



Technical Manual 2016-2017 Program Year

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Preface

The Missouri Department of Elementary and Secondary Education (DESE) has contracted with the Evaluation Systems group of Pearson (Evaluation Systems) to plan, develop, and administer the Missouri Educator Gateway Assessments (MEGA) program. The MEGA program, designed to support the state's vision for education reform, includes the Missouri General Education Assessment (MoGEA), the Missouri Educator Profile (MEP), and 50 content and pedagogy assessments. All assessments are administered by computer.

Initial development of the MEGA program was divided into two phases. The MoGEA and the MEP were developed in Phase One and became operational in September 2013. A Paraprofessional Assessment, administered by Evaluation Systems, also went operational in Missouri in September 2013. Content and pedagogy assessments were developed in Phase Two, with administration beginning in September 2014.

In September 2015 a revised Missouri General Education Assessment and the Elementary Mathematics Specialist Content Assessment were launched. DESE requested that in August 2016 the School Psychologist and the Mild/Moderate Middle/Secondary Multi-Content be retired.

In September 2016 a Journalism test was launched. For the 2016-17 Program Year, there were 48 assessment areas and 53 tests in the program. The MEGA tests are listed in Appendix A.

This Missouri Educator Gateway Assessments Technical Manual 2016-2017 Program Year provides information to support the validity of score interpretations. The report is intended to inform policy makers, state educators, and other interested stakeholders about the Missouri Educator Gateway Assessments. The report describes activities undertaken to provide validity to support the use of the tests included in the program.

The report first describes the purpose and composition of the Missouri Educator Gateway Assessments (MEGA) program, followed by a description of the processes used in the development of the assessments, including framework development, item development, content and bias reviews, and establishment of passing standards. The last two sections present technical characteristics and score reporting for the assessments.

Purpose of the Missouri Educator Gateway Assessments (MEGA)

The Missouri Department of Elementary and Secondary Education (DESE), in 2012, contracted with Evaluation Systems to develop and administer an assessment required for entry into Missouri educator preparation programs and develop and administer new teacher and school administrator certification assessments.

Pearson developed the MEGA program to help assess the basic skills and content knowledge needed by candidates entering educator preparation programs and the content knowledge and pedagogical skills needed by teacher and public school administrator candidates for Missouri state certification, as defined by the Missouri State Board of Education. The MEGA program includes the Missouri General Education Assessment (MoGEA), an assessment required of all students entering an educator preparation program in the state; the Missouri Educator Profile (MEP), an inventory of work styles used in educator preparation programs to counsel and develop student candidates; and the Missouri Content Assessments, content and pedagogy assessments required for certification of teacher and school and district administrators in the state. The MEGA program is aligned with Missouri and, where applicable, national standards.

The state of Missouri can be confident in the quality of all tests in the MEGA program. The assessments were developed in accordance with the practices recommended by the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 1999 and 2014), which require a clear definition of the content domain being assessed and a rationale to support a claim that the knowledge and skills being assessed are required.

To ensure that the assessments in the Missouri Educator Gateway Assessments program reflect essential knowledge and skills for entry into educator preparation programs and for educator certification in the state of Missouri, Evaluation Systems used widely accepted professional standards to draft the assessment frameworks. Practitioners at the PK–12 level and educator preparation program faculty throughout the state of Missouri were involved in reviewing the materials for each assessment to confirm that they capture the requisite knowledge and skills a candidate needs.

All MEGA program tests are offered via computer. The computer-based assessments are available year-round, by appointment, Monday through Saturday (excluding some holidays). The MEGA program is delivered through a national network of Pearson's computer-based testing centers, as well as testing centers at universities and other locations throughout Missouri.

The major purpose of testing is to allow stakeholders to draw inferences about individuals regarding the knowledge and skills they possess. Accurate inferences can be drawn from test scores only if there is agreement between what candidates are expected to know and what appears on a test. Therefore, it is important that a test assess the knowledge and skills that candidates are expected to possess as outlined in the test framework that documents the content subtests/domains and associated competencies.

The assessments in the Missouri Educator Gateway Assessments program have been fully aligned with the standards that the state of Missouri has deemed appropriate for the level of knowledge and skills candidates must demonstrate to perform effectively in Missouri educator preparation programs and in Missouri public schools and districts. The assessments in the Missouri Educator Gateway Assessments program were carefully developed to provide a comprehensive assessment based on the state's professionally reviewed and accepted standards. Evaluation Systems worked with DESE to ensure that the content of the assessments in the program is appropriate as defined by these standards.

Development of the Missouri Educator Gateway Assessments Program

Test development involves a comprehensive process of defining and structuring a test, collecting validity evidence regarding test content, reviewing content to ensure it is equitable and free from bias, developing and piloting test items, and establishing an appropriate passing standard through guided standard-setting activities. Evaluation Systems developed the Missouri Educator Gateway Assessments using such a process.

The Test Development Process

Evaluation Systems developed assessments in the Missouri Educator Gateway Assessments program in accordance with the guidelines specified in the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 1999 and 2014) for defining test content, developing test items, establishing passing standards, and collecting evidence to support the validity of the assessments. Evaluation Systems incorporated these guidelines for test development for the Missouri Educator Gateway Assessments in twelve distinct steps:

- Task 1. Conduct Program Planning
- Task 2. Establish Advisory Committees
- Task 3. Prepare Assessment Frameworks
- Task 4. Review Assessment Frameworks
- Task 5. Conduct Content Validation Surveys
- Task 6. Prepare Assessment Items
- Task 7. Review Assessment Items for Potential Bias
- Task 8. Conduct Field Tests
- Task 9. Conduct Marker Response Establishment
- Task 10. Develop Test Preparation Materials
- Task 11. Begin Operational Assessment Administration
- Task 12. Conduct Confirmatory Item Validation and Standard Setting

To support the connection between assessments in the Missouri Educator Gateway Assessments program and their purposes, validity was a central focus in the test development process. Validity evidence for each of these steps in the development process was carefully compiled and documented. Additionally, the test development process involved careful attention to bias prevention in order to create fair assessments. Details for each step are described below.

Task 1. Conduct Program Planning

Evaluation Systems met with representatives of DESE in Missouri and by conference calls, as needed, to discuss and formulate plans for program development activities. Topics discussed included identification of Missouri and national standards to inform development, proposed conference dates, the recruitment of Missouri educators to participate in assessment development activities, and the involvement of Missouri stakeholder groups.

During initial development, Evaluation Systems and DESE conducted weekly conference calls to monitor and review progress on assessment development. Currently, Evaluation Systems and DESE conduct bi-weekly conference calls.

Task 2. Establish Advisory Committees

DESE and Evaluation Systems worked with two primary groups of educators throughout the development of the Missouri Educator Gateway Assessments program: a Bias Review Committee and Content Advisory Committees. Committees were composed of certified public school educators and educator preparation program faculty in Missouri as nominated by DESE, professional organizations, teacher educator programs, and school principals and superintendents. Educators applied for participation in committees and were selected by DESE. The committee members participated in the following roles.

Bias Review Committee

While bias prevention is an integral part of Evaluation Systems's test development activities and a component of the Content Advisory Committees' responsibility, Evaluation Systems established a separate and independent Bias Review Committee (BRC) in Missouri to focus primarily on reviewing assessment materials for potential bias issues, a developmental step recommended by the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 1999 and 2014).

The BRC was composed of Missouri public school educators and educator preparation program faculty. Evaluation Systems convened the BRC to review the draft test frameworks and test items for fairness and sensitivity, identify any potential sources of bias based on review criteria provided, and make recommendations on ways to eliminate potential sources of bias.

Evaluation Systems provided the BRC with information regarding the background, purpose, and policies of the MEGA program and the purpose of the MEGA assessments. Explicit bias review criteria were presented to bias review committee members during the training orientation to each conference and through the relevant orientation manuals. Committee members reviewed the test frameworks and test items for bias based upon a set of review criteria relating to areas of content, language, offense, stereotypes, inclusion, and fairness.

Content Advisory Committee

A Content Advisory Committee (CAC) was established for each Missouri assessment. The CACs were composed of Missouri public school educators and preparation program faculty.

Content Advisory Committee members were selected with consideration given to representation from diverse school settings (e.g., urban areas, rural areas, large schools, small schools) as well as geographic representation.

The various roles of the CACs were to review the assessment framework, review test items, review marker responses for the fields with constructed-response items, and participate in the Item Validation/Standard Setting Conference.

Task 3. Prepare Assessment Frameworks

The first step in developing test specifications is to extend the original statement of purpose(s), and the construct or content domain being considered, into a framework for the test that describes the extent of the domain, or the scope of the construct to be measured. *Content specifications*, sometimes referred to as *content frameworks*, delineate the aspects (e.g., content, skills, processes, and diagnostic features) of the construct or domain to be measured. ... The delineation of the content specifications can be guided by theory or by an analysis of the content domain (e.g., an analysis of job requirements in the case of many credentialing or employment tests). The content specifications serve as a guide to subsequent test evaluation. (AERA, APA, & NCME, 2014, p. 76)

Evaluation Systems prepared test designs for each assessment in the Missouri Educator Gateway Assessments program for review and approval by the Missouri DESE. The test designs delineate item formats, response formats, scoring specifications, and other aspects of the assessments. The designs outline the number of multiple-choice items and constructed-response items as well as the percentage of total assessment score allocated to the multiple-choice and constructed-response sections of the assessments. The test designs also specify the number of scorable and nonscorable items per test/subtest.

The assessments in the Missouri Educator Gateway Assessments program were designed to accommodate the appropriate numbers, types, and distribution of test items, in accordance with the test frameworks. The frameworks for the Missouri Educator Gateway Assessments program clearly define the content knowledge and skills. The *Standards for Educational and Psychological Testing* require that evidence be provided to show that the knowledge and skills that the test intends to assess are required for success in the field (AERA, APA, & NCME, 1999 and 2014).

In developing the frameworks, Evaluation Systems worked with DESE to identify the appropriate Missouri student and educator standards. Each test competency has been aligned to one or more of these standards.

Evaluation Systems structured the frameworks to include the following components:

- **Content Subtests/Domains:** the primary areas of content knowledge to be assessed. The content Subtests/Domains serve to structure the content for both test preparation and score reporting purposes.
- **Competencies:** broad, meaningful statements of knowledge and/or skills that define the range of content to be measured by the test.
- **Descriptive Statements:** define each test competency. Each descriptive statement provides more detailed information about a competency and provides specific examples of the knowledge and skills eligible for testing. There are multiple descriptive statements for each competency.

Task 4. Review Assessment Frameworks

Evaluation Systems prepared draft assessment frameworks and convened the BRC to review the frameworks. At the meeting, members of the BRC were trained according to specified bias review criteria and then participated in reviews of frameworks. Following an in-person training and review of frameworks, the BRC continued to review frameworks online.

BRC members used the following criteria when conducting the review of the framework.

Content

Does any element of the competencies or descriptive statements contain content that disadvantages a person because of her or his gender, race, nationality, ethnicity, sexual orientation, religion, age, disability, or cultural, economic, or geographic background?

Language

Does the language used to describe any element of the competencies or descriptive statements disadvantage a person because of her or his gender, race, nationality, ethnicity, sexual orientation, religion, age, disability, or cultural, economic, or geographic background?

Offense

Is any element of the competencies or descriptive statements presented in such a way as to offend a person because of her or his gender, race, nationality, ethnicity, sexual orientation, religion, age, disability, or cultural, economic, or geographic background?

Stereotypes

Does any element of the competencies or descriptive statements contain language or content that reflects a stereotypical view of a group based on gender, race, nationality, ethnicity, sexual orientation, religion, age, disability, or cultural, economic, or geographic background?

Fairness

Taken as a whole, is the list of competencies and descriptive statements fair to all individuals regardless of race, gender, cultural background, or other personal characteristics?

Diversity

Does the list of competencies and descriptive statements permit appropriate inclusion of content that reflects the diversity of the Missouri population? Bias-related recommendations made by the BRC were incorporated into the assessment framework.

The Missouri Educator Gateway Assessments program Content Advisory Committees (CACs) also conducted reviews of the frameworks. Content-related validity review provides evidence that the test is measuring the content it was designed to assess. The CAC reviews are an important step in establishing appropriate validity evidence for the tests (AERA, APA, & NCME, 1999 and 2014). The CAC members reviewed the Missouri General Education Assessment (MoGEA) test framework, including the competencies and descriptive statements, based on the following criteria:

Alignment

Is the assessment framework consistent with the Missouri general education competencies for college undergraduates and the knowledge and skills that candidates should possess when entering an educator preparation program?

