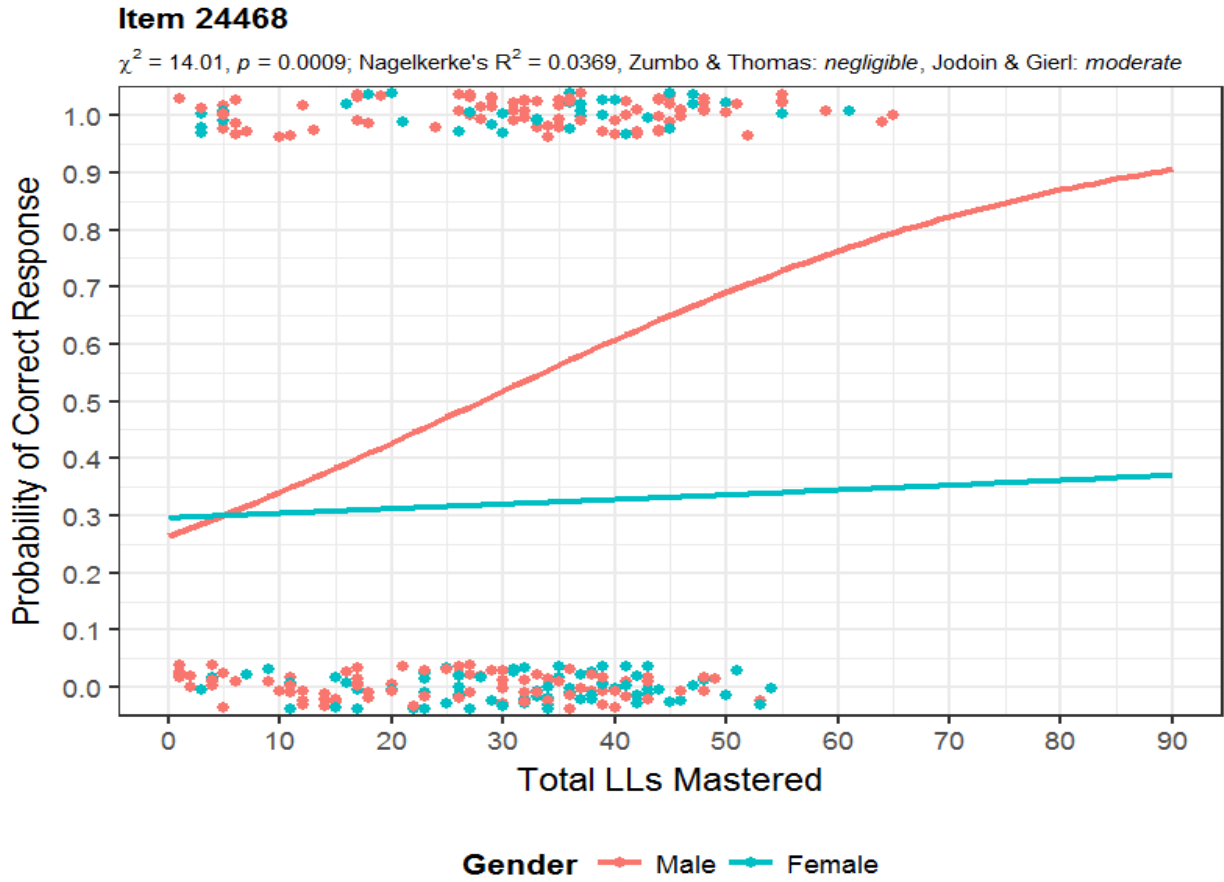
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Figure B8. Combined model logistic regression plot for ELA grade 8 item 38580



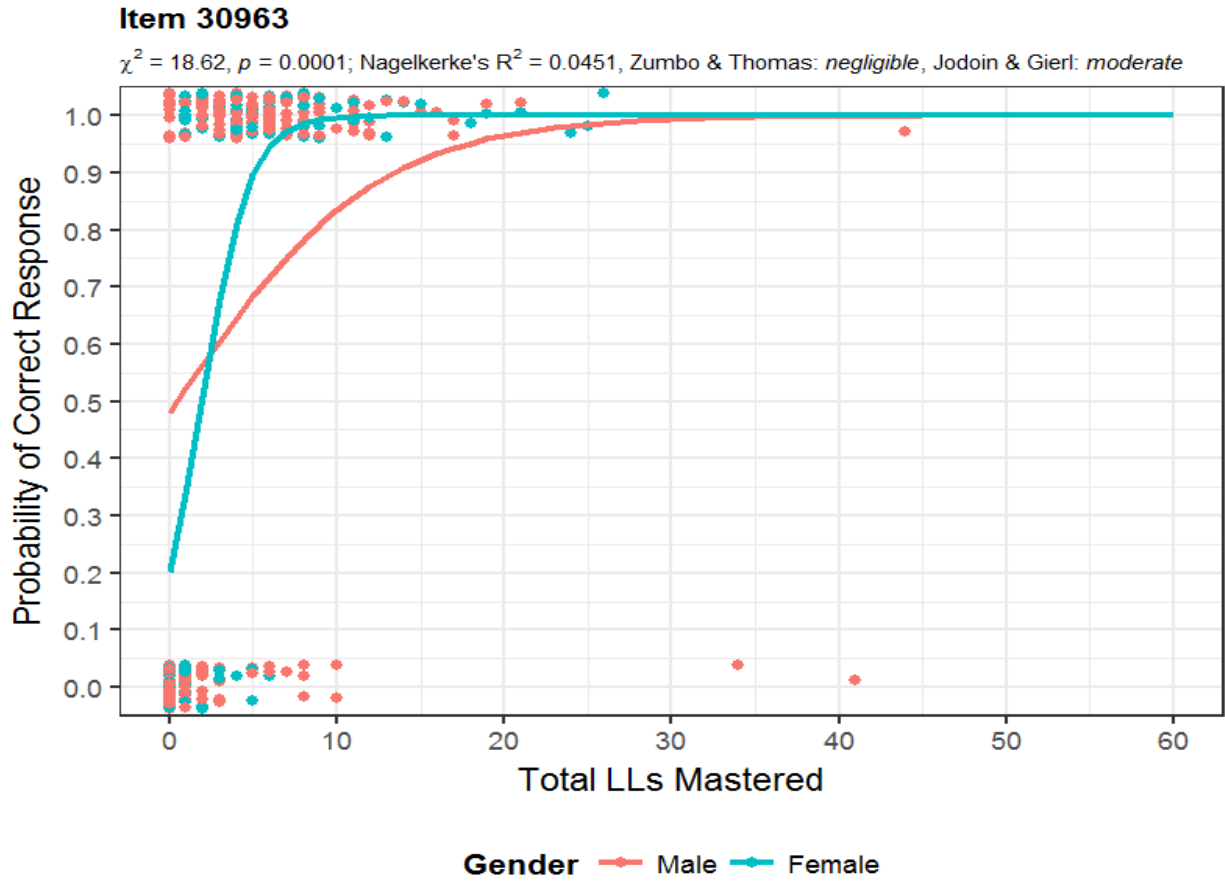
n = 294

Figure B9. Combined model logistic regression plot for ELA grade 9-10 item 34475



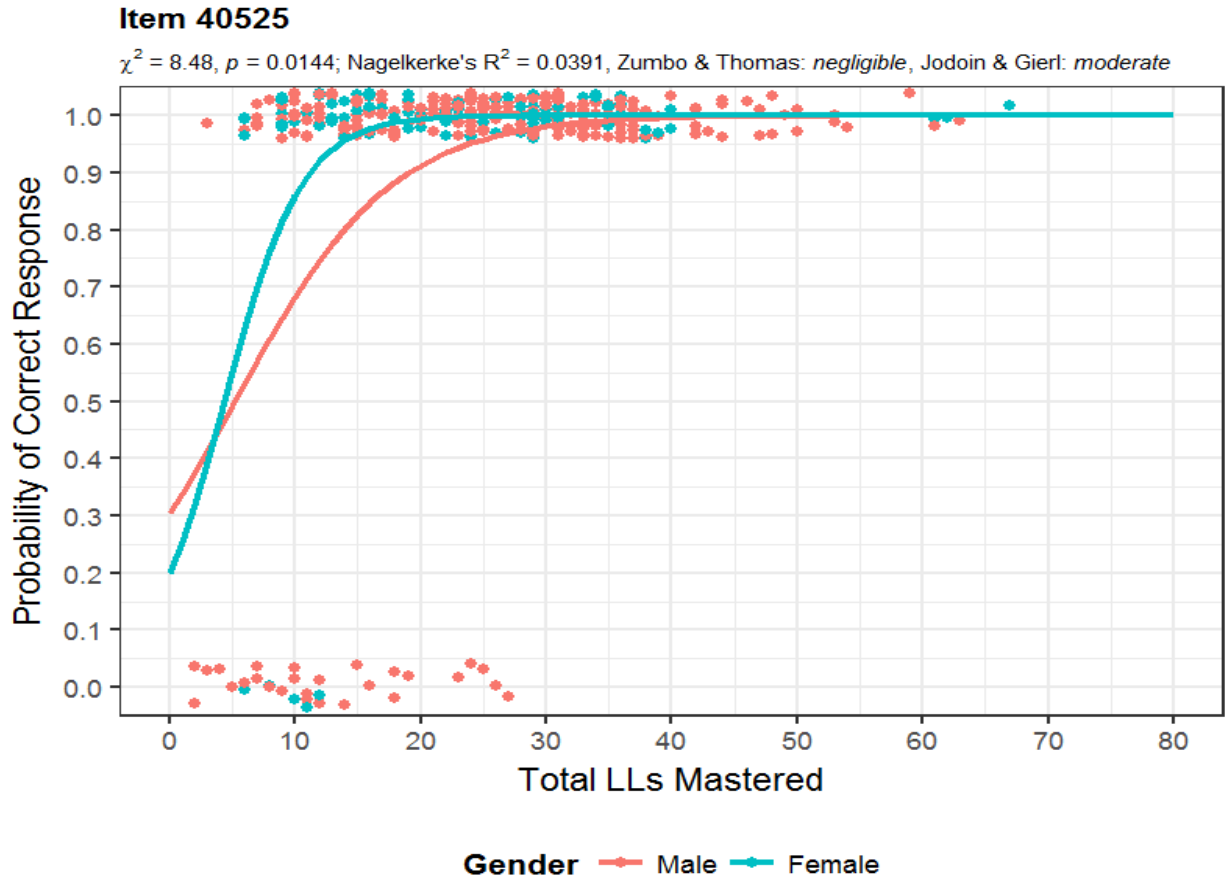
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Figure B10. Combined model logistic regression plot for ELA grade 11-12 item 24468