Completeness

Does the assessment framework address important areas of general education knowledge and skills in Missouri?

Language and Terminology

Does the assessment framework contain language that is stated clearly, using terminology that reflects educational policies and practices in Missouri?

Freedom from Bias

Is the assessment framework free from elements that might potentially disadvantage an individual because of her or his gender, sexual orientation, race, nationality, ethnicity, religion, age, disability, or cultural, economic, or geographic background?

The CAC members reviewed the Missouri Content Assessment test frameworks, including the competencies and descriptive statements, based on the following criteria:

Alignment

Is the test framework consistent with Missouri and national standards of the knowledge, skills, and abilities that candidates should possess as entry-level educators in this field?

Completeness

Does the test framework address important areas of knowledge, skills, and abilities in this field?

Language and Terminology

Does the test framework contain language that is stated clearly, using terminology that reflects educational policies and practices in Missouri?

Freedom from Bias

Is the test framework free from elements that might potentially disadvantage an individual because of her or his gender; sexual orientation; race; nationality; national origin; ethnicity; religion; age; disability; or cultural, economic, or geographic background?

The BRC and CACs reviewed the frameworks and offered suggested revisions. Following the reviews of the test frameworks, the frameworks were revised based on both the BRC and CACs' recommendations.

Task 5. Conduct Content Validation Surveys

Evaluation Systems conducted state-wide content validation surveys, or job analyses, to gather additional input from experts regarding the importance of the knowledge and skills specified in each test framework. The participants included both PK–12 practitioners and educator preparation program faculty. These surveys provided additional evidence to support the claim that the knowledge, skills, and abilities being assessed are important.

Using an interactive, online survey instrument, survey participants were asked to respond to a set of background questions. The content validation surveys contained three major components. The first asked participants to judge the importance of the content addressed in each of the competencies in the framework. The question and response alternatives for participants in the Missouri General Education Assessment (MoGEA) survey were as follows:

How important is the knowledge or skill described by this competency for performing effectively in a Missouri-approved educator preparation program?

1. No importance
2. Little importance
3. Moderate importance
4. Great importance
5. Very great importance

The second question asked participants to indicate how well they thought the descriptive statements associated with each competency captured the meaning and intent of the competency.

How well does the set of descriptive statements represent important aspects of the competency?

1. Poorly
2. Somewhat
3. Adequately
4. Well
5. Very well

The third component asked for the overall judgment of the set of competencies as a whole.

How well does the set of competencies as a whole cover the knowledge and skills required for performing effectively in a Missouri-approved educator preparation program?

1. Poorly
2. Somewhat
3. Adequately
4. Well
5. Very well

The question and response alternatives for participants in the Missouri Content Assessment surveys were as follows:

How important is the knowledge or skill described by this competency for performing the job of an entry-level educator in this field in Missouri public schools?

1. No importance
2. Little importance
3. Moderate importance
4. Great importance
5. Very great importance

The second question asked participants to indicate how well they thought the descriptive statements associated with each competency captured the meaning and intent of the competency.

How well does the set of descriptive statements represent important aspects of the competency?

1. Poorly
2. Somewhat
3. Adequately
4. Well
5. Very well

The third component asked for the overall judgment of the set of competencies as a whole.

How well does the set of competencies as a whole cover the content knowledge and skills for performing the job of an entry-level educator in this field in Missouri public schools?

1. Poorly
2. Somewhat
3. Adequately
4. Well
5. Very well

In addition to assigning a 1 to 5 rating for each question, participants were given the opportunity to comment on the competencies, the descriptive statements, and the overall framework.

Content validation surveys were produced for each framework and sent to a sample of Missouri educators in two groups: practicing PK–12 educators and faculty at educator preparation programs who teach courses taken by educator candidates. For the public school sample, participants were randomly selected from a state database of eligible personnel, with up to 200 possible participants by field. For the college faculty sample, surveys were sent to up to 150 possible participants per field.

Evaluation Systems reviewed overall ratings to determine the final status of the test framework components. In general, a rating of 3.00 or higher is considered to be a clear indication that the content addressed by a competency is of the appropriate level of importance. Ratings below 3.00 may also be included if they are deemed to address topics that are articulated in the relevant state standards. The results of the surveys indicate overwhelming support for the Missouri Educator Gateway Assessment frameworks. All MEGA frameworks had mean competency ratings of 3.50 or above, with most above 4.20. These findings are true for both the PK–12 and the educator preparation program faculty populations. Further, only two individual competencies within the 43 frameworks (Please note that there is one framework for the four World Languages) had ratings below 3.00. These competencies are part of the Social Sciences framework, and had ratings of 2.67 and 2.80. Because these two competencies were articulated in the relevant Missouri standards, the Missouri DESE determined that the two competencies should remain in the framework.

Similarly, mean ratings for the descriptive statements and the overall composite ratings for each certification field were at 3.00 or above. Evaluation Systems also reviewed comments in the open-ended section of the content validation surveys. In addition, the Missouri DESE invited all Missouri educators to participate in a public comment period for review of the MEGA frameworks. Comments from all sources were used to produce final versions of the Missouri Educator Gateway Assessments frameworks for each field. The overall competency rating results from the MEGA content validation surveys are found in Appendix B.

The final versions of the Missouri Educator Gateway Assessments program Frameworks and Content Alignment Tables can be found on the *Understanding Test Content* page under the *Faculty Resources* section of the MEGA website at the following link:

http://www.mo.nesinc.com/PageView.aspx?f=GEN_MatchStudies.html

Task 6. Prepare Assessment Items

Evaluation Systems developed Missouri Educator Gateway Assessments program item banks in accordance with the final, validated test frameworks and test designs. Evaluation Systems assembled a team of content specialists, test development specialists, editors, content reviewers, and equity advisors to develop the test items and associated scoring rubrics to ensure that the test materials produced were closely linked to the test frameworks and met Evaluation Systems' standards for editorial quality.

Evaluation Systems prepared test items by drawing from existing item banks and by drafting additional items as necessary. Test item and material development involves a series of activities designed to produce a test that is technically sound, reliable, and valid. Evaluation Systems used the following two item formats.

- Multiple-choice items, which are intended to address specific knowledge, skills, and abilities in a rigorous, authentic, and challenging manner
- Constructed-response items, which require candidates to provide a written response to an assignment

Task 7. Review Assessment Items for Potential Bias

Evaluation Systems conducted item reviews with the Bias Review Committee (BRC). The BRC was convened to review test items for potential bias in relation to established review criteria. Committee members were oriented to the background, purposes, and policies of the MEGA program and the purpose of the assessments. Pearson presented review criteria in the training orientations and in the orientation manual. Committee members reviewed the test items for bias based upon the following review criteria.

Content

Does the item contain content that disadvantages a person because of her or his gender, race, nationality, ethnicity, sexual orientation, religion, age, disability, or cultural, economic, or geographic background?

Language

Does the item contain language that disadvantages a person because of her or his gender, race, nationality, ethnicity, sexual orientation, religion, age, disability, or cultural, economic, or geographic background?

Offense

Is the item presented in such a way as to offend a person because of her or his gender, race, nationality, ethnicity, sexual orientation, religion, age, disability, or cultural, economic, or geographic background?

Stereotypes

Does the item contain language or content that reflects a stereotypical view of a group based on gender, race, nationality, ethnicity, sexual orientation, religion, age, disability, or cultural, economic, or geographic background?

Fairness

Taken as a whole, are the items fair to all individuals regardless of race, gender, cultural background, or other personal characteristics?

Diversity

Taken as a whole, do the items permit appropriate inclusion of content that reflects the diversity of the Missouri population?

The committee either approved the assessment items as presented, made recommendations for revision, or deleted assessment items from the item banks.

Task 8. Conduct Field Tests

Field testing provides another source of validity evidence by gathering data regarding the performance characteristics of the draft test items. Item performance can be assessed and, when needed, items can be revised for future pilot tests and administration.

Evaluation Systems conducted state-wide field tests of the Missouri General Education Assessment Writing Subtest constructed-response items and the Missouri Administrator Content Assessment Building-Level and Superintendent constructed-response items to obtain sample responses and data about the items' statistical and qualitative characteristics. The constructed-response items in the World Language assessments and most of the multiple-choice items in the MEGA program had been

used in programs in other states. These items had previously gone through the full development process, including review by those states' bias and content committees, and field testing on pilot and/or operational test forms. Beginning with the first operational MEGA test forms, additional multiple-choice items are introduced as nonscorable items, and are field tested for use on future operational test forms.

The field tests of the constructed-response items were designed to determine how items perform, to identify any items that may need revision, and to evaluate the comparability of items within a set. Constructed-response items measuring the same competencies should be comparable to each other in difficulty and other relevant characteristics. Field testing of the constructed-response items also provided an opportunity to gather candidate responses that could be used as marker or exemplar responses for scorer training or study guide sample responses.

Evaluation Systems administered field tests at institutions in the state of Missouri offering state-approved educator preparation programs. Field tests were administered under conditions of quiet, confidentiality, and test security, and participants were not permitted access to unauthorized aids, such as reference materials, so as to approximate operational testing conditions.

Eligible participants for the Missouri Educator Gateway Assessment program field tests included candidates that were enrolled in Missouri educator preparation programs and candidates anticipating enrolling in a Missouri educator preparation program. Evaluation Systems recruited field test participants through notifications to deans and other college contacts. Participants were required to indicate their eligibility for the field test and their willingness to abide by the security and confidentiality requirements of field testing by indicating their agreement with a non-disclosure statement. Multiple pilot test forms were constructed to include all constructed-response items in the three fields. Pilot test participants were asked to respond to two constructed-response items per form.

Constructed-response items were scored using procedures and scorers in a process designed to simulate the scoring of responses for operational test administrations. Each field test response was individually scored by trained and calibrated scorers using the scoring rubric. The scoring rubrics contained performance characteristics (descriptions of characteristics of the response) to guide the scoring of constructed-response items.

Evaluation Systems generated constructed-response items statistics for review and determined those items that were eligible for use on operational test forms.

Task 9. Conduct Marker Response Establishment

Following the field test, Evaluation Systems oversaw marker selection for the seven assessments in the Missouri Educator Gateway Assessments program that have constructed-response items: the Missouri General Education Assessment, the World Languages (Chinese–Mandarin, French, German, and Spanish), the Building-Level

Administrator, and Superintendent. The Missouri General Education Assessment has a constructed-response item in the Writing Subtest. For the World Languages, the constructed-response items are in Domain V (Writing) and Domain VI (Speaking). The two constructed-response items in Building-Level Administrator and Superintendent are both writing assignments.

Members of the content advisory committees for the seven fields met in Columbia, Missouri, to identify marker responses that exemplify the components of the four-point scale. At the marker response selection meeting, committee members reviewed scoring criteria and selected a set of “marker responses” that illustrated the holistic score points on the scoring scale. These marker responses are used to train scorers in evaluating operational responses to the constructed-response assignment. The use of the marker responses, together with the standardized scoring scale and performance characteristics, promotes continuity and consistency in scoring over time, and across test forms, test administrations, and scorers. The marker responses also help to ensure that scores retain a consistent meaning over time, and that candidates’ responses are judged similarly regardless of when they take the test or which test form they take.

Task 10. Develop Test Preparation Materials

Evaluation Systems developed web-based resources to assist candidates in preparing for all assessments in the Missouri Educator Gateway Assessments program. Candidates have access to the test frameworks, study guides, a tutorial on computer-based testing, and practice tests. The following describes several resources available to candidates:

- **Missouri Educator Gateway Assessments Frameworks**—contain the test competencies organized by content subtests/domains, groupings of test competencies that reflect the main areas of subject-matter knowledge for each subtest/domain
- **Missouri Educator Gateway Assessments Study Guides**—provide general information about the MEGA program, test-taking strategies, the test design and framework, sample multiple-choice questions, and, if relevant, sample constructed-response assignments, and sample strong responses.
- **Computer-Based Testing Tutorial**—familiarizes candidates with the navigational tools and operations of computer-based testing. The tutorial directs candidates on how to record, change, and review answers during the testing experience. The tutorial also gives candidates the opportunity to practice using functions to view visuals and exhibits, scroll pages, and review items.

- **Test Preparation Video**—provides a general overview of test preparation and test-taking strategies. It is designed to help the candidate prepare for the Missouri Educator Gateway Assessments by describing how to use the study resources provided online.
- **Missouri Educator Gateway Assessments Practice Tests**—replicates the computer-based testing experience by providing full length computer-based tests, allowing candidates to understand the complexity of questions designed to measure content knowledge and skills and practice using the functions of the testing platform.

Task 11. Begin Operational Assessment Administration

Items that met Evaluation Systems' requirements in terms of the review criteria were assembled into test forms for operational administrations. Evaluation Systems' test construction group of experts assembled each form to meet the appropriate assessment specifications. The experts considered difficulty of the items and the ability of items to distinguish between weak and strong candidates so that overall test statistics are comparable across forms. The test construction experts also checked for inclusion of unique item types, if applicable, and verified the answer key. After the forms were constructed, independent content experts were brought in to review the assembled forms for item accuracy, topicality, overlap, and possible cueing.

The first operational test administration for the Missouri General Education Assessment (MoGEA) was September 2013. The redesigned MoGEA went operational in September 2015. The Missouri Content Assessments began operational test administration in September 2014, with the Elementary Mathematics Specialist Content Assessment going operational in September 2015, and the Journalism Content Assessment going operational in September 2016.

Task 12. Conduct Confirmatory Item Validation and Standard Setting

Panels composed of Missouri public school educators and preparation program faculty were convened for each Missouri Educator Gateway Assessments program field for a confirmatory item validation and standard setting conference. The *Standards for Educational and Psychological Testing* provided the foundations for the item validation and standard setting process (AERA, APA, & NCME, 1999 and 2014). Participants were invited to represent a wide variety of backgrounds, including PK–12 practitioners and educator preparation program faculty from various geographic regions of the state.

There were two activities associated with this task. During the confirmatory item validation activity the committees reviewed each item in their field using the four criteria: match to competency, accuracy, freedom from bias, and job-relatedness. Members of the CACs confirmed that each assessment item was valid for use on the

assessment according to these criteria. Items determined by the CACs to be not valid were removed from the item banks.

During the standard-setting phase of the conference, members of the CACs engaged in a series of activities. The first of these activities required participants to “take the test” without the benefit of the answer key, in order to simulate the candidate testing experience. Members of the CACs then made a series of judgments regarding each of the multiple-choice and constructed-response items.

Multiple-Choice Items

The standard-setting process utilized a method commonly referred to as the “Modified Angoff procedure” to obtain item-by-item judgments from each panelist about the percentage of acceptable candidates who would correctly answer each item on the assessment forms. Panelists made two rounds of standard setting ratings. Following the first round of ratings, panelists were provided with the results of their own and fellow panelists’ first round item judgments. For those test items that had been used in Evaluation Systems programs in other states, panelists also received a table showing the percentage of candidates who had answered the items correctly. Panelists then completed a second round of judgments in which they had an opportunity to review and revise their Round 1 item judgments in light of the information provided.

Following the second round of ratings, the item-by-item judgments were combined to calculate a panel-based passing score for each field.

Constructed-Response Items

For the seven Missouri Educator Gateway Assessments program fields that have constructed-response items—the Missouri General Education Assessment, the World Languages (Chinese–Mandarin, French, German, and Spanish), Building-Level Administrator, and Superintendent—panelists reviewed the sample “marker” responses from the constructed-response items on the test form and descriptions of performance at each score point on the scoring scale. Panelists then identified the candidate response that best represents the performance of acceptable candidates. As with the multiple-choice items, following their first round of judgments, panelists were provided with a summary of their own and fellow panelists’ first round ratings, and used that information to provide final recommendations in the second round.

Standard Setting Results

The calculated panel-based passing scores from the panels of Missouri educators for each Missouri Educator Gateway Assessments program field were provided to DESE and the State Board of Education. For each assessment, candidates who achieve the panel-based raw passing score receive a scaled score of 220 on the 100- to 300-point MEGA score scale.

Technical Properties of the Missouri Content Assessments

The *Standards for Educational and Psychological Testing* require that testing agencies provide relevant technical information about assessments so test users and reviewers have sufficient information to make judgments about the quality of the test, the resulting scores, and the interpretations based on test scores (AERA, APA, & NCME, 1999 and 2014). This information can ultimately assist test users and reviewers in determining the appropriateness of the test for its intended purpose (AERA, APA, & NCME, 1999 and 2014). The following sections outline the efforts made to ensure the quality of the assessments comprising the Missouri Educator Gateway Assessments program.

Scoring

The assessments in the Missouri Educator Gateway Assessments program consist of multiple-choice items, and seven of the fields also have constructed-response items. The scoring procedures are carefully documented for the multiple-choice and constructed-response items. Additionally, the reliability of holistic scoring for the constructed-response items is monitored through multiple analyses of scorer performance.

The correct responses for multiple-choice items are an integral component of each item definition, so that the selection of test items that appear on a test form automatically results in the generation of answer keys during the test construction process. These keys are reviewed and checked at several points during development and test form production. Multiple-choice items are dichotomously scored, meaning a single point is awarded for each correct response, and no points are awarded for an incorrect response.

For the multiple-choice items the final raw score is the total number of correct responses on the test. These raw scores are transformed and reported on a scale ranging from 100 to 300, with 220 representing the Missouri Board of Education-approved passing score.

For the seven fields that include constructed-response items, candidate responses to the constructed-response items are scored using a focused holistic scoring methodology. In this method, scorers judge the overall effectiveness of each response using a set of performance characteristics. Candidate responses to the constructed-response items are scored on a scale of 1 to 4, where 1 represents little or no command of the performance characteristics, and 4 represents a strong command of the characteristics. Each constructed-response item is independently scored by two scorers, and these scores are summed for a total possible score range of 2 to 8. These raw scores are transformed and reported on a scale ranging from 100 to 300, with 220 representing the Board-approved passing score. The multiple-choice and constructed-response section scores are then combined to report a total test scaled score.

To participate in the holistic scoring process, scorers must meet qualifications, including holding educator certification or having experience as a college educator responsible for preparing perspective teachers. Prior to scoring, each scorer receives orientation and training by a Chief Reader. The Chief Reader is responsible for training each scorer to holistically evaluate the constructed-response items. Scorers are provided with the performance characteristics and score scales for the constructed-response assignments.

The Chief Reader leads training sessions in order to calibrate scorers, and monitors the scoring sessions to ensure that every constructed response is scored accurately. During the training sessions, scorers practice using training sets of responses to which scores have already been assigned, including historical anchor responses. The training emphasizes equity and fair application of the score scales. Once scorers have been trained, they have to prove their ability to score accurately by completing a calibration exercise.

Evaluation Systems monitors the performance of scorers throughout the focused holistic scoring process. Specific areas monitored include scorers' ability to understand and apply the established score scales, the consistency of the scores assigned in comparison with those scored by a second scorer, and the scorers' consistency over time. Scorers must demonstrate continued scoring accuracy.

Item Analyses

Item analyses are conducted on multiple-choice items to assess the accuracy and psychometric quality of the items. Additionally, data from the constructed-response items are reviewed to confirm that items in the bank are comparable in terms of difficulty and score distribution.

For multiple-choice items, data are collected for each item, allowing for the empirical consideration of item difficulty, item discrimination, content accuracy, and the plausibility of distractors. These item statistics are calculated and reviewed for the current content administration and cumulatively (i.e., combined statistics from previous operational test administrations). The item statistics calculated and evaluated for each multiple-choice item include:

- Item difficulty (p-value);
- Distribution of responses (percentages of candidates selecting each response category);
- Item-to-test point biserial correlation; and
- Mean score by response choice (average score on the total multiple-choice set achieved by all candidates selecting each response option).

Those items that do not perform within defined statistical parameters are flagged for additional review.

Test Equating

Each Missouri Educator Gateway Assessments field consist of multiple test forms. Multiple forms are utilized across test administrations to address issues of item exposure and security. Statistical adjustment (equating) is implemented to adjust for small differences in difficulty across forms.

According to the *Standards for Educational and Psychological Testing*, equating refers to the process of placing scores from alternate, parallel, or equivalent forms on a test on a common scale (AERA, APA, & NCME, 1999 and 2014). The central purpose of the statistical equating method is to compensate statistically for possible variability in the characteristics of test forms that may affect candidate scores (e.g., differences in the overall difficulty of a new test form compared to a previous test form). Statistical equating ensures that a candidate's scaled score is adjusted for the relative difficulty of a particular test form. Statistical equating allows test developers to attribute differences in scores across test forms to differences in the knowledge and skills of candidates, and not differences in the tests.

Scaled Scores

The *Standards for Educational and Psychological Testing* state that scaled scores may aid in interpretation of the assessments. Scaled scores allow scores to be easily comparable regardless of field, test form, or administration (AERA, APA, & NCME, 1999 and 2014). Scaled score reporting is preferred to raw score reporting due to the confusion that may occur as a result of some changes in raw cut scores across test administrations and forms.

Raw test scores—number correct for multiple-choice items and holistic scores for the constructed-response items—are transformed to a standard scale ranging from 100 to 300. For each assessment in the Missouri Educator Gateway Assessment program, a score of 220 represents the statewide passing standard.

For the assessments with multiple-choice items, a simple linear transformation is applied to the raw scores to compute the associated scaled score. The scaled score is derived from the candidate's raw score, the raw cut score, and the maximum possible raw score. Candidates who perform at the raw score that is equivalent to the state benchmark achieve a scale score of 220, while those who achieve the maximum possible raw score will receive a scaled score of 300.

Test Validity

The majority of test development tasks are designed to establish and/or support the connection between the test and its educational purpose. This connection describes validity, which is the central concern in high-stakes professional testing.

Validity refers to the degree to which evidence and theory support the interpretations of test scores entailed by proposed uses of tests. Validity is, therefore, the most fundamental consideration in developing tests and evaluating tests. The process of validation involves accumulating relevant evidence to provide a sound scientific basis for the proposed score interpretations. (AERA, APA, & NCME, 2014, p. 11)

The *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 1999 and 2014) provide professional guidelines for accumulating validity evidence. The guidelines are clear that the process for accumulating such validity evidence is not a matter of performing one step during test development or gathering one set of data from time to time for statistical analysis. Rather, validation is a logical and intellectual process that begins with defining assessment content, continues during both the development and the administration of the test, and is revisited through subsequent validation reviews as the test is updated. Because the collection of validity evidence is an ongoing process, Evaluation Systems gathers this evidence at every step of test development.

The validation process used by Evaluation Systems for development of assessments in the Missouri Educator Gateway Assessments program followed professionally accepted procedures. The validation process focused primarily on establishing that the content of the assessments was appropriate for the purpose of the tests. In addition, Evaluation Systems provides guidance to test takers, educator preparation programs, and statewide stakeholders regarding the appropriate interpretation and use of test scores.

Throughout the various steps in preparing assessments in the Missouri Educator Gateway Assessments program, Evaluation Systems aimed to establish the validity of the assessments as recommended by the *Standards for Educational and Psychological Testing* (1999 and 2014). The steps included:

- **Establishing the Basis for the Assessment**

The purpose of the assessments in the Missouri Educator Gateway Assessments program and the assessment areas to be tested were established by state rules and regulations.

- **Defining the test competencies**

The assessment competencies describe the content knowledge that a candidate should possess to succeed in an educator preparation program or in a public school or district setting. Alignment tables for each assessment in the Missouri Educator Gateway Assessments program link the competencies to state and national standards.

- **Conduct Content Validation of the Assessment Competencies**

Content validation of the assessment competencies occurred through alignment with documentation of content requirements and a review by Missouri DESE curriculum specialists and Missouri educators.

Assessment competencies were aligned with relevant laws and regulations and Missouri and national standards to provide documentation of the basis of the assessment competencies. Thus, the content of the assessment was verified as being relevant. The content alignment tables for the assessments in the Missouri Educator Gateway Assessments program can be found in the Faculty Resources section of the MEGA website.

DESE curriculum specialists, Missouri PK–12 educators, and faculty at educator preparation programs reviewed and revised the assessment competencies to ensure that the alignment with Missouri and national standards were clear. This effort was conducted during framework reviews.

Content validation surveys or job analysis provided content-based validity evidence through the input of experts and stakeholders regarding the importance of the necessary knowledge and skills specified in each test framework. For each assessment in the MEGA program, the results of these surveys guided the final definition of each of the competencies. Practicing educators rated the test components of each framework on a 1-5 scale. Results of the surveys were used to determine the final status of all of the test frameworks.