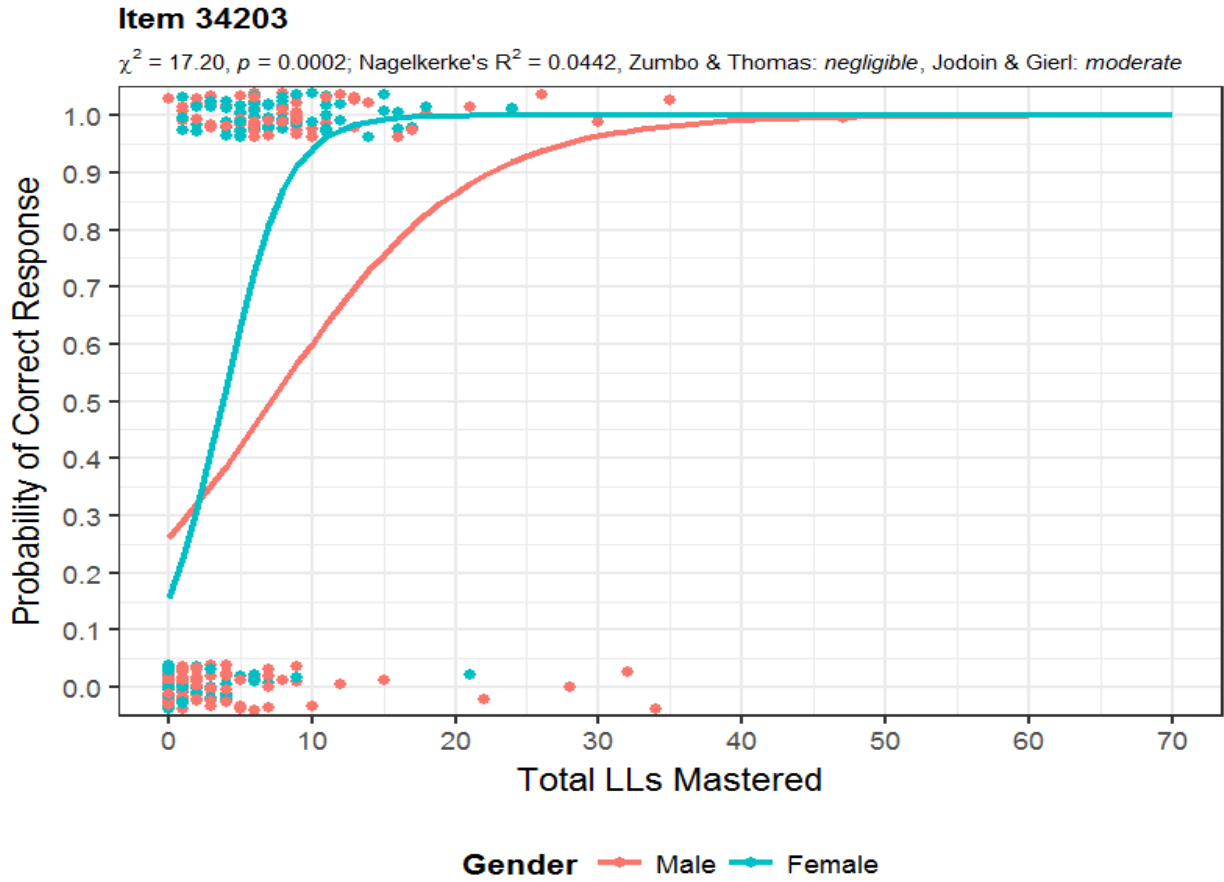
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Figure B11. Combined model logistic regression plot for mathematics grade 3 item 30963



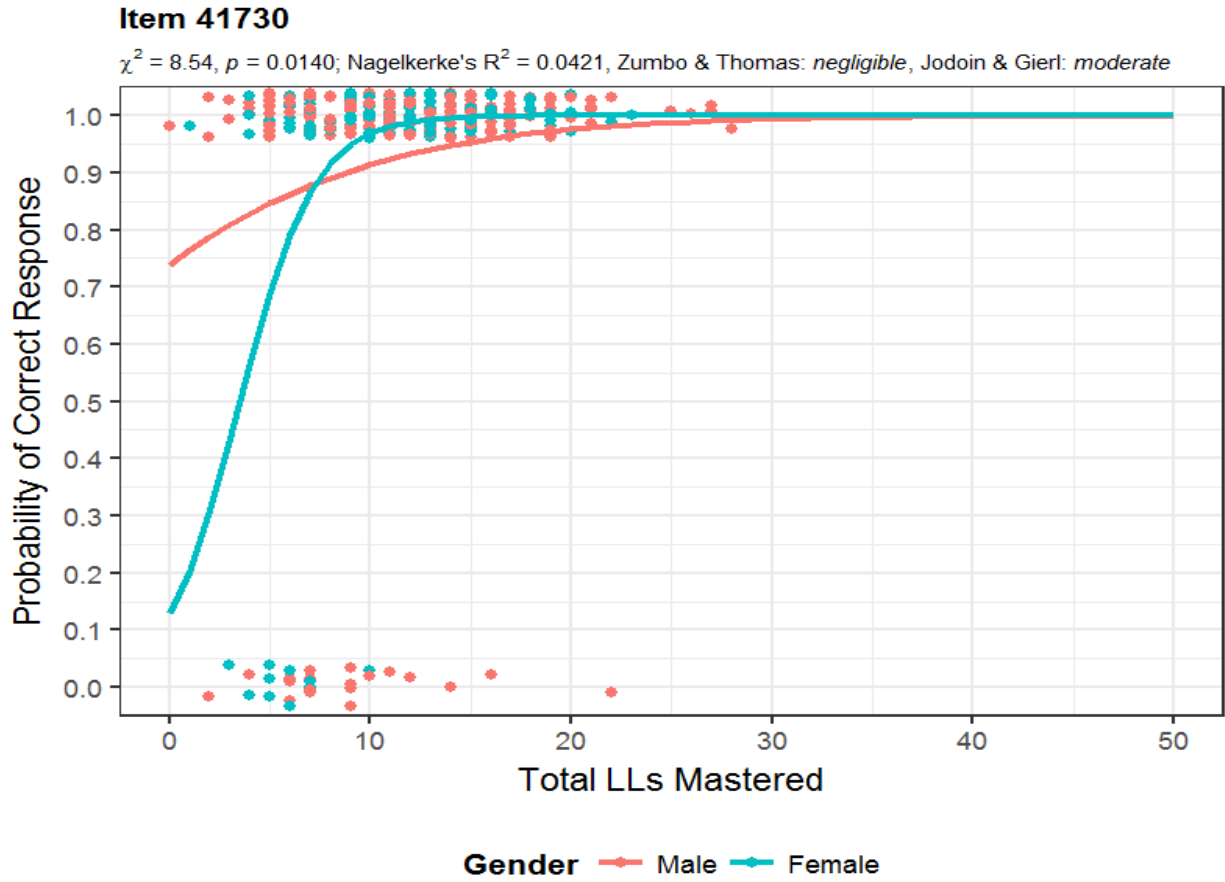
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Figure B12. Combined model logistic regression plot for mathematics grade 4 item 40525



n = 282

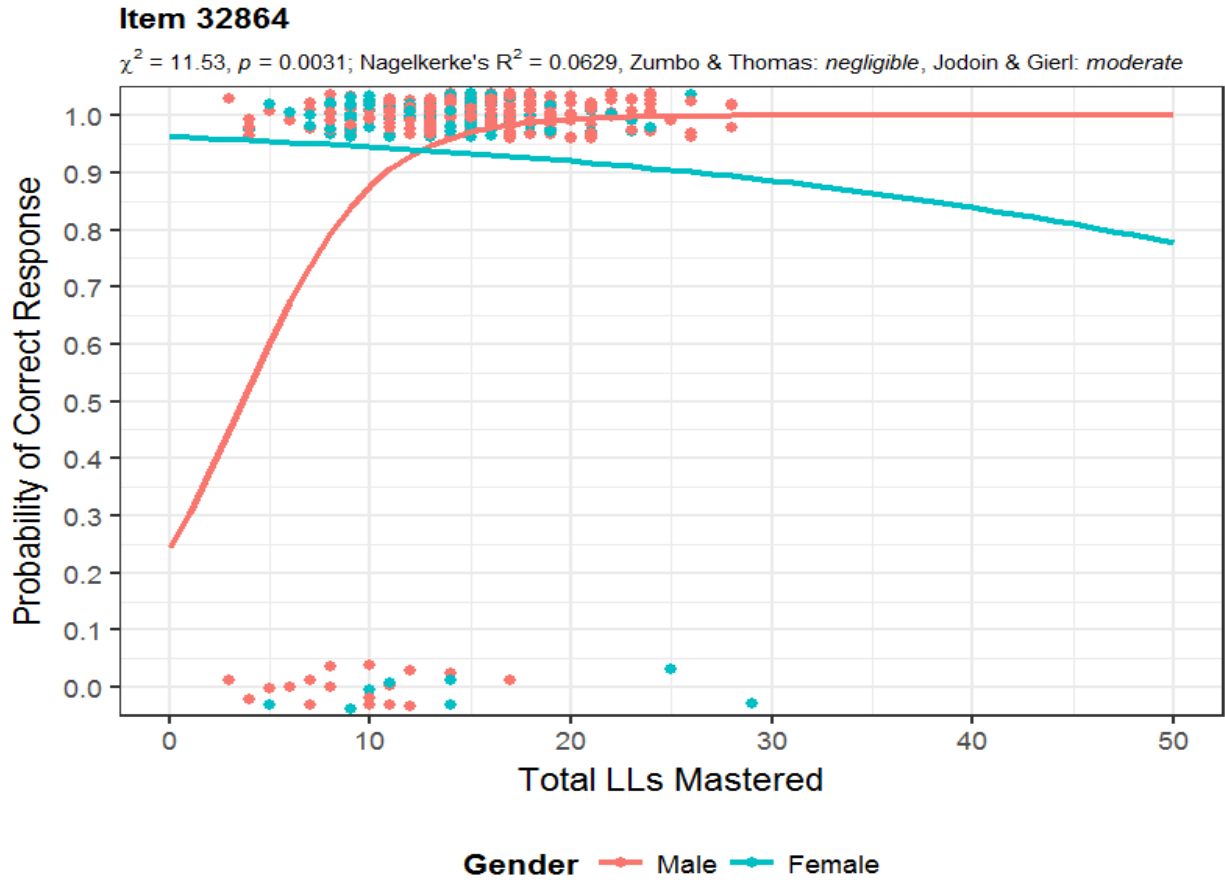
Figure B13. Combined model logistic regression plot for mathematics grade 8 item 34203



n = 371

Figure B14. Combined model logistic regression plot for mathematics grade 9 item 41730





n = 375

Figure B15. Combined model logistic regression plot for mathematics grade 11 item 32864