- **Validating Test Items**

Missouri educator preparation program faculty and PK–12 educators reviewed and validated every test item that is included in the Missouri Educator Gateway Assessments program item banks. Both the Bias Review Committee and the Content Advisory Committees review the items. First, the BRC reviewed the items for potential bias, and then the CACs completed a content review.

- **Preventing Bias**

The prevention of bias in a testing program is both a matter of fairness and an aspect of test validity. To create a sensitive, fair, and valid assessment for test takers, Evaluation Systems makes bias prevention and equity a priority during the development and review of all tests. The Evaluation Systems manual titled *Fairness and Diversity in Testing* guides these efforts for all Evaluation System test development staff.

The manual contains four major sections that provide a discussion of the dimensions of bias in test development. The sources of bias discussed include: bias due to content, bias in language, bias due to assumptions and stereotypes, and bias due to lack of inclusion of test content that reflects diversity of the population for whom the test is intended. For each source, examples are provided to assist reviewers.

The manual also addresses specific bias prevention steps to be taken in test development and methods of bias review to apply during test development. Bias prevention steps are taken during the development of test frameworks and individual test items. The *Fairness* manual presents a comprehensive understanding of bias, including both bias prevention and equity inclusion (i.e., the inclusion of content that reflects diverse populations).

Evaluation Systems test developers and editors are charged with detecting and removing potentially biasing content, situations, language, and stereotypes. Other test development steps also reflect attention to bias prevention. The content advisory and bias advisory committee composition reflects, to the extent possible, representative demographic characteristics, as does the drawing of samples for pilot testing. Additionally, statistical analyses are designed to detect instances where one group of candidates performs much better on an item than another group of equivalent ability (Differential Item Functioning). Based on the statistics, the items can be flagged for further review.

Rather than waiting for such statistical tests to be performed, however, Evaluation Systems procedures involve the review of all test items during the initial development phase by both ES staff and the Missouri PK–12 educators and educator preparation program faculty who serve on the Bias Review Committee and the Content Advisory Committees.

Content Advisory Committee members rated an item valid if it matched the assessment competency to which it was written, was accurate, was free from bias, and was job-related. Thus, all items used in the Missouri Educator Gateway Assessments program were reviewed by Missouri educators and verified to assess the desired content and are free from bias, providing content-based validity evidence.

- **Setting Passing Standards**

In addition to reviewing the framework and validating test items, Missouri PK–12 educators and educator preparation program faculty assisted in recommending the statewide benchmark scores for the assessments in the Missouri Educator Gateway Assessments program. The standard-setting process is described in more detail earlier in this report.

- **Communicating Appropriate Interpretations with Assessment Users**

It is important that test scores are understood and used appropriately by the various potential users of the assessment results. Evaluation Systems includes an explanatory page of text with every assessment examinee score report describing the included information. This information is also posted on the testing program website. In addition, Evaluation Systems has worked closely with the state to provide guidance regarding the appropriate and psychometrically sound uses of test scores.

Test Reliability

The *Standards for Educational and Psychological Testing* refer to reliability as the consistency of scores when testing is repeated across administrations (AERA, APA, & NCME, 1999 and 2014). There are many common reasons for scores to fluctuate over time. Ideally, score fluctuations caused by differences in the test itself are minimized. Thus changes of test scores over time may be attributed to the candidate. Evaluation Systems uses a number of statistics to estimate test reliability for the Missouri Educator Gateway Assessments program. In general, reported reliability values range from zero to one, with higher values indicating greater reliability of test scores. Reliability is a property of test scores for a particular group of candidates, not a fixed property of a test. In a certification context, reliability measures may be influenced by many factors, such as:

- **Number of Candidates**

In general, reliability estimates based on larger numbers of candidates are more stable than estimates based on smaller numbers of candidates. For this reason, reliability estimates are calculated for tests that are taken by 100 or more candidates.

- **Self-Selection of Candidates by Test Administration Period**

Typically, examinees can decide when to take a particular test. The assessments in the Missouri Educator Gateway Assessments program are offered on computer year-round. This self-selection can affect the composition, ability level, and variability of the group taking a particular test during a given testing period.

- **Variability of the Group Tested**

In general, the larger the true variance or true spread of the scores of the candidate group (i.e., the greater the individual differences in the level of knowledge and skills of the candidates in the particular group taking a test on a particular occasion), the greater the reliability. Reliability estimates tend to be higher if candidates in the group have widely varying levels of knowledge and skills. Conversely, if the examinees on a particular occasion have generally similar levels of knowledge, skills, and abilities, statistical estimates of reliability may tend to be lower.

- **Test Length**

Reliability estimates tend to be higher for tests with greater numbers of test items. One obtains a more reliable estimate of a person's knowledge by asking more questions.

- **Test Content**

Reliability estimates are typically higher for tests that cover narrow, homogeneous content than for tests that cover a broad range of content. Tests for entrance into educator preparation programs and tests for educator certification typically test a broad base of knowledge, skills, and abilities that

pertain to a wide range of educational settings, grade levels, and educator assignments.

Several measures are employed for the MEGA program to assess the reliability of the assessments. Each statistical procedure employed provides different information about reliability. Measures are reported for the total tests, the multiple-choice sections, and the constructed-response sections. The measures used on the Missouri Educator Gateway Assessments program are described below.

Kuder-Richardson Formula 20 (KR20) for Selected-Response Items

The Kuder-Richardson index of item homogeneity (KR20) is an overall test consistency (reliability) estimate based on a single test administration (Kuder & Richardson, 1937). It is applicable to tests composed of multiple-choice items. KR20 is reported in the range of 0 to 1, with a higher number indicating a greater level of consistency (reliability). Homogeneity refers to the degree to which the items on the test are consistent with one another.

Scorer Agreement and Generalizability (G) Coefficient for Constructed-Response Assignments

Scorer agreement is the degree of agreement between constructed-response scores assigned by independent scorers. Independent scorers are in agreement if the scores they award are either exact or adjacent. The scorers are not in agreement if the scores awarded differ by more than one point. The percent of cases in which the first two independent scorers are in agreement is computed as a measure of scorer agreement (reliability).

The Constructed-Response Scorer Reliability report in Appendix C provides selected statistics on the scoring of constructed-response items for assessments with more than 100 candidates testing. This report includes the following scorer agreement information:

- Percent Agreement. Overall agreement determined by summing exact and adjacent agreement.
- Percent Exact.
- Percent Adjacent.
- Inter-rater Reliability. This is the intraclass correlation between the first and second score assigned to each response, corrected using the Spearman-Brown formula.

The Generalizability coefficient is reported for the constructed-response section of each test form with at least 100 attempts. The G coefficient is a measure of the percent of total score variance that is attributable to persons (i.e., factors within the candidate, such as subject matter knowledge). It reflects the proportion of variability in individuals' scores that is attributable to true score variability rather than to measurement error (Shavelson and Webb, 1991). It is reported in the range .00 to 1.00, with a higher number indicating a greater level of generalizability.

Total Test Decision Consistency

There are a number of statistics that may be used to estimate test reliability. For the Missouri Educator Gateway Assessments program, the most important testing outcome is the pass/fail decision. Total test decision consistency is a reliability statistic that describes the consistency of the pass/fail decision. An estimate of total test decision consistency (Breyer and Lewis, 1994) is reported in the range 0.00 to 1.00; the closer the estimate is to 1.00, the more consistent (i.e., reliable) the decision.

Test Form Statistics Report

Evaluation Systems prepares reports to provide information regarding statistical characteristics of each test form. The Test Form Statistics Report in Appendix D includes the following information, where applicable:

- Test Field Code and Name
- Form Designation
- Number of Tests Taken
- Mean
- Standard Error of Measurement (SEM)
- Decision Consistency (See the description above.)
- Stratified Alpha (Only applicable for the seven fields with constructed-response items.)
- Test Length
- The Kuder-Richardson formula 20 (KR-20) (See the description above.)
- Generalizability Coefficient (Applicable to the seven fields with constructed-response items. See the description above.)

Total Scaled Score Distribution by Subtest

Evaluation Systems prepares reports that display the performance of candidates on the test forms administered during the reporting period. The Total Scaled Score Distribution by Assessment Tests/Subtests in Appendix E provides information about the scaled score distributions for September 2015 through August 2016. Results are reported on a scale ranging from 100 to 300. A scaled score of 220 represents the panel-based passing standard for each tests/subtest.

The scaled score distribution includes the following information:

- Total Scaled Score: the inclusive list of observed total test scaled scores, in intervals of ten scale-score points
- N: the number of scores observed within intervals of ten scale score points
- N at or above: the number of scores observed at or above each scale score interval
- Percent: the percent of scores observed within intervals of the scaled score points
- Percent at or above: the percent of scores observed at or above each scaled score interval

Score Reporting

After each test administration in the Missouri Educator Gateway Assessments program, score reports are provided to candidates to inform them of their performance. Score reports are also provided to the Missouri DESE, and educator preparation programs, as designated by the candidate.

All candidates that register for the MEGA assessments online may request that a score report be e-mailed to them on the score report date published on the MEGA website. Official score reports are posted to the candidate's online account on the score report date associated with their testing window.

The reports remain in the candidate's online account for two years, during which time the candidate may view, print, and save for his or her records. After two years, candidates may request a copy of their scores through their online accounts on the MEGA website.

Candidate score reports include the following information:

- The date the candidate took the assessment
- The candidate's scaled score, based on the number of items answered correctly converted to a scale ranging from 100 to 300, for each of the tests/subtests taken
- The candidate's pass/fail status
- Details of the candidate's performance on each competency area assessed
- A list of educator preparation program(s), up to four to which the candidate's scores have been released
- For Content Assessments with subtests, the candidate's testing history listing passing status

Score reports are accompanied by an interpretative guide to help candidates understand the report.

Test results are sent to DESE and to educator preparation programs as designated by the candidate. These reports are delivered electronically through Evaluation Systems's web-based system called *ResultsAnalyzer*[®]. This interactive, electronic system is used by DESE and educator preparation programs to view, analyze, customize, download, and print reports based on operational data. The program allows users to generate reports based on administration dates, gender, race, and other demographic characteristics. Specifically, the web-based system allows users to access candidate, subtest, and program data, giving them the capability to:

- *Create reports on candidate and institution results*
- *Customize data queries*
- *Aggregate data across testing program years*
- *Export data to other software and print graphics*
- *Analyze data for numerous variables*

Appendix A: Missouri Educator Gateway Assessments

Test Code	Early Childhood Education & Elementary Education
064	Early Childhood Education
007-010	Elementary Education Multi-Content <ul style="list-style-type: none"> • 007 Elementary Education: English Language Arts Subtest • 008 Elementary Education: Mathematics Subtest • 009 Elementary Education: Science Subtest • 010 Elementary Education: Social Studies Subtest
065	Elementary Mathematics Specialist

Test Code	Middle School Education
011	Middle School Education: Language Arts
012	Middle School Education: Mathematics
013	Middle School Education: Science
014	Middle School Education: Social Science

Test Code	Secondary Education
015	Agriculture
016	Biology
017	Business
018	Chemistry
019	Earth Science
020	English
021	General Science
070	Journalism
022	Marketing
023	Mathematics
024	Physics
025-030	Social Science Multi-Content <ul style="list-style-type: none"> • 025 Social Science: United States History Subtest • 026 Social Science: World History Subtest • 027 Social Science: Economics Subtest • 028 Social Science: Geography Subtest • 029 Social Science: Political Science Subtest • 030 Social Science: Behavioral Sciences Subtest
031	Speech & Theater
046	Technology & Engineering
032	Unified Science: Biology
033	Unified Science: Chemistry
034	Unified Science: Earth Science
035	Unified Science: Physics

Test Code	K-12 Education
036	Art
038	Family & Consumer Sciences
041	Health

042	Library Media Specialist
043	Music: Instrumental & Vocal
044	Physical Education
037	World Languages: Chinese-Mandarin
039	World Languages: French
040	World Languages: German
045	World Languages: Spanish

Test Code	Special Education
047	Blind & Low Vision
048	Deaf & Hard of Hearing
049	Early Childhood Special Education
050	Mild/Moderate Cross Categorical Special Education
051	Severely Developmentally Disabled

Test Code	Student Services
056	Counselor

Test Code	School & District Leadership
058	Building-Level Administrator
059	Superintendent