# 1 APPENDIX A: INTEGRATED MODEL BLUEPRINT COVERAGE

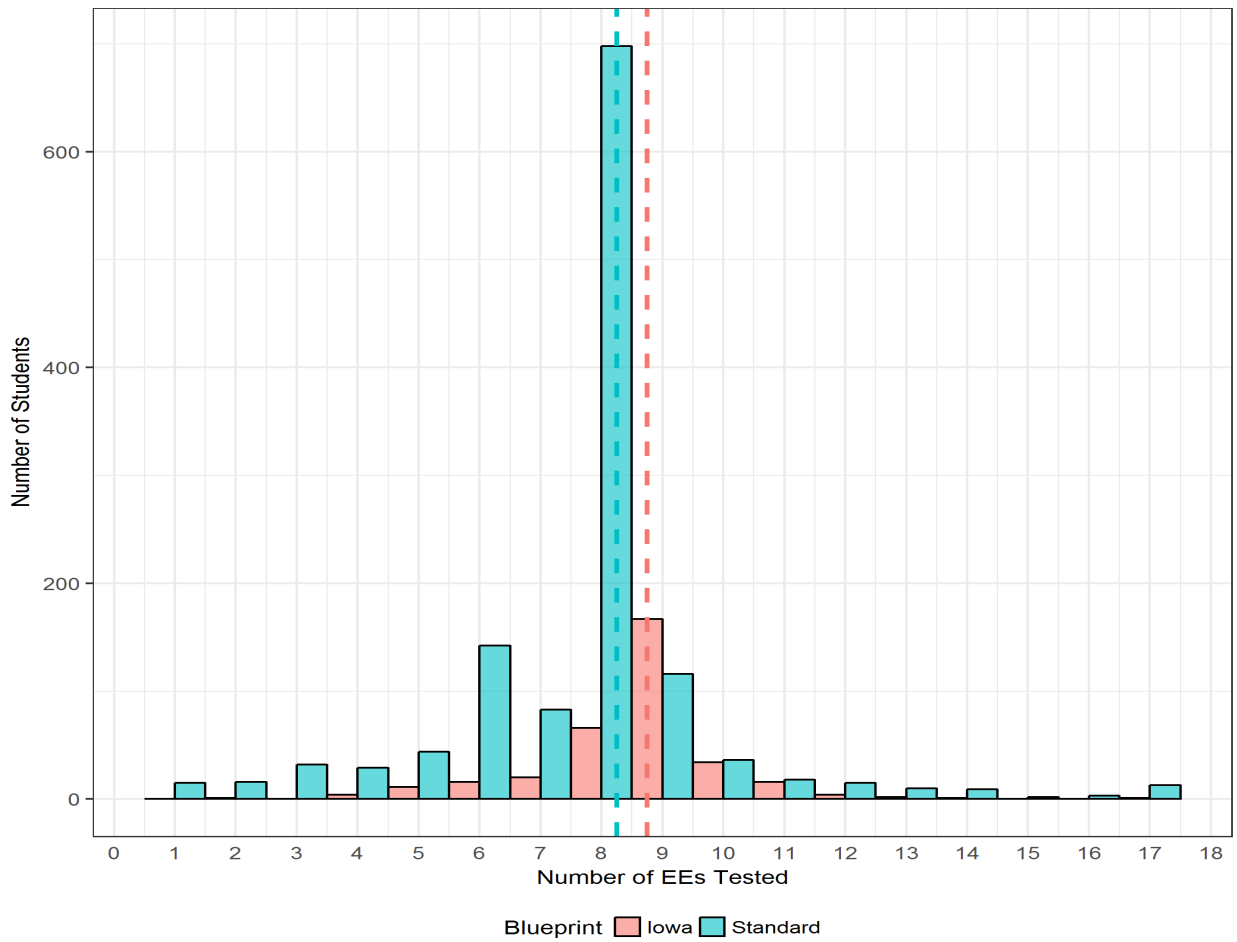


Figure X. English language arts third grade blueprint coverage for standard consortium and Iowa-specific blueprint.

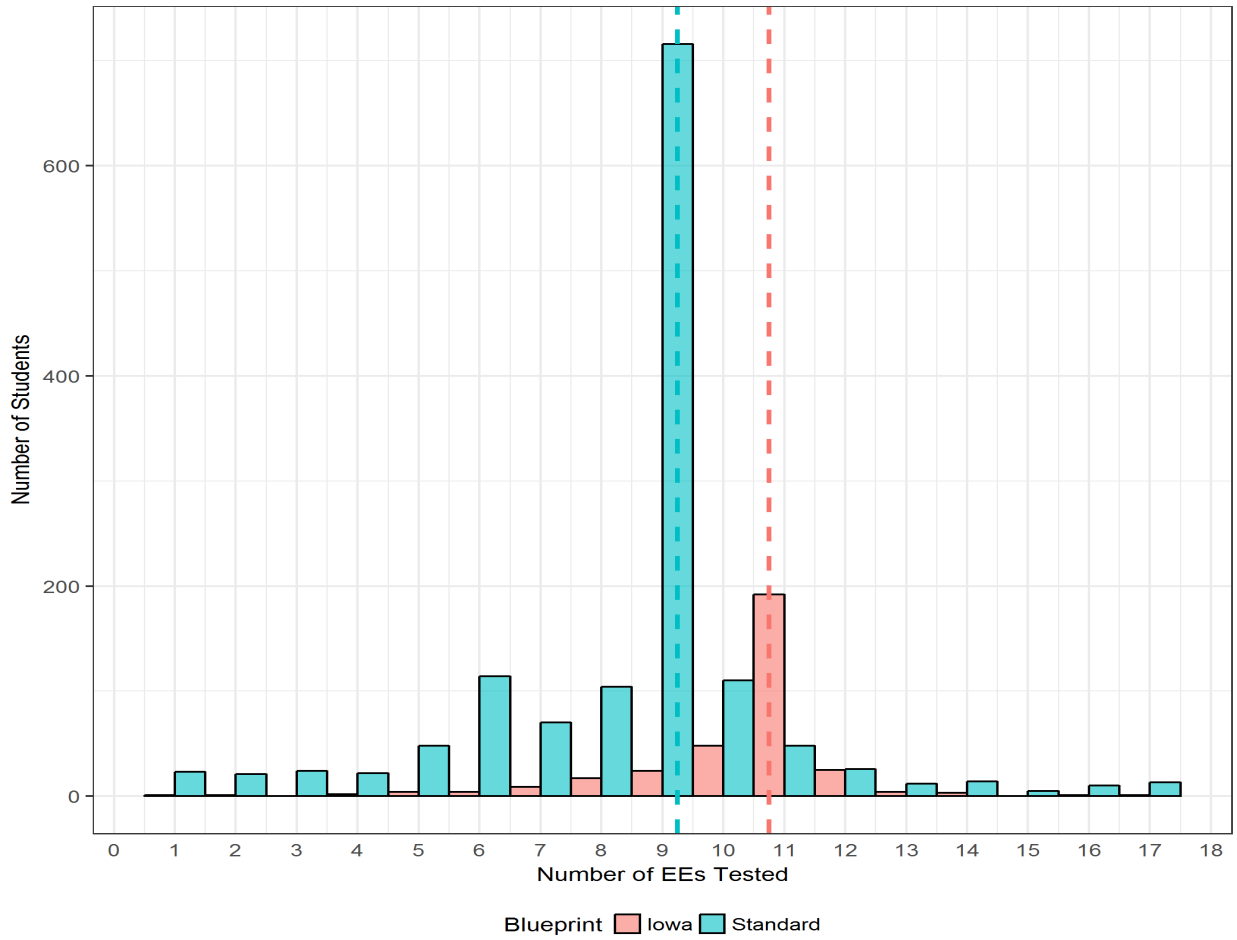


Figure X. English language arts fourth grade blueprint coverage for standard consortium and Iowa-specific blueprint.