Test Code	Professional Knowledge
062	Professional Knowledge: Middle School
063	Professional Knowledge: Secondary

Test Code	Missouri General Education Assessment (MoGEA)
066-069	<ul style="list-style-type: none"> • 066 MoGEA: Reading Comprehension and Interpretation • 067 MoGEA: Writing • 068 MoGEA: Mathematics • 069 MoGEA: Science and Social Studies

**Appendix B: Content Validation Survey
Overall Competency Rating Results**

Test Code	Field Name	Teacher			College Faculty		
		N	Mean	SD	N	Mean	SD
064	Early Childhood Education	20	4.34	0.80	21	4.60	0.56
007-010	Elementary Education Multi-Content	14	4.21	0.92	35	4.44	0.74
011	Middle School Education: Language Arts	19	4.35	0.67	15	4.48	0.59
012	Middle School Education: Mathematics	22	4.13	0.92	22	4.43	0.73
013	Middle School Education: Science	14	4.17	0.78	16	4.23	0.62
014	Middle School Education: Social Science	15	3.93	0.93	16	4.03	0.81
015	Agriculture	23	4.11	0.79	-	-	-
016	Biology	13	4.27	0.87	17	4.35	0.66
017	Business	25	4.04	0.87	13	4.05	0.81
018	Chemistry	31	4.26	0.82	11	4.16	0.76
019	Earth Science	29	4.19	0.75	3	4.25	0.70
020	English	25	4.31	0.73	30	4.36	0.74
021	General Science	24	3.85	0.94	2	4.19	0.54
070	Journalism	21	4.32	0.82	6	4.20	0.76
022	Marketing	20	4.43	0.76	1	4.00	0.00
023	Mathematics	32	4.17	0.78	33	4.39	0.71
024	Physics	41	4.12	0.85	6	4.36	0.60
025-030	Social Science Multi-Content	15	3.80	1.01	20	4.25	0.74
031	Speech & Theater	31	4.19	0.86	3	4.57	0.57
046	Technology & Engineering	24	3.85	0.90	4	4.15	1.14
032	Unified Science: Biology	26	4.28	0.69	15	4.47	0.69
033	Unified Science: Chemistry	26	4.47	0.69	12	4.68	0.59
034	Unified Science: Earth Science	27	4.14	0.67	2	4.17	0.75
035	Unified Science: Physics	34	4.19	0.79	5	4.73	0.46
036	Art	28	4.29	0.81	16	4.18	0.72

038	Family & Consumer Sciences	25	4.30	0.68		1	5.00	0.00
041	Health	8	4.47	0.50		6	4.34	0.72
042	Library Media Specialist	44	4.44	0.69		4	4.60	0.74
043	Music: Instrumental & Vocal	33	4.36	0.80		18	4.31	0.89
044	Physical Education	15	4.10	0.78		17	4.39	0.77
037, 039, 040, 045	World Languages	18	4.21	0.82		8	4.61	0.59
047	Blind & Low Vision	16	4.61	0.53		-	-	-
048	Deaf & Hard of Hearing	37	4.51	0.65		2	4.32	0.78
049	Early Childhood Special Education	35	4.42	0.74		9	4.56	0.60
050	Mild/Moderate Cross Categorical Special Education	45	4.18	0.76		24	4.54	0.63
051	Severely Developmentally Disabled	27	4.28	0.80		4	4.74	0.75
052- 055	Mild/Moderate Middle/Secondary Multi-Content	28	4.13	0.83		15	3.56	1.12
056	Counselor	37	4.44	0.68		13	4.55	0.64
057	School Psychologist	18	4.23	0.85		3	4.78	0.59
058	Building-Level Administrator	26	4.15	0.72		9	4.34	0.59
059	Superintendent	17	4.36	0.62		9	4.39	0.67
062	Professional Knowledge: Middle School	21	4.25	0.69		14	4.51	0.72
063	Professional Knowledge: Secondary	31	4.21	0.82		19	4.12	0.84
065	Elementary Mathematics Specialist	20	4.38	0.78		21	4.20	0.94
066- 069	Missouri General Education Assessment	46	4.20	0.76		98	4.15	0.83

Appendix C: Constructed-Response Scorer Reliability

*Missouri Educator Gateway Assessments (MEGA)
September 1, 2016 - August 31, 2017
Technical Report Statistics by Test Field (All Forms)*

	Number of Tests Taken	Open Response Prompts							
		Item 1 of 2				Item 2 of 2			
		Scorer Agreement			Inter-rater Reliability	Scorer Agreement			Inter-rater Reliability
		Percent Agreement	Percent Exact	Percent Adjacent		Percent Agreement	Percent Exact	Percent Adjacent	
045 World Languages: Spanish	122	100.0	88.4	11.6	0.97	100.0	70.7	29.3	0.91
058 Building-Level Administrator	886	99.5	66.2	33.3	0.57	100.0	72.8	27.2	0.67
059 Superintendent	262	100.0	69.8	30.2	0.68	100.0	78.2	21.8	0.76
067 Writing	4,172	99.8	83.0	16.8	0.86	--	--	--	--

Appendix D: Test Form Statistics Report

Missouri Educator Gateway Assessments (MEGA)
September 1, 2016 - August 31, 2017
Technical Report Statistics by Test Form

		Number of Tests Taken	Total Test Scaled Score Indices				Multiple-Choice Section		Open Response Section
			Mean	SEM	Decision Consistency	Stratified Alpha	Length	KR20	G Coefficient
Test Field	Form								
007 Elementary Education: English Language Arts Subtest	A	1,169	228	17.3	0.80	--	32	0.66	--
	B	1,155	227	17.4	0.76	--	32	0.66	--
	C	400	231	17.4	0.77	--	32	0.66	--
	D	389	227	17.7	0.72	--	32	0.64	--
	E	125	226	17.7	0.75	--	32	0.51	--
	F	129	224	17.5	0.73	--	32	0.69	--
008 Elementary Education: Mathematics Subtest	A	1,019	238	14.5	0.85	--	32	0.80	--
	B	1,017	238	14.5	0.86	--	32	0.81	--
	C	347	240	14.1	0.85	--	32	0.84	--
	D	380	241	14.1	0.88	--	32	0.83	--
	E	125	238	14.5	0.84	--	32	0.77	--
	F	93	245	--	--	--	32	--	--
009 Elementary Education: Science Subtest	A	1,072	230	14.2	0.79	--	32	0.69	--
	B	1,141	231	14.8	0.78	--	32	0.74	--
	C	386	233	14.2	0.82	--	32	0.76	--
	D	379	230	14.9	0.83	--	32	0.77	--
	E	116	227	15.2	0.74	--	32	0.65	--
	F	132	227	15.0	0.78	--	32	0.73	--

Missouri Educator Gateway Assessments (MEGA)
September 1, 2016 - August 31, 2017
Technical Report Statistics by Test Form

		Number of Tests Taken	Total Test Scaled Score Indices				Multiple-Choice Section		Open Response Section
			Mean	SEM	Decision Consistency	Stratified Alpha	Length	KR20	G Coefficient
010 Elementary Education: Social Studies Subtest	A	1,263	227	15.3	0.75	--	32	0.69	--
	B	1,193	225	15.7	0.72	--	32	0.67	--
	C	430	231	14.8	0.83	--	32	0.79	--
	D	403	227	15.3	0.74	--	32	0.76	--
	E	144	223	15.4	0.79	--	32	0.60	--
	F	117	224	15.4	0.79	--	32	0.68	--
011 Middle School Education: Language Arts	A	223	233	10.9	0.85	--	80	0.82	--
	B	222	236	10.8	0.88	--	80	0.83	--
	C	3	--	--	--	--	80	--	--
012 Middle School Education: Mathematics	A	16	203	--	--	--	64	--	--
	B	229	222	11.7	0.86	--	64	0.89	--
	C	257	222	11.7	0.81	--	64	0.89	--
013 Middle School Education: Science	A	14	214	--	--	--	64	--	--
	B	174	222	10.6	0.83	--	64	0.86	--
	C	178	227	10.5	0.84	--	64	0.86	--
014 Middle School Education: Social Science	A	22	215	--	--	--	64	--	--
	B	190	222	12.1	0.83	--	64	0.82	--
	C	181	223	11.5	0.80	--	64	0.79	--
015 Agriculture	A	34	243	--	--	--	80	--	--

Missouri Educator Gateway Assessments (MEGA)
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Technical Report Statistics by Test Form

		Number of Tests Taken	Total Test Scaled Score Indices				Multiple-Choice Section		Open Response Section
			Mean	SEM	Decision Consistency	Stratified Alpha	Length	KR20	G Coefficient
016 Biology	A	31	217	--	--	--	64	--	--
	B	85	214	--	--	--	64	--	--
	C	79	215	--	--	--	64	--	--
017 Business	A	98	223	--	--	--	80	--	--
	B	21	234	--	--	--	80	--	--
	C	25	232	--	--	--	80	--	--
018 Chemistry	A	88	218	--	--	--	64	--	--
019 Earth Science	A	15	228	--	--	--	80	--	--
020 English	A	261	226	11.0	0.83	--	80	0.81	--
	B	246	224	11.1	0.86	--	80	0.84	--
	C	3	--	--	--	--	80	--	--
	D	1	--	--	--	--	80	--	--
021 General Science	A	26	227	--	--	--	80	--	--
022 Marketing	A	37	245	--	--	--	80	--	--
023 Mathematics	A	60	216	--	--	--	64	--	--
	B	112	195	13.7	0.87	--	64	0.92	--
	C	115	202	13.9	0.82	--	64	0.86	--
024 Physics	A	35	234	--	--	--	64	--	--
025 Social Science: United States History Subtest	A	188	218	16.7	0.71	--	32	0.67	--
	B	197	218	16.6	0.74	--	32	0.70	--

*Missouri Educator Gateway Assessments (MEGA)
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Technical Report Statistics by Test Form*

		Number of Tests Taken	Total Test Scaled Score Indices				Multiple-Choice Section		Open Response Section
			Mean	SEM	Decision Consistency	Stratified Alpha	Length	KR20	G Coefficient
026 Social Science: World History Subtest	A	191	216	16.7	0.80	--	32	0.71	--
	B	202	220	16.4	0.74	--	32	0.69	--
027 Social Science: Economics Subtest	A	165	219	16.0	0.77	--	32	0.65	--
	B	177	224	15.9	0.74	--	32	0.64	--
028 Social Science: Geography Subtest	A	139	226	15.7	0.76	--	32	0.74	--
	B	175	231	15.8	0.76	--	32	0.76	--
029 Social Science: Political Science Subtest	A	201	216	17.9	0.77	--	32	0.70	--
	B	198	216	17.6	0.77	--	32	0.76	--
030 Social Science: Behavioral Sciences Subtest	A	159	222	15.2	0.70	--	32	0.64	--
	B	192	222	15.6	0.73	--	32	0.59	--
031 Speech & Theater	A	29	242	--	--	--	80	--	--
	B	4	--	--	--	--	80	--	--
	C	8	--	--	--	--	80	--	--
032 Unified Science: Biology	A	18	213	--	--	--	32	--	--
033 Unified Science: Chemistry	A	33	219	--	--	--	32	--	--
034 Unified Science: Earth Science	A	24	219	--	--	--	32	--	--
035 Unified Science: Physics	A	46	202	--	--	--	32	--	--
036 Art	A	110	230	11.1	0.81	--	80	0.80	--
	B	95	229	--	--	--	80	--	--
037 World Languages: Chinese-Mandarin	A	10	204	--	--	--	64	--	--

Missouri Educator Gateway Assessments (MEGA)
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		Number of Tests Taken	Total Test Scaled Score Indices				Multiple-Choice Section		Open Response Section
			Mean	SEM	Decision Consistency	Stratified Alpha	Length	KR20	G Coefficient
038 Family & Consumer Sciences	A	70	238	--	--	--	80	--	--
	B	15	241	--	--	--	80	--	--
	C	10	254	--	--	--	80	--	--
039 World Languages: French	A	29	215	--	--	--	64	--	--
040 World Languages: German	A	8	--	--	--	--	64	--	--
041 Health	A	119	232	11.1	0.84	--	80	0.76	--
	B	133	236	11.0	0.84	--	80	0.78	--
042 Library Media Specialist	A	92	233	--	--	--	80	--	--
	B	119	237	12.6	0.91	--	80	0.81	--
043 Music: Instrumental & Vocal	A	101	236	9.5	0.89	--	80	0.90	--
	B	105	235	9.6	0.88	--	80	0.89	--
044 Physical Education	A	170	230	11.6	0.86	--	80	0.80	--
	B	156	231	11.6	0.87	--	80	0.79	--
	C	42	224	--	--	--	80	--	--
	D	43	232	--	--	--	80	--	--
045 World Languages: Spanish	A	61	232	--	--	--	64	--	--
	B	61	228	--	--	--	64	--	--
046 Technology & Engineering	A	28	223	--	--	--	80	--	--
047 Blind & Low Vision	A	25	216	--	--	--	80	--	--
	B	1	--	--	--	--	80	--	--
048 Deaf & Hard of Hearing	A	21	251	--	--	--	80	--	--