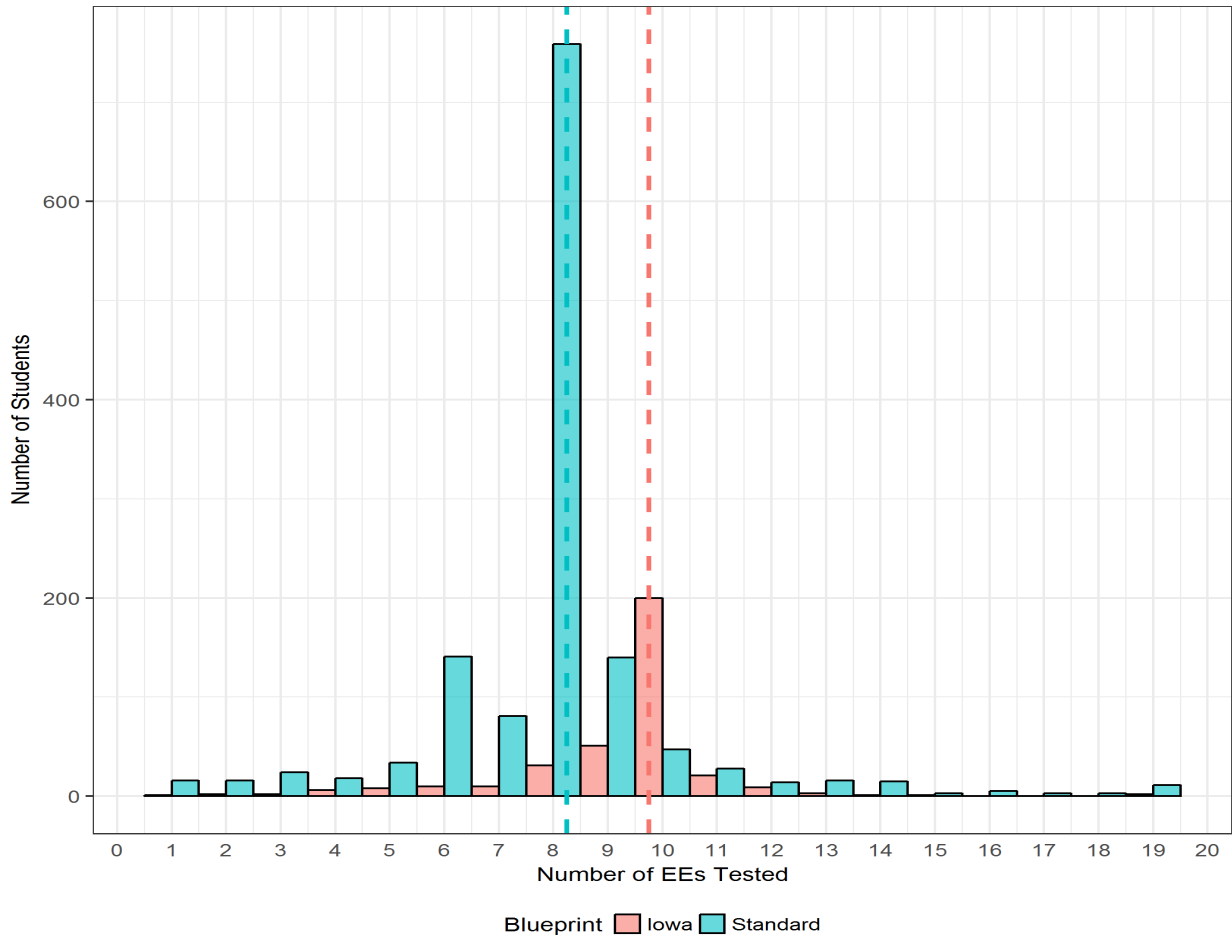


Figure X. English language arts fifth grade blueprint coverage for standard consortium and Iowa-specific blueprint.

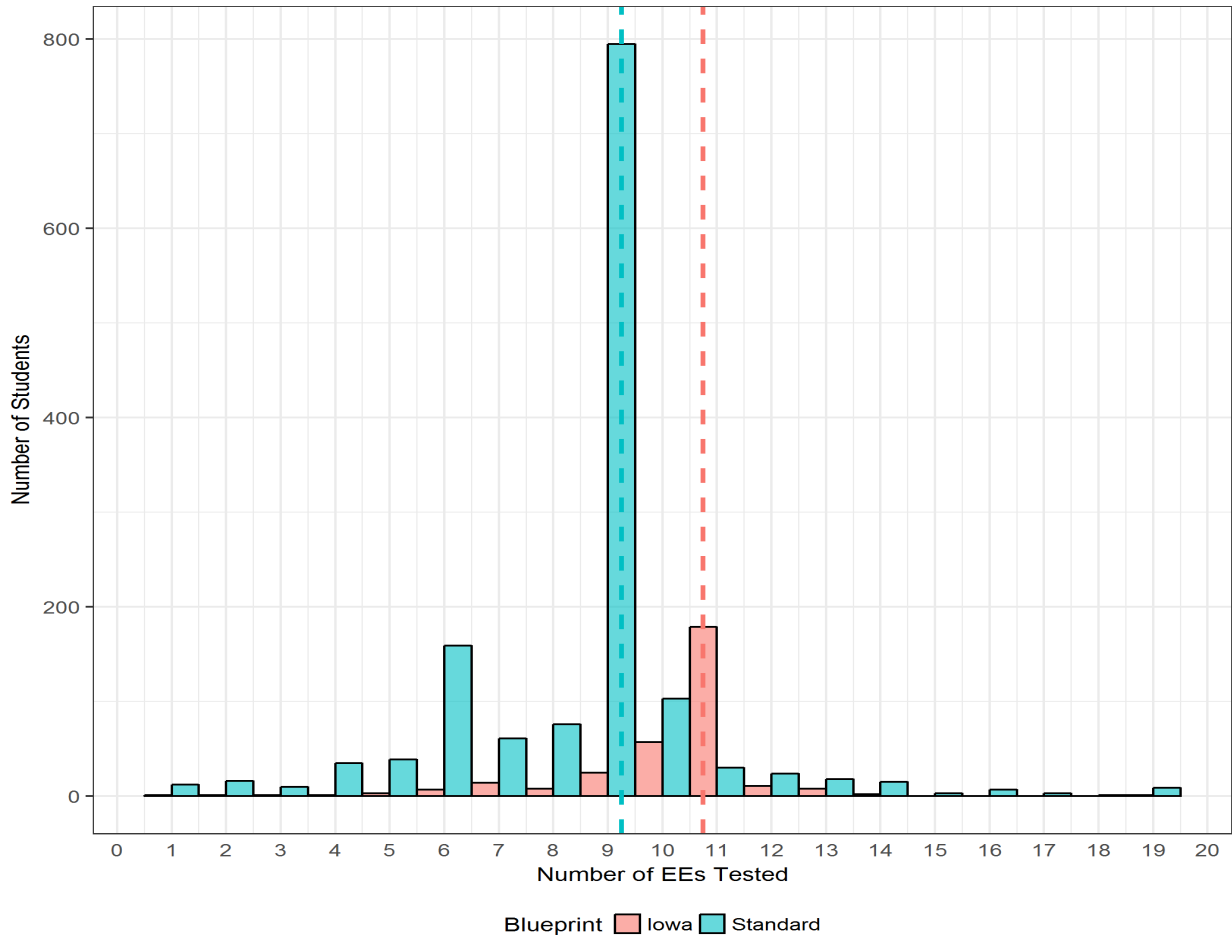


Figure X. English language arts sixth grade blueprint coverage for standard consortium and Iowa-specific blueprint.

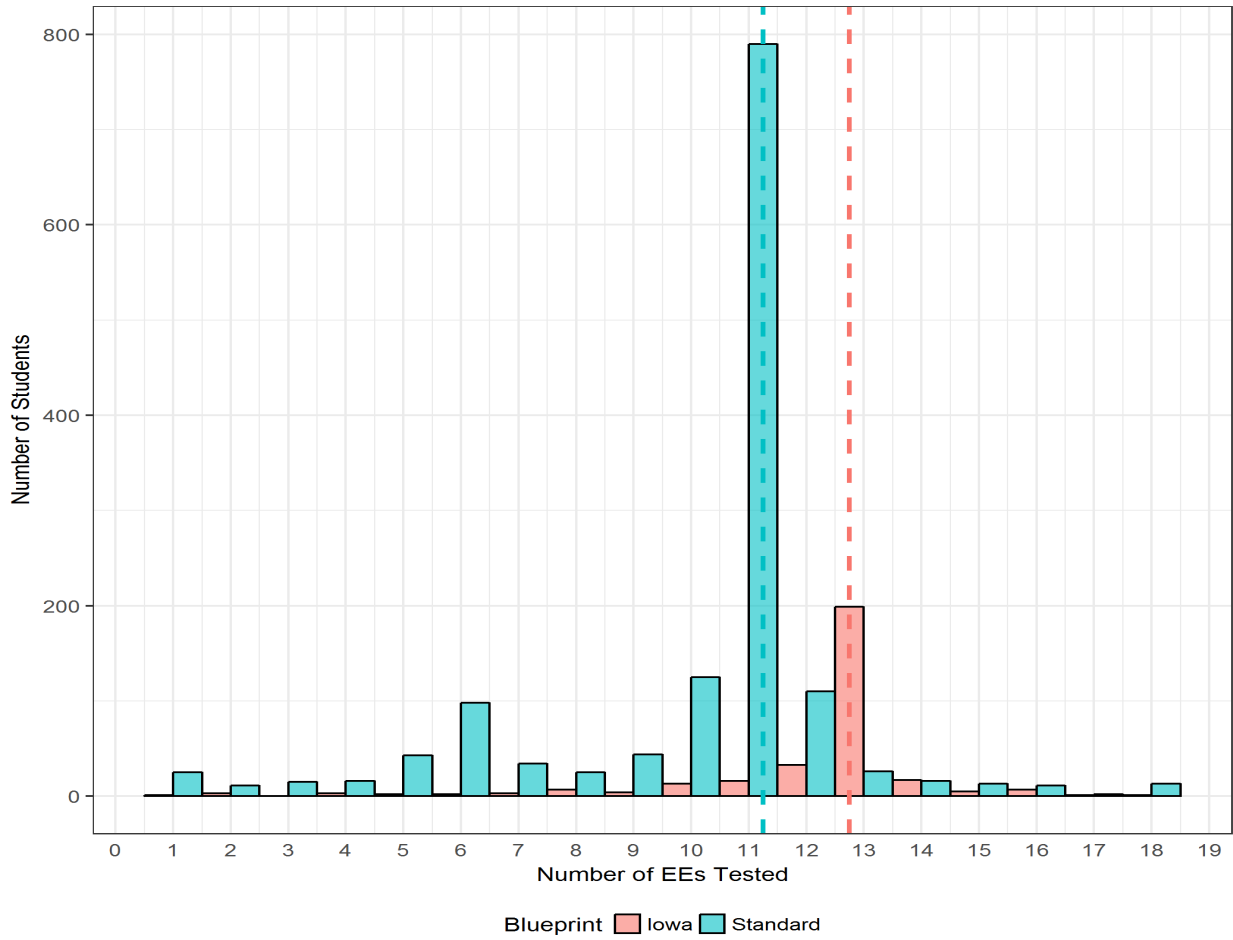


Figure X. English language arts seventh grade blueprint coverage for standard consortium and Iowa-specific blueprint.

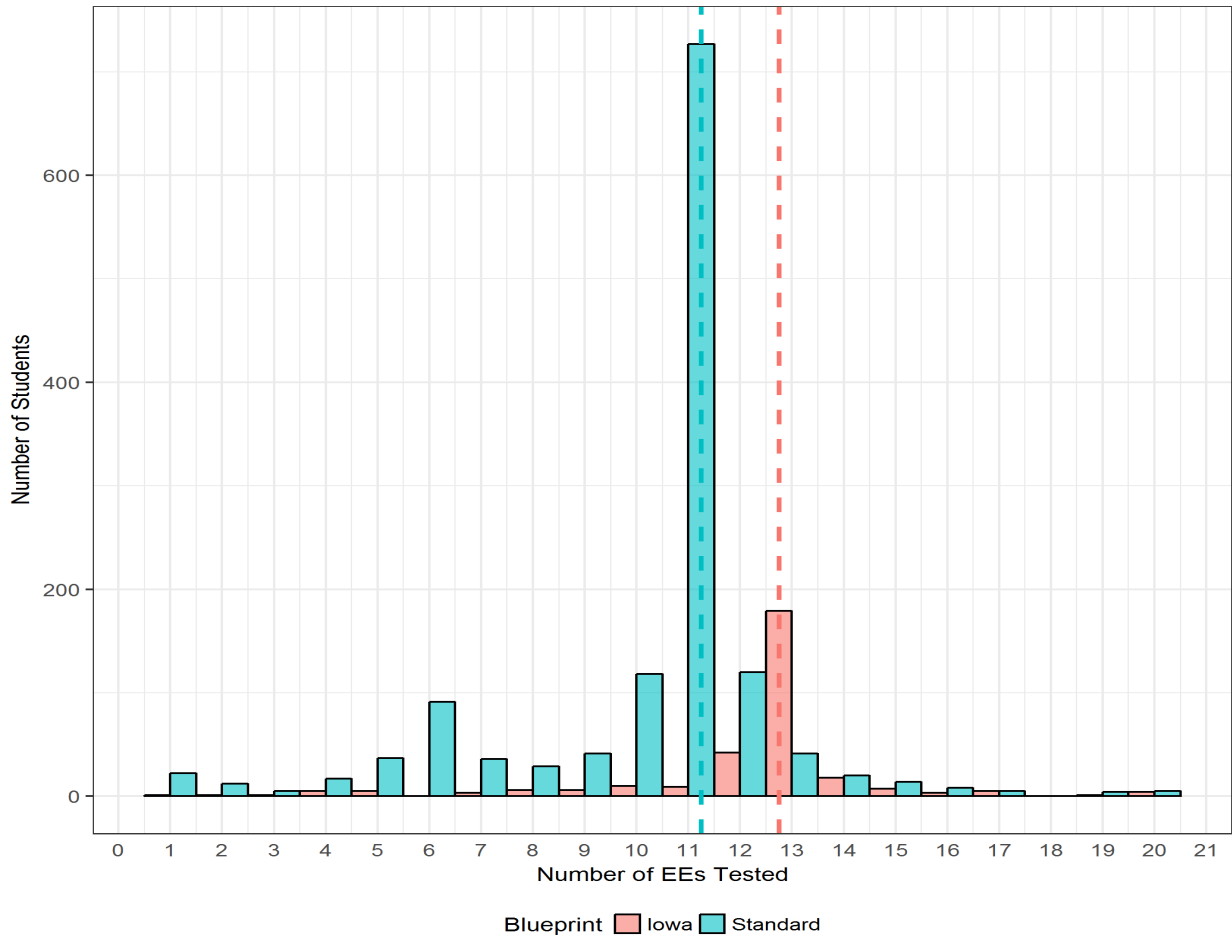


Figure X. English language arts eighth grade blueprint coverage for standard consortium and Iowa-specific blueprint.

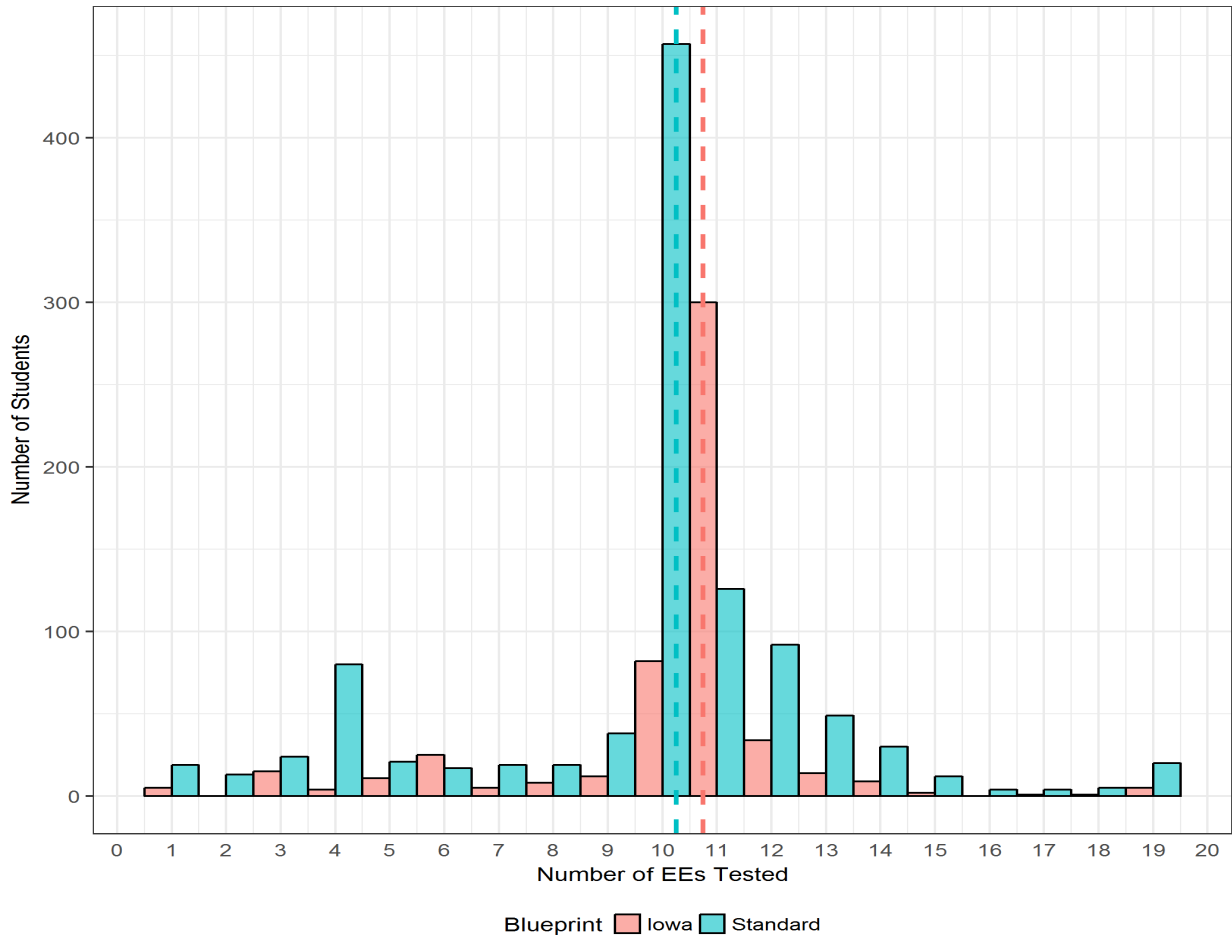


Figure X. English language arts ninth and tenth grade band blueprint coverage for standard consortium and Iowa-specific blueprint.



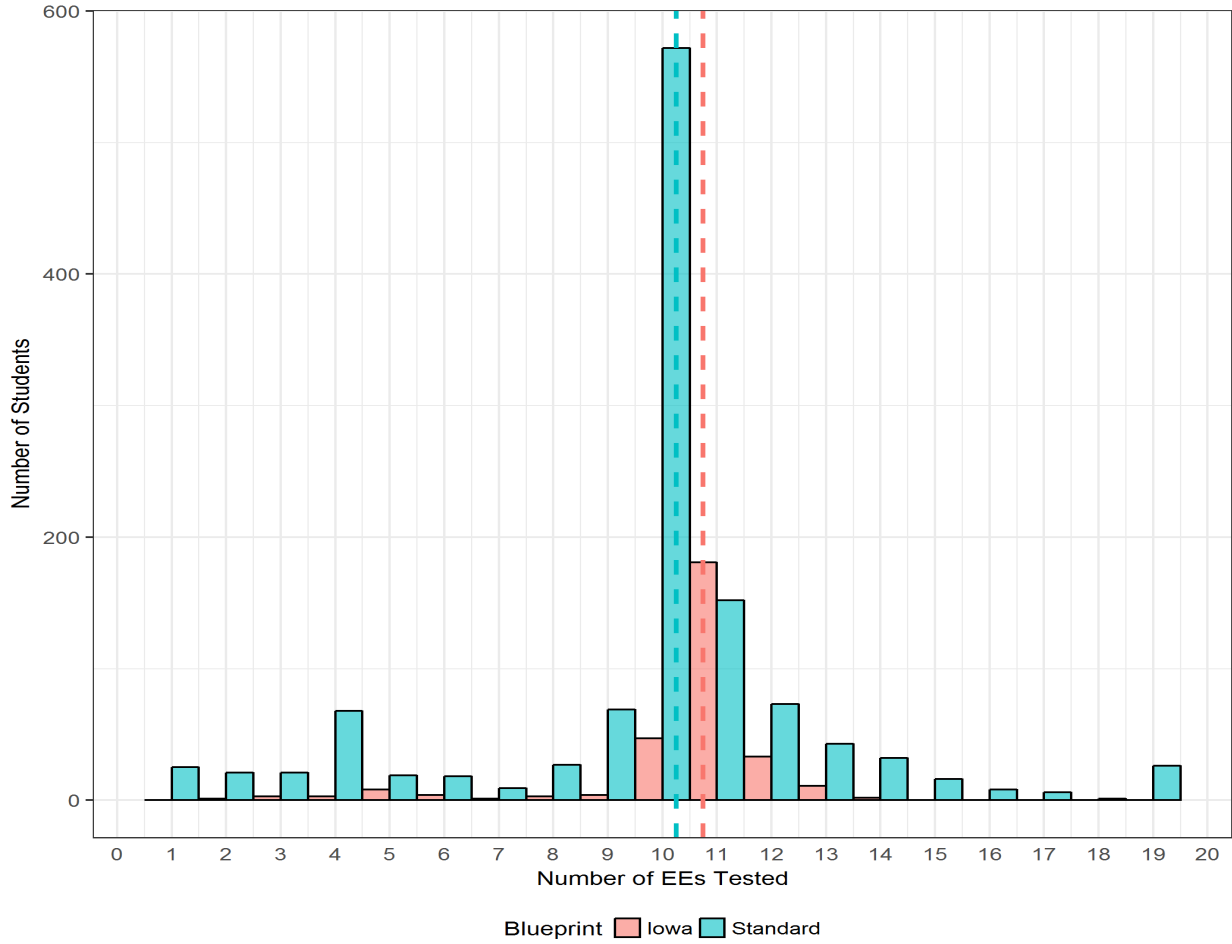


Figure X. English language arts eleventh and twelfth grade band blueprint coverage for standard consortium and Iowa-specific blueprint.