Missouri Educator Gateway Assessments (MEGA)
September 1, 2016 - August 31, 2017
Technical Report Statistics by Test Form

		Number of Tests Taken	Total Test Scaled Score Indices				Multiple-Choice Section		Open Response Section
			Mean	SEM	Decision Consistency	Stratified Alpha	Length	KR20	G Coefficient
049 Early Childhood Special Education	A	171	245	10.5	0.91	--	80	0.79	--
	B	155	245	10.6	0.91	--	80	0.80	--
050 Mild/Moderate Cross Categorical Special Education	A	124	243	10.6	0.90	--	80	0.84	--
	B	143	244	10.5	0.92	--	80	0.81	--
	C	374	241	10.7	0.90	--	80	0.84	--
	D	373	242	10.6	0.92	--	80	0.85	--
051 Severely Developmentally Disabled	A	9	--	--	--	--	80	--	--
056 Counselor	A	170	232	12.3	0.87	--	80	0.78	--
	B	176	231	12.4	0.85	--	80	0.81	--
058 Building-Level Administrator	A	135	220	12.7	0.98	0.56	64	0.59	0.05
	B	115	218	11.8	0.97	0.73	64	0.64	0.68
	C	307	222	12.0	0.98	0.71	64	0.72	0.40
	D	329	223	11.9	0.99	0.71	64	0.69	0.43
059 Superintendent	A	138	220	12.2	1.00	0.58	64	0.66	0.22
	B	124	221	12.5	1.00	0.60	64	0.70	0.20
062 Professional Knowledge: Middle School	A	3	--	--	--	--	80	--	--
	B	62	258	--	--	--	80	--	--
	C	59	255	--	--	--	80	--	--
063 Professional Knowledge: Secondary	A	8	--	--	--	--	80	--	--
	B	68	242	--	--	--	80	--	--
	C	81	244	--	--	--	80	--	--

Missouri Educator Gateway Assessments (MEGA)
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Technical Report Statistics by Test Form

		Number of Tests Taken	Total Test Scaled Score Indices				Multiple-Choice Section		Open Response Section
			Mean	SEM	Decision Consistency	Stratified Alpha	Length	KR20	G Coefficient
064 Early Childhood Education	A	128	231	12.0	0.81	--	80	0.78	--
	B	147	234	11.8	0.81	--	80	0.76	--
	C	392	232	11.6	0.81	--	80	0.78	--
	D	399	237	11.3	0.91	--	80	0.81	--
065 Elementary Mathematics Specialist	A	23	248	--	--	--	80	--	--
066 Reading Comprehension and Interpretation	A	24	239	--	--	--	30	--	--
	B	25	247	--	--	--	30	--	--
	C	876	237	14.5	0.87	--	30	0.70	--
	D	879	235	14.7	0.81	--	30	0.69	--
	E	902	236	14.4	0.87	--	30	0.69	--
	F	903	235	14.4	0.83	--	30	0.68	--
	G	187	236	14.6	0.85	--	30	0.68	--
	H	186	233	14.8	0.78	--	30	0.67	--
	J	96	236	--	--	--	30	--	--
	K	96	234	--	--	--	29	--	--

Missouri Educator Gateway Assessments (MEGA)
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Technical Report Statistics by Test Form

		Number of Tests Taken	Total Test Scaled Score Indices				Multiple-Choice Section		Open Response Section
			Mean	SEM	Decision Consistency	Stratified Alpha	Length	KR20	G Coefficient
067 Writing	A	580	226	--	1.00	--	--	--	--
	B	658	221	--	1.00	--	--	--	--
	C	603	225	--	1.00	--	--	--	--
	D	744	222	--	1.00	--	--	--	--
	E	485	220	10.8	1.00	--	--	--	0.86
	F	315	222	--	1.00	--	--	--	--
	G	389	226	--	1.00	--	--	--	--
	H	398	222	--	1.00	--	--	--	--
068 Mathematics	A	892	260	13.0	0.93	--	32	0.85	--
	B	893	258	13.2	0.93	--	32	0.85	--
	C	836	258	13.1	0.93	--	32	0.85	--
	D	833	257	13.2	0.93	--	32	0.84	--
	E	178	253	13.6	0.89	--	32	0.87	--
	F	178	252	13.8	0.88	--	32	0.86	--
	G	89	257	--	--	--	32	--	--
	H	89	252	--	--	--	32	--	--

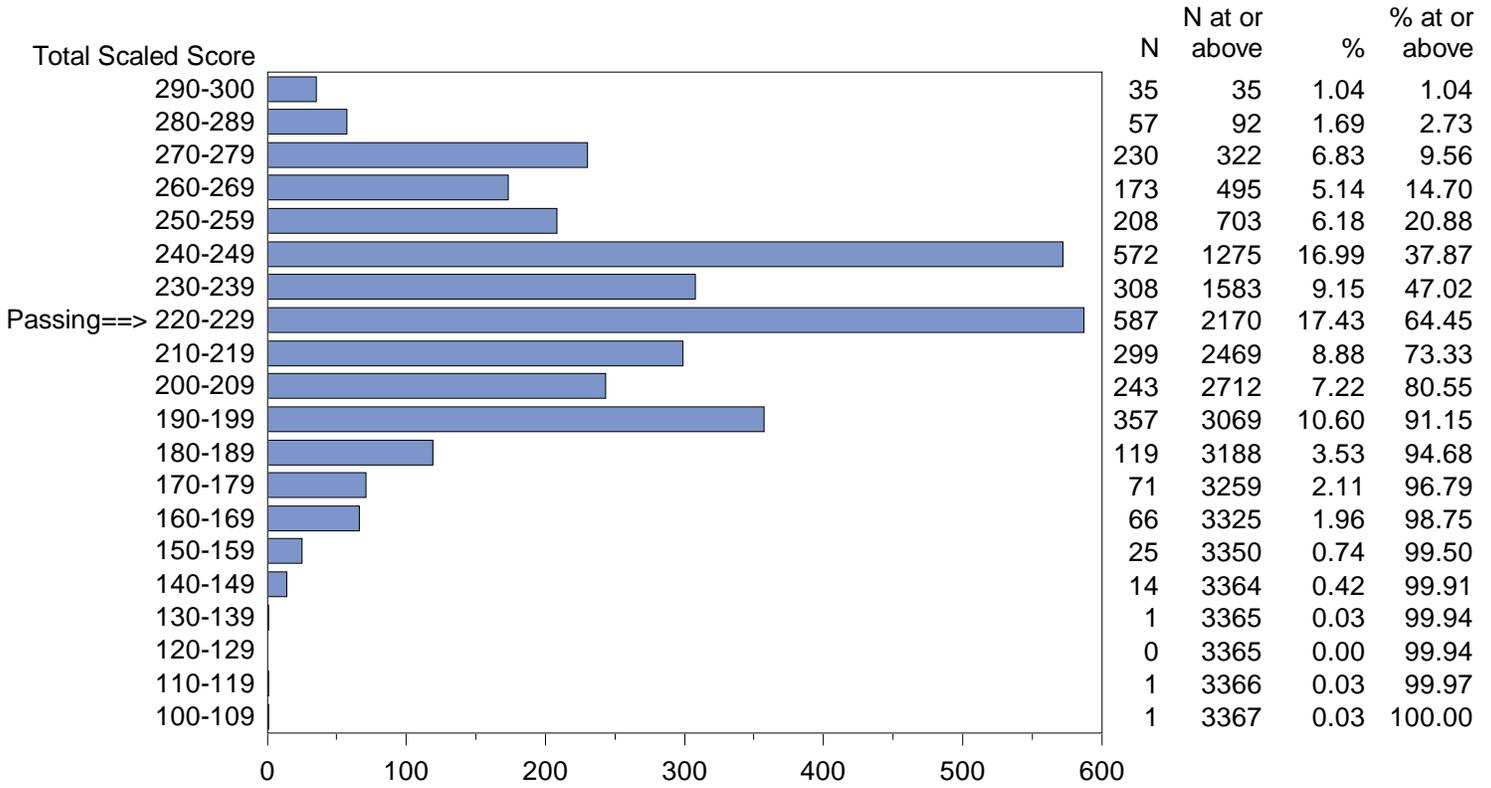
Missouri Educator Gateway Assessments (MEGA)
September 1, 2016 - August 31, 2017
Technical Report Statistics by Test Form

		Number of Tests Taken	Total Test Scaled Score Indices				Multiple-Choice Section		Open Response Section
			Mean	SEM	Decision Consistency	Stratified Alpha	Length	KR20	G Coefficient
069 Science and Social Studies	A	935	235	13.3	0.85	--	32	0.76	--
	B	937	235	13.3	0.86	--	32	0.74	--
	C	881	234	13.3	0.85	--	32	0.74	--
	D	883	234	13.2	0.86	--	32	0.76	--
	E	186	233	13.1	0.86	--	32	0.76	--
	F	185	230	13.3	0.82	--	32	0.77	--
	G	96	235	--	--	--	32	--	--
	H	96	232	--	--	--	32	--	--
070 Journalism	A	18	245	--	--	--	80	--	--

**Appendix E: Total Scaled Score Distribution by
Assessment Tests/Subtests**

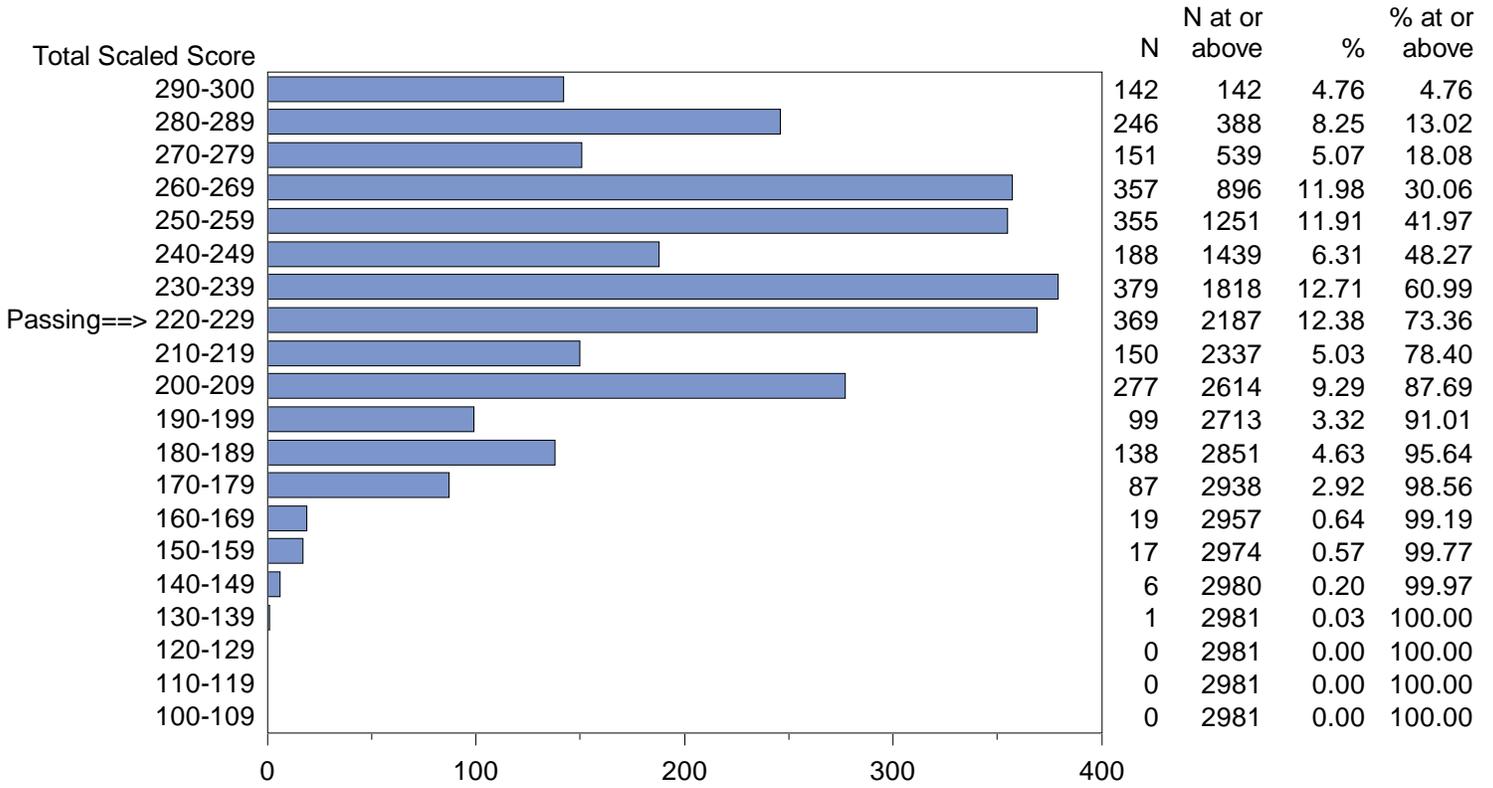
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=007 Elementary Education: English Language Arts Subtest



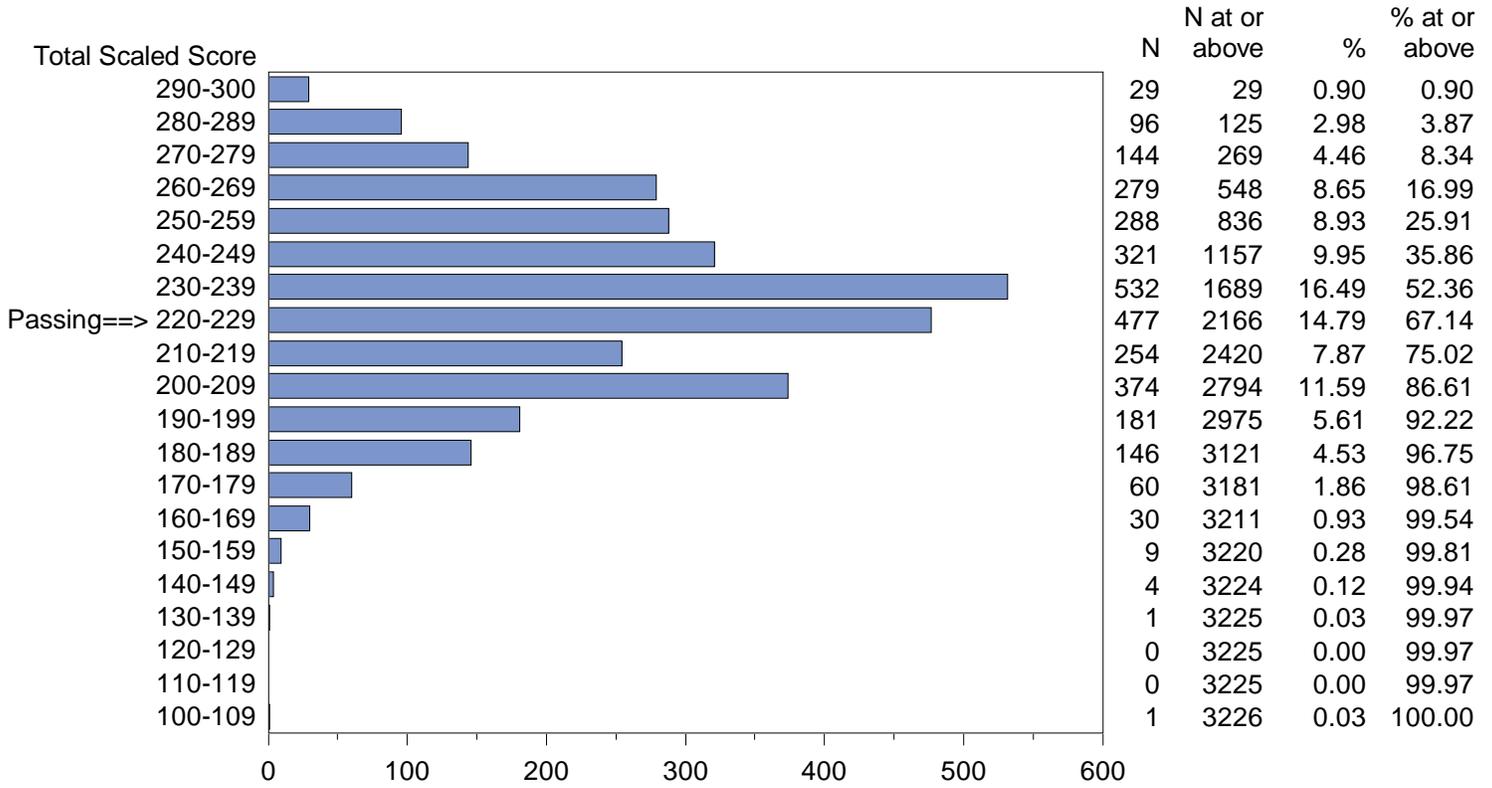
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=008 Elementary Education: Mathematics Subtest



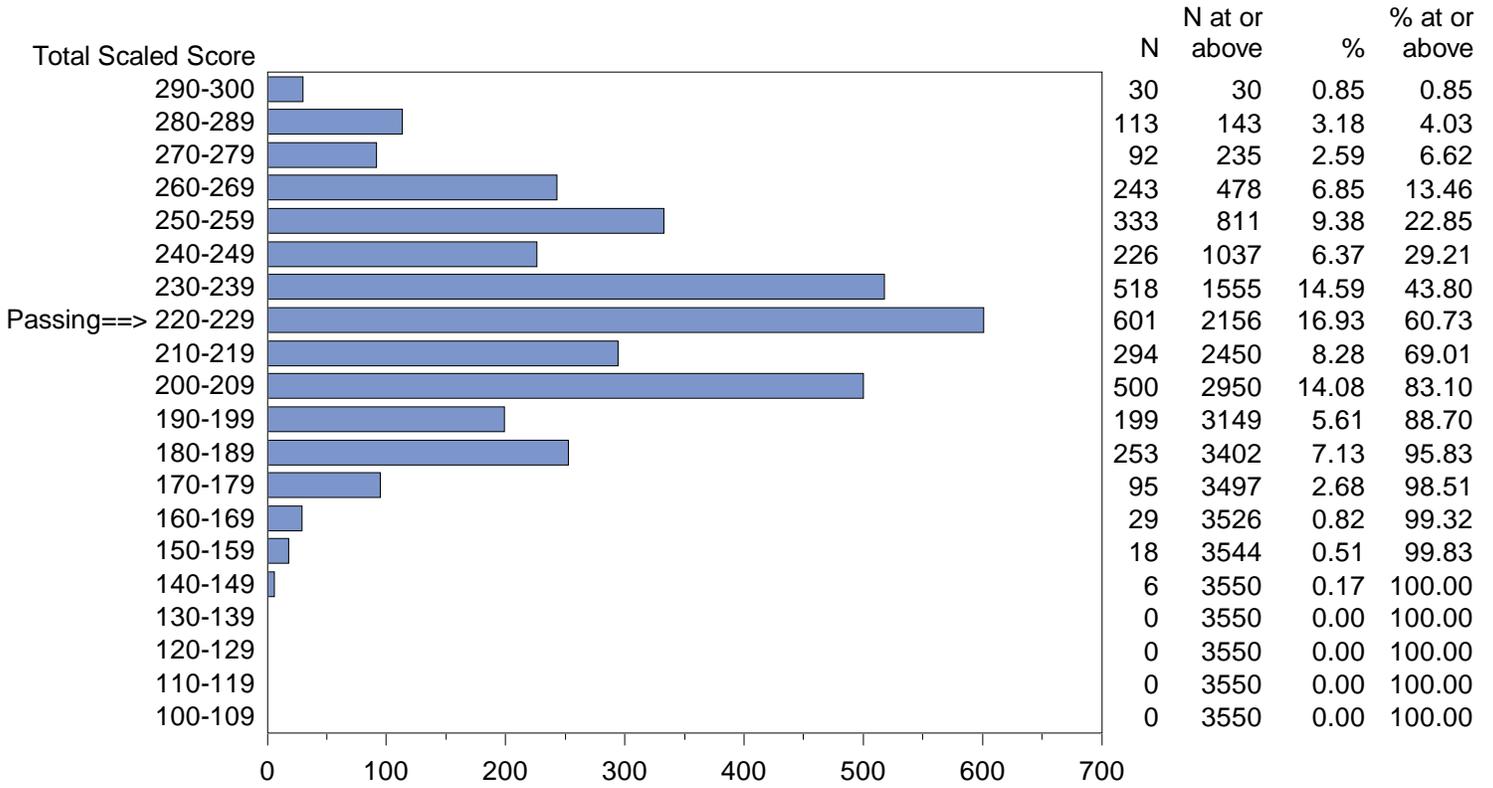
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=009 Elementary Education: Science Subtest



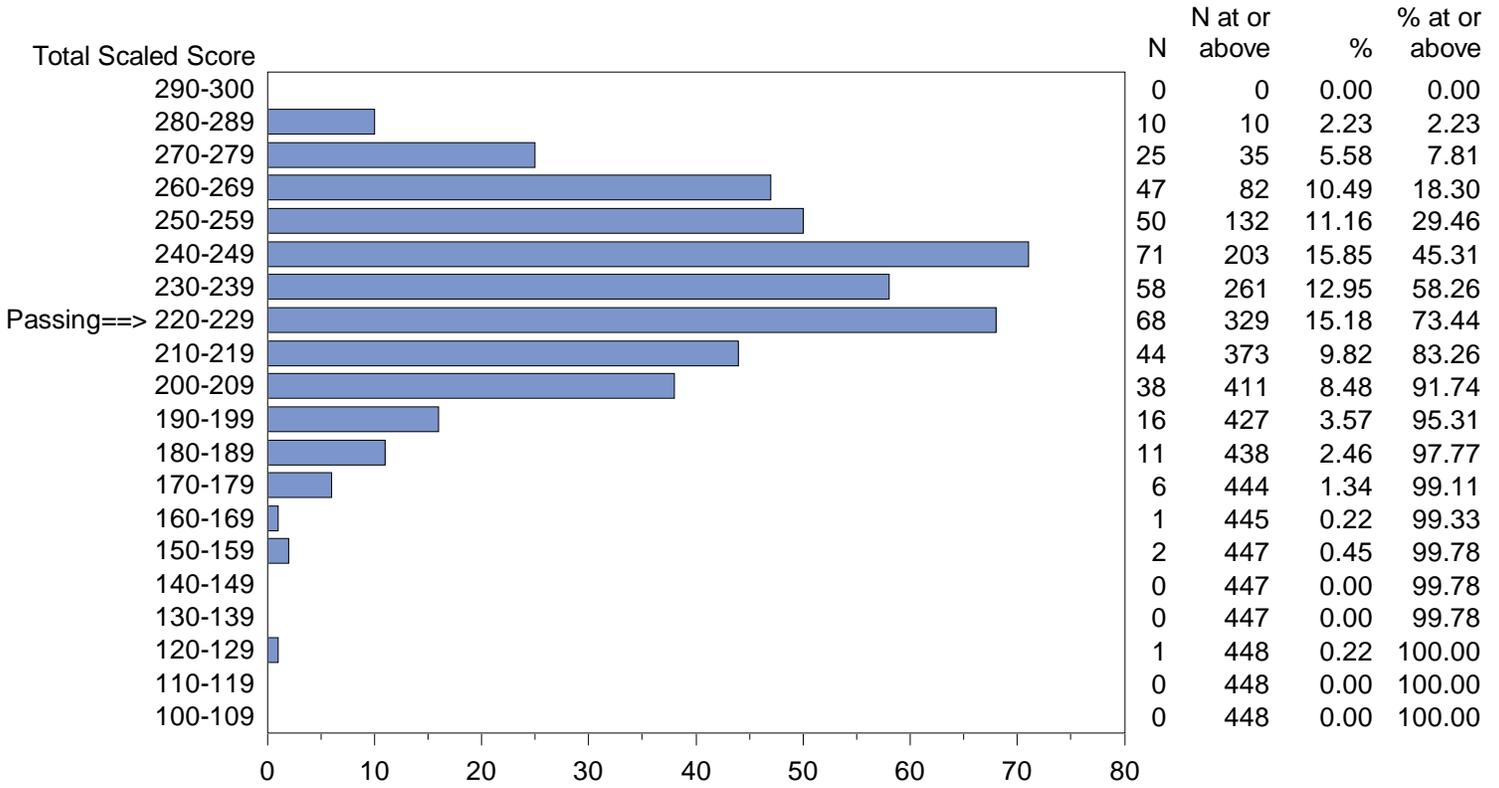
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=010 Elementary Education: Social Studies Subtest