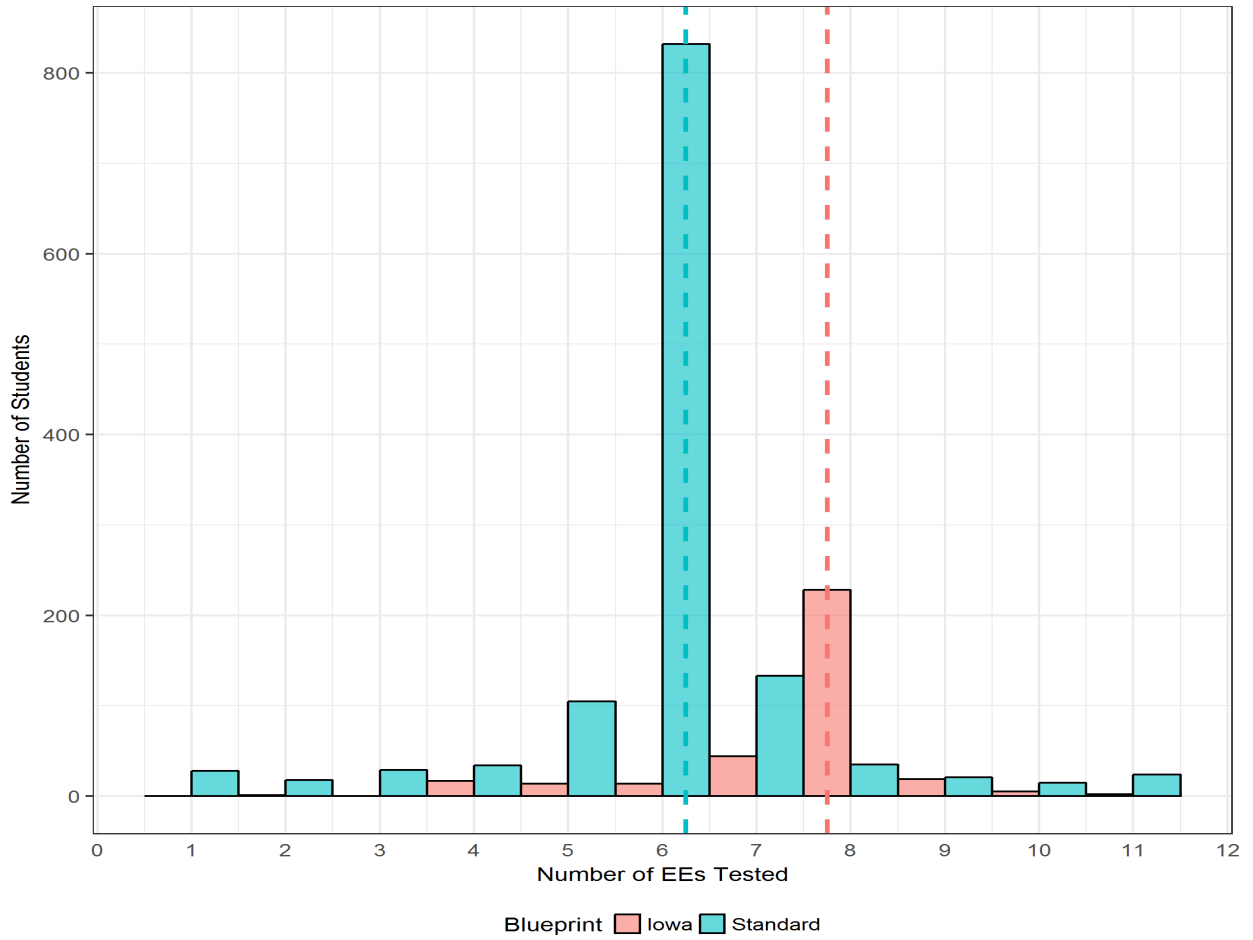


Figure X. Mathematics third grade blueprint coverage for standard consortium and Iowa-specific blueprint.

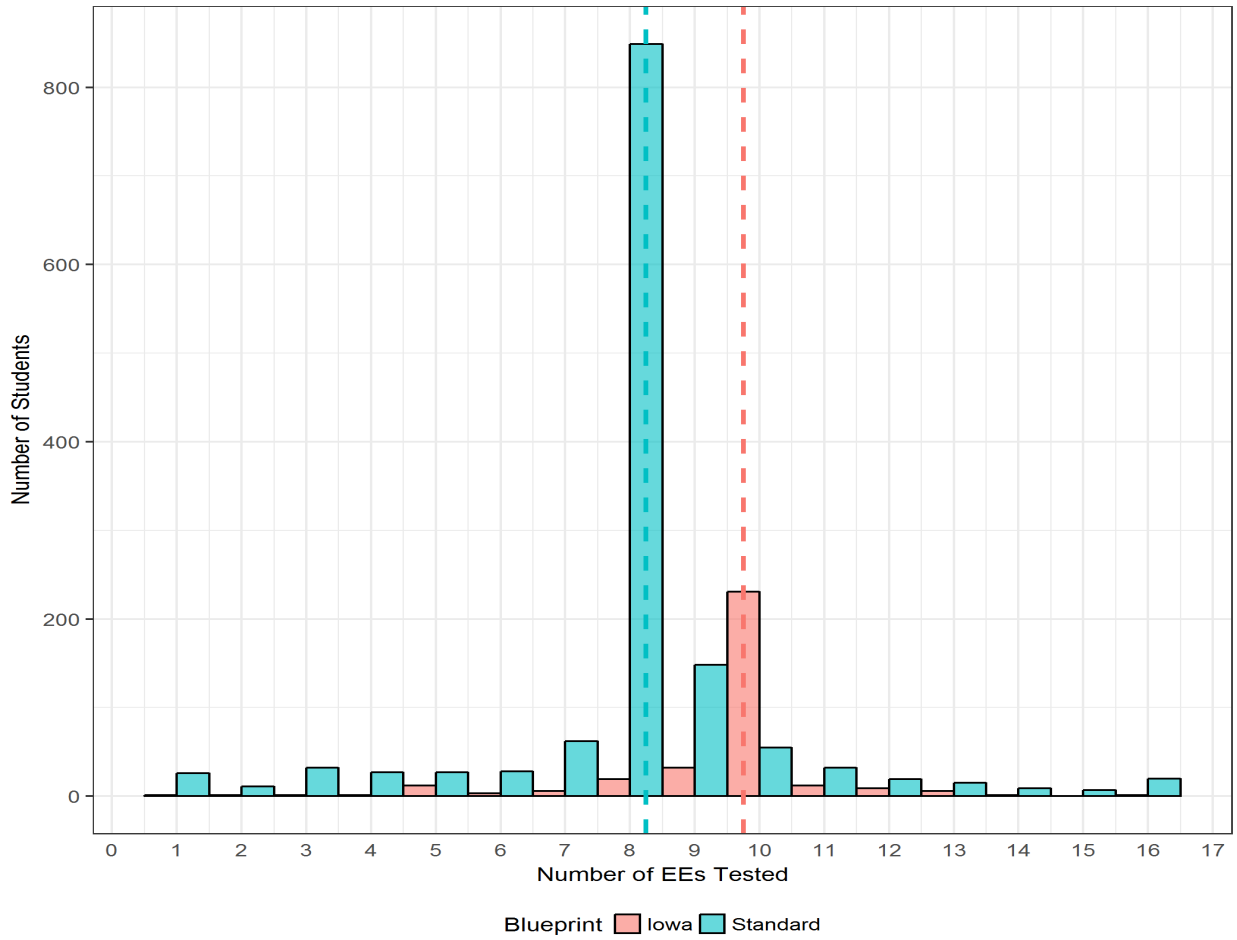


Figure X. Mathematics fourth grade blueprint coverage for standard consortium and Iowa-specific blueprint.

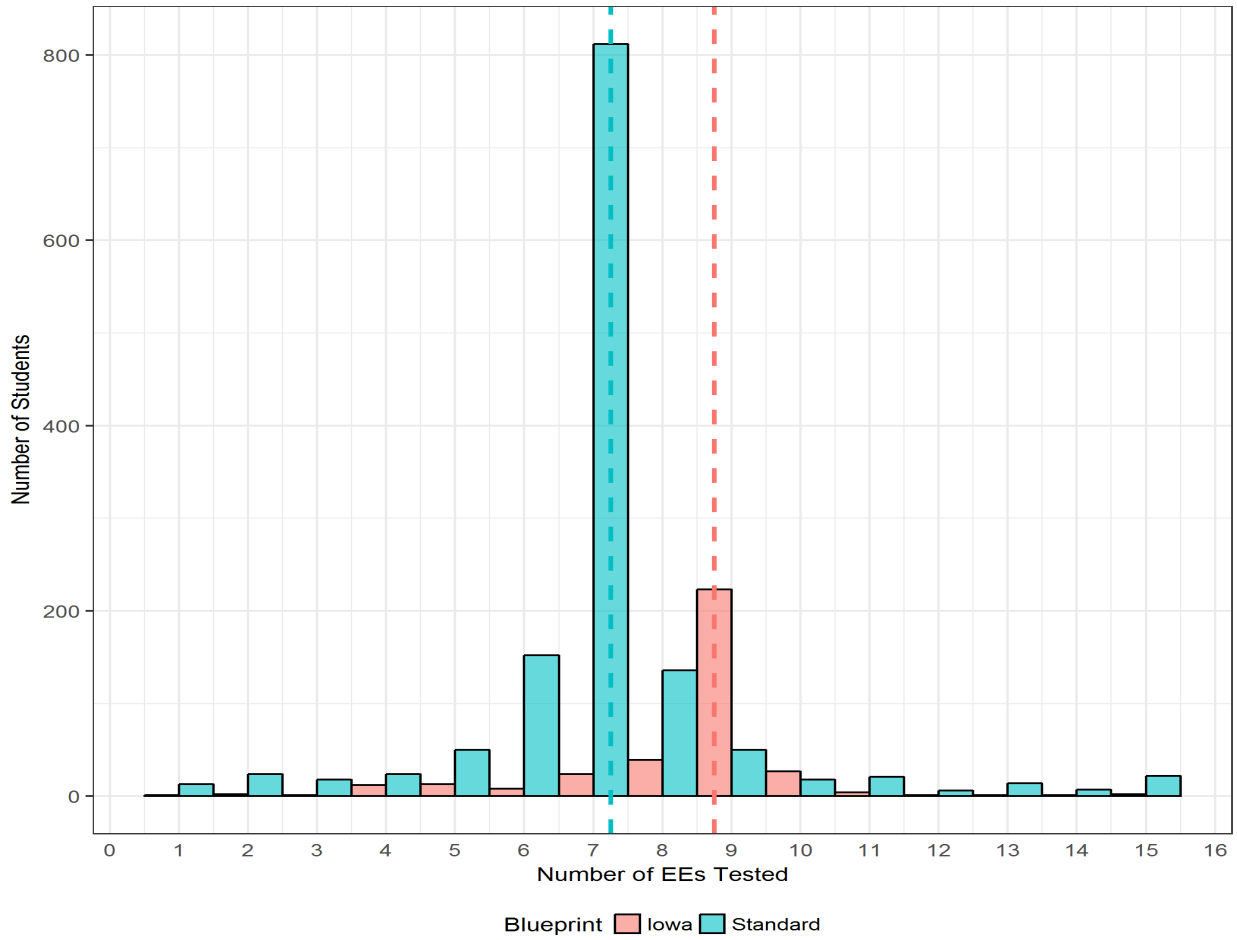


Figure X. Mathematics fifth grade blueprint coverage for standard consortium and Iowa-specific blueprint.

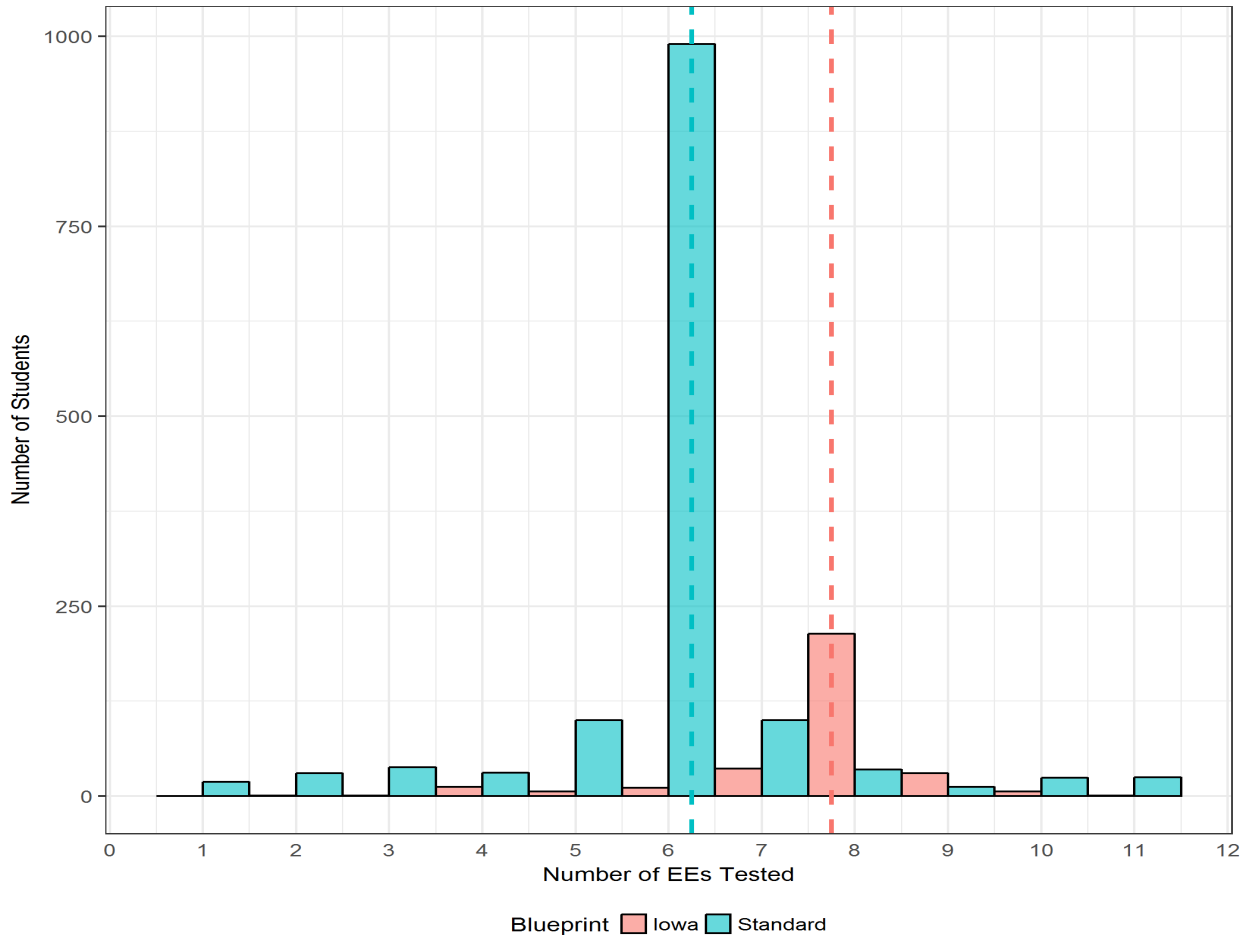


Figure X. Mathematics sixth grade blueprint coverage for standard consortium and Iowa-specific blueprint.

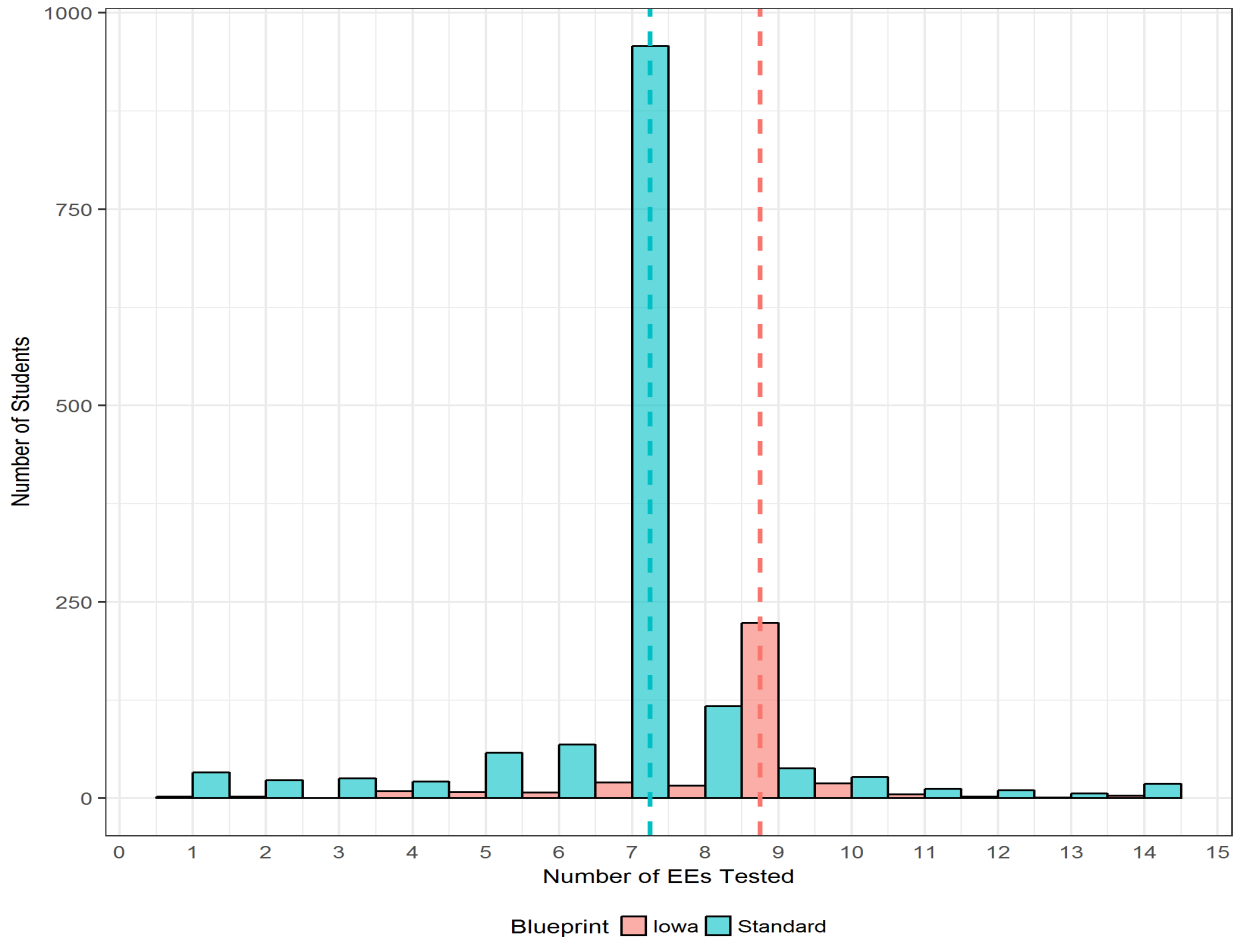


Figure X. Mathematics seventh grade blueprint coverage for standard consortium and Iowa-specific blueprint.

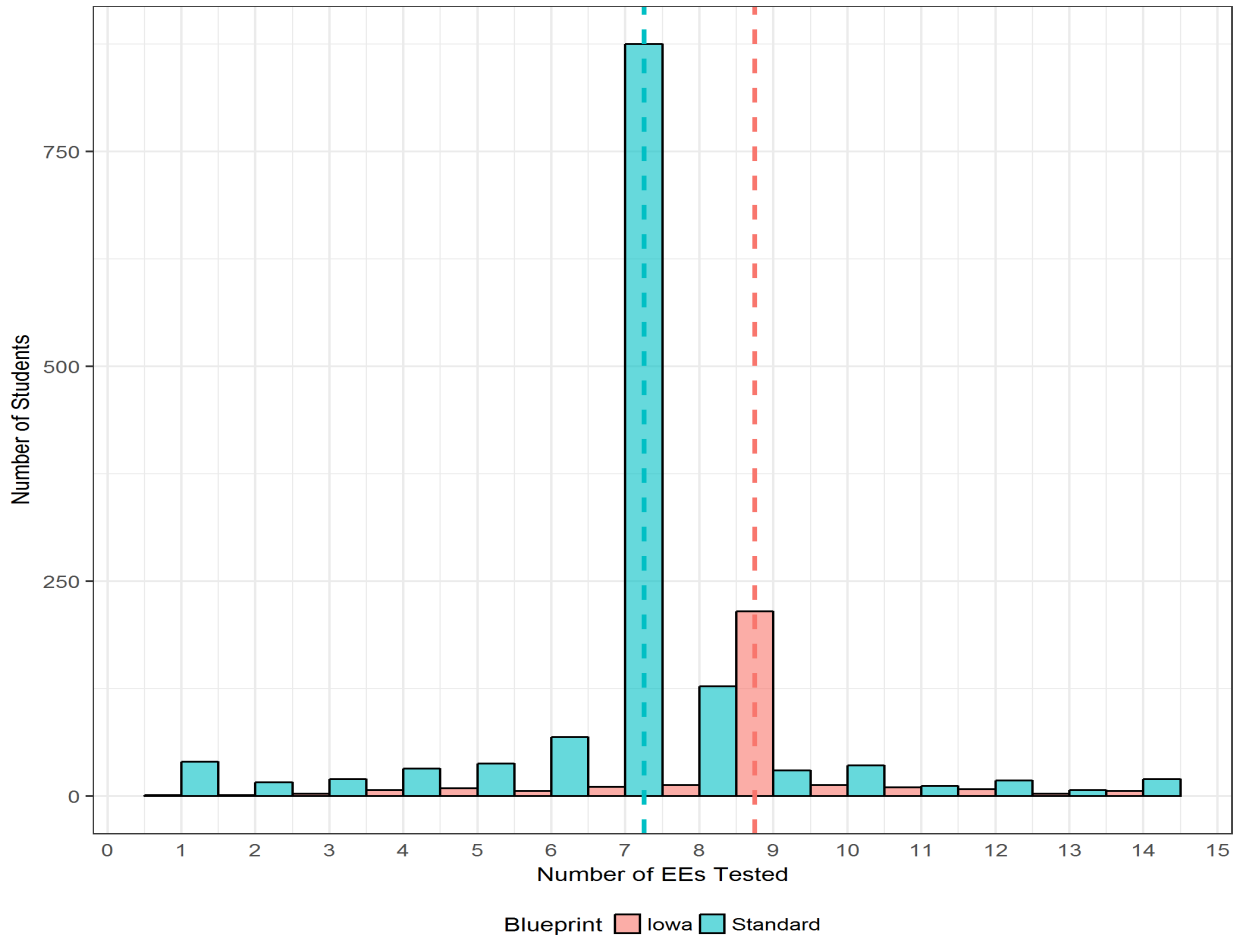


Figure X. Mathematics eighth grade blueprint coverage for standard consortium and Iowa-specific blueprint.

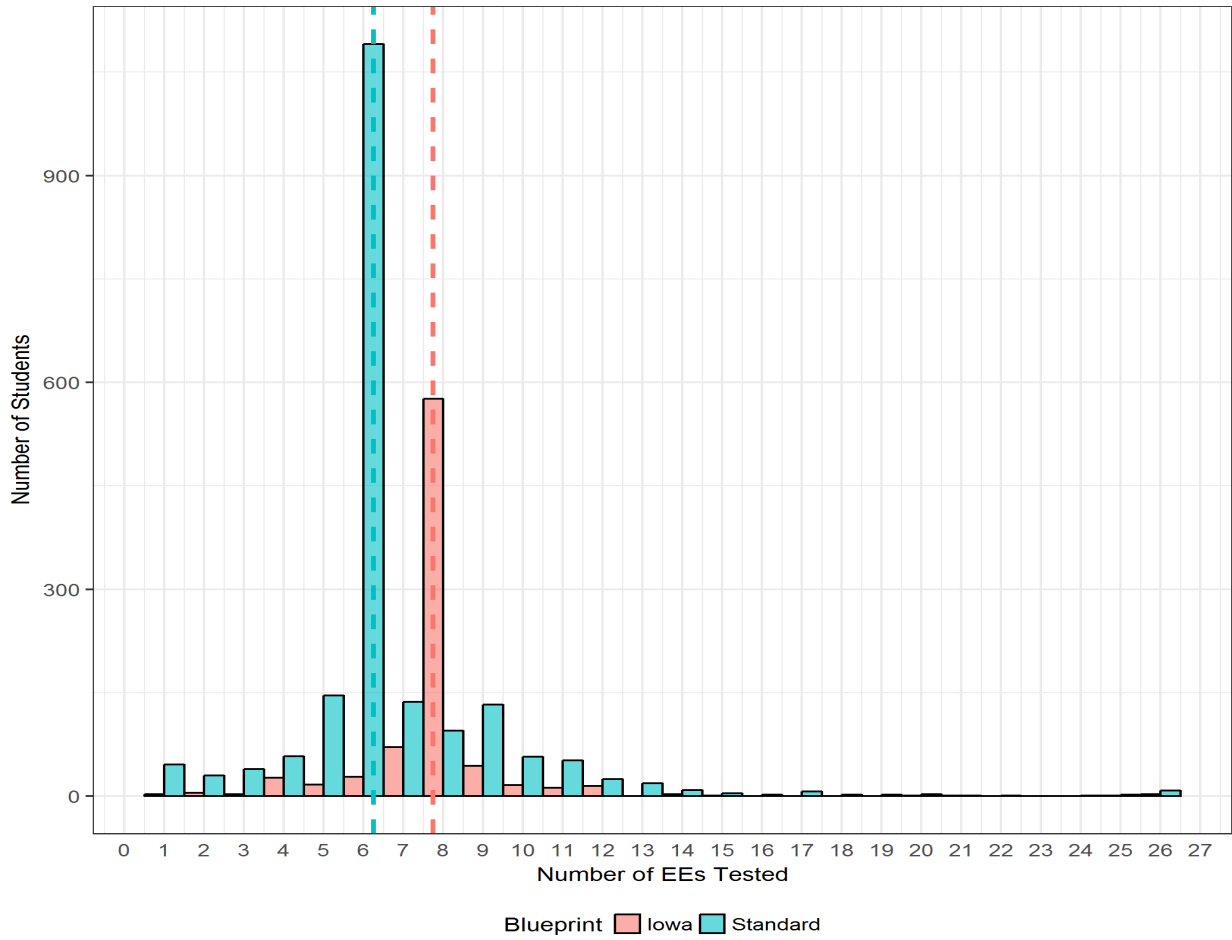


Figure X. Mathematics high school grade band blueprint coverage for standard consortium and Iowa-specific blueprint.



## First Contact Survey Item and Tested Nodes Identified

<b>First Contact Section</b>	<b>First Contact Survey Item</b>	<b>Map Node(s)</b>
Reading	Recognizes single symbols presented visually or tactually	ELA-1374 Recognize that illustrations or tactile graphics/objects in a text can provide information
Reading	Identifies individual words without symbol support	F-140: Can identify words that describe familiar persons, places, things, and events
Writing	Writes sentences or complete ideas without copying using spelling	ELA-1872: Can write a complete thought
Writing	Writes words or simple phrases without copying using spelling	ELA-1272 Can connect two or more words together when writing ELA-100 Can produce conventional spellings for single-syllable words, including the final -e rule words
Writing	Writes words using letters to accurately reflect some of the sounds	ELA-1391 Can accurately represent the initial sound in a word with a letter ELA-1309 Can spell words phonetically using letter-sound knowledge and common spelling patterns ELA-2107 Can use spelling patterns in familiar words to spell new words
Mathematics	Creates or matches patterns of objects or images	M-816 - extend a symbolic pattern by applying a rule M-2666 - extend a pictorial pattern by applying the rule M-2665 - predict an element in a symbolic pattern by applying the rule
Mathematics	Identifies simple shapes in 2 or 3 dimensions (e.g., square, circle, triangle, cube, sphere)	M-130 - recognize squares M-131 - recognize circles M-132 - recognize triangles M-133 - recognize rectangles M-135 - recognize cubes M-136 - recognize cones M-137 - recognize cylinders M-138 - recognize spheres
Mathematics	Sorts objects by common properties (e.g., color, size, shape)	M-76 - classify

<b>First Contact Section</b>	<b>First Contact Survey Item</b>	<b>Map Node(s)</b>
Mathematics	Counts more than two objects	F-61 - arrange objects in pairs M-2617 - count all objects in a set or subset M-608 - partition sets into equal subsets
Mathematics	Adds or subtracts by joining or separating groups of objects	M-23 - demonstrate the concept of addition M-140 - demonstrate the concept of subtraction
Mathematics	Adds and/or subtracts using numerals	M-2527 - Solve repeated addition problems M-29 - add within 10 M-144 - subtract within 10 M-228 - subtract within 20 M-231 - add within 20 M-255 - solve subtraction problems within 100 M-254 - solve addition problems within 100 M-28 - add within 5 M-27 - add 1 to 2, 3, and 4 M-26 - add 1 and 1 M-141 - subtract 1 from 2 M-142 - subtract 1 from up to 5 M-143 - subtract 5 M-251 - add within 100 M-252 - subtract within 100
Mathematics	Forms groups of objects for multiplication or division	M-710 - demonstrate the concept of multiplication M-711 - demonstrate the concept of division
Mathematics	Multiplies and/or divides using numerals	M-481 - multiply by 10 M-480 - multiply by 9 M-479 - multiply by 8 M-478 - multiply by 7 M-477 - multiply by 6 M-476 - multiply by 5 M-473 - multiply by 2 M-475 - multiply by 4 M-474 - multiply by 3 M-472 - multiply by 1 M-549 - divide by 1 M-550 - divide by 2 M-551 - divide by 3 M-552 - divide by 4

<b>First Contact Section</b>	<b>First Contact Survey Item</b>	<b>Map Node(s)</b>
		M-553 - divide by 5 M-554 - divide by 6 M-555 - divide by 7 M-556 - divide by 8 M-557 - divide by 9 M-558 - divide by 10
Mathematics	Tells time using an analog or digital clock	M-206 - read a digital clock M-199 - tell time to the hour M-201 - tell time to the half-hour M-202 - tell time to the quarter hour
Mathematics	Uses common measuring tools (e.g., ruler or measuring cup)	M-305 - use an appropriate tool to measure length using inches M-306 - use an appropriate tool to measure length using feet M-2494 - use an appropriate tool to measure liquid volume in cups M-879 - use an appropriate tool to measure mass in ounces M-880 - use an appropriate tool to measure mass in pounds