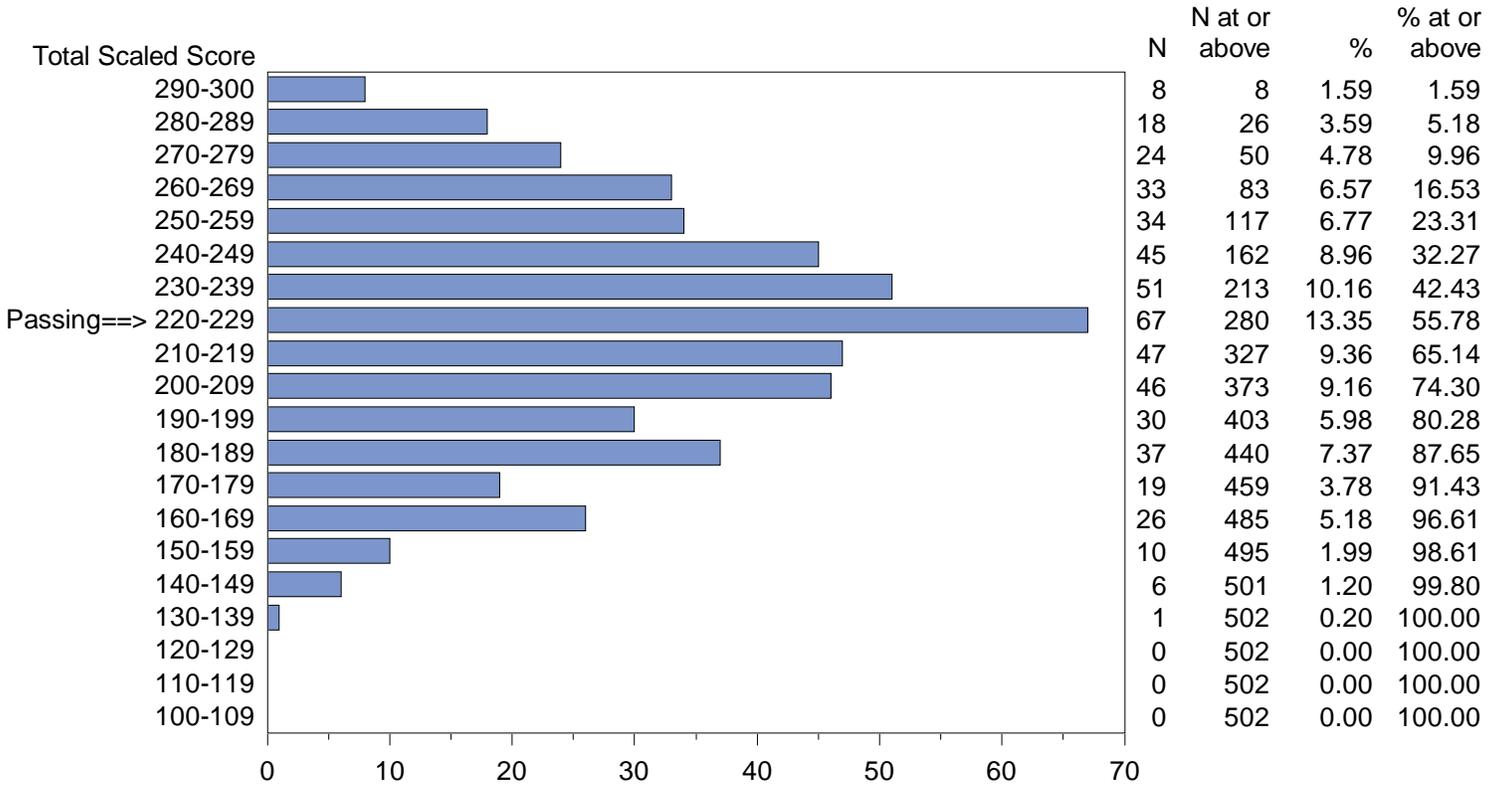
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=011 Middle School Education: Language Arts



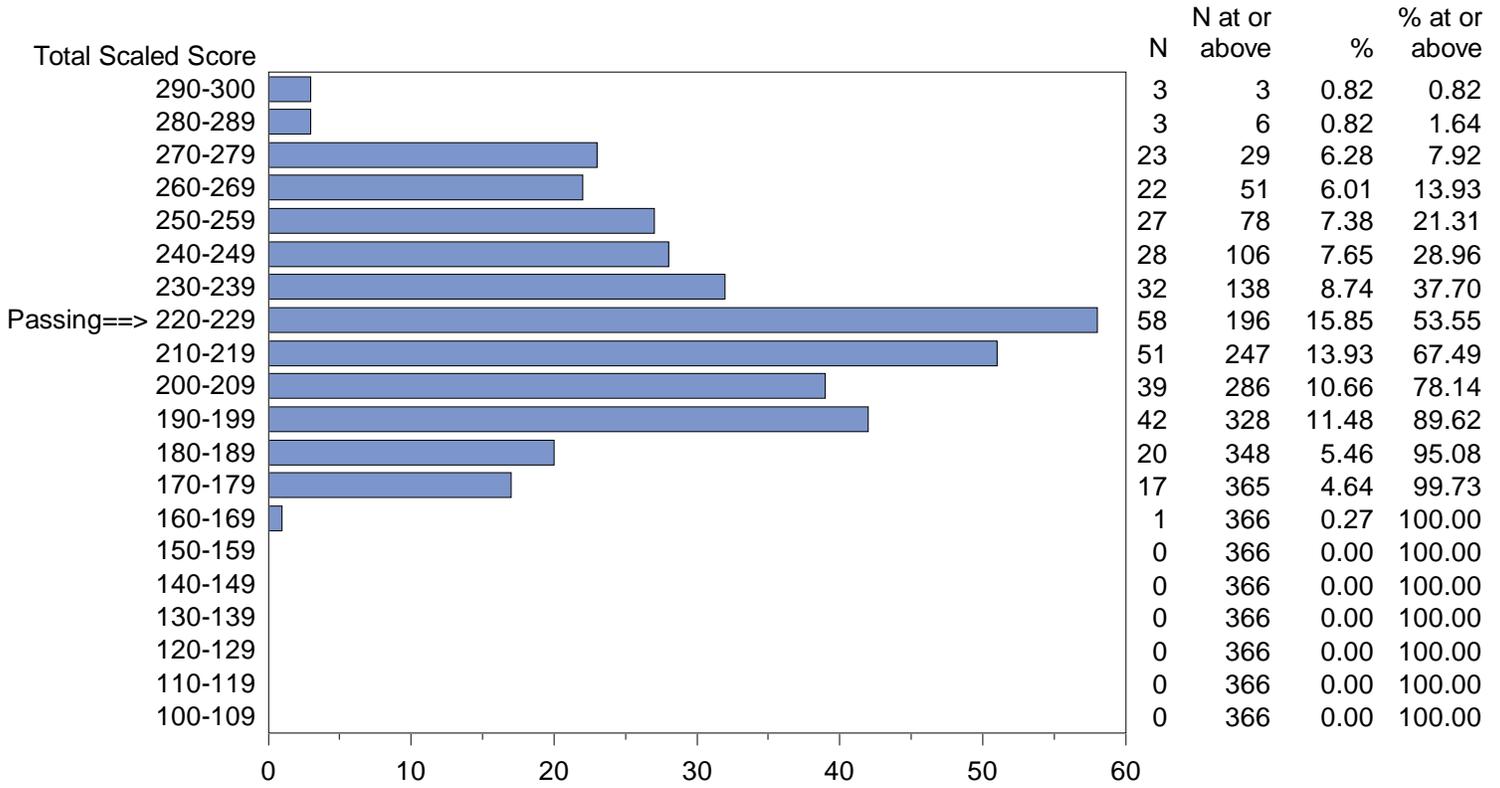
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=012 Middle School Education: Mathematics



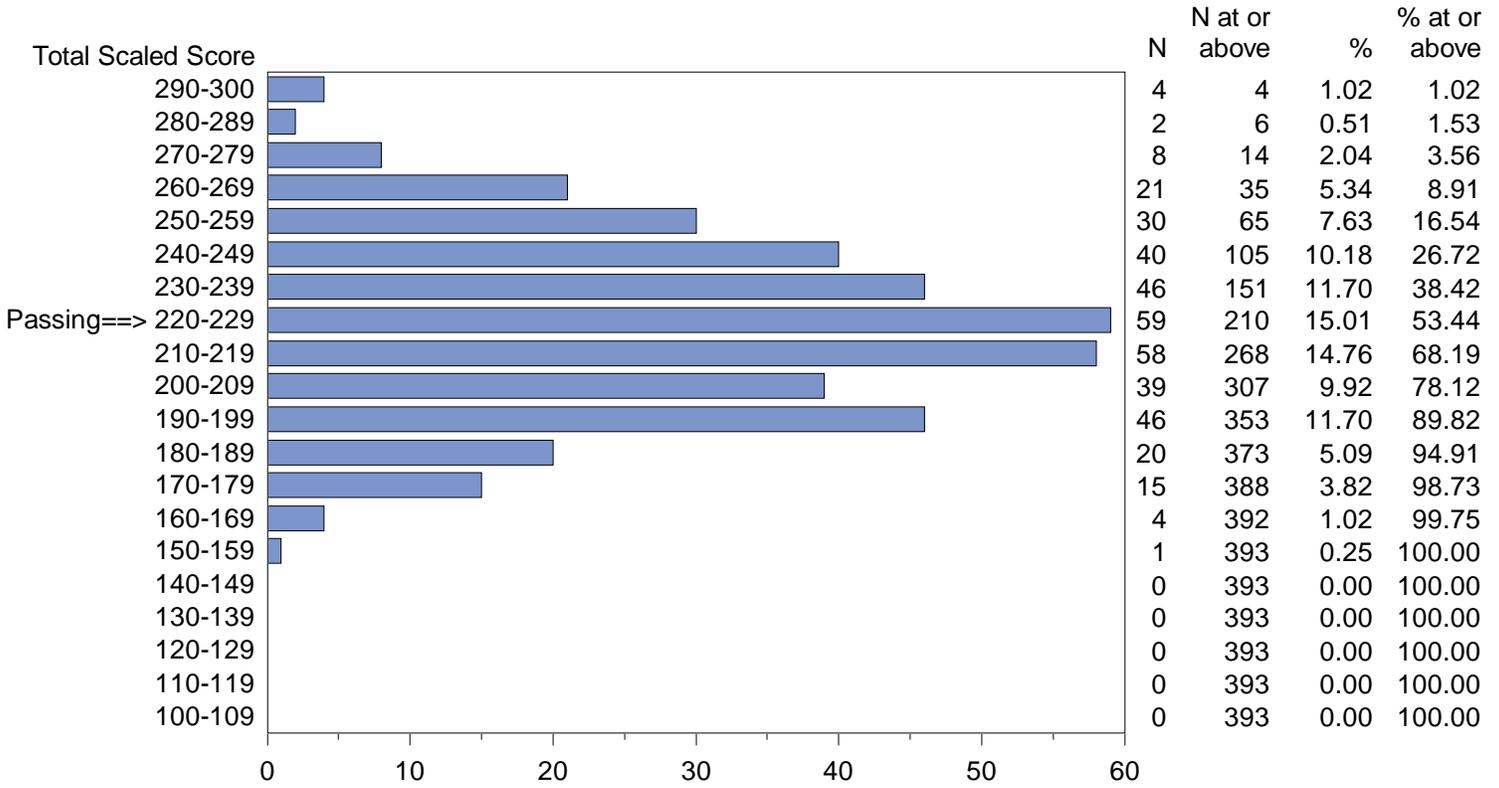
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=013 Middle School Education: Science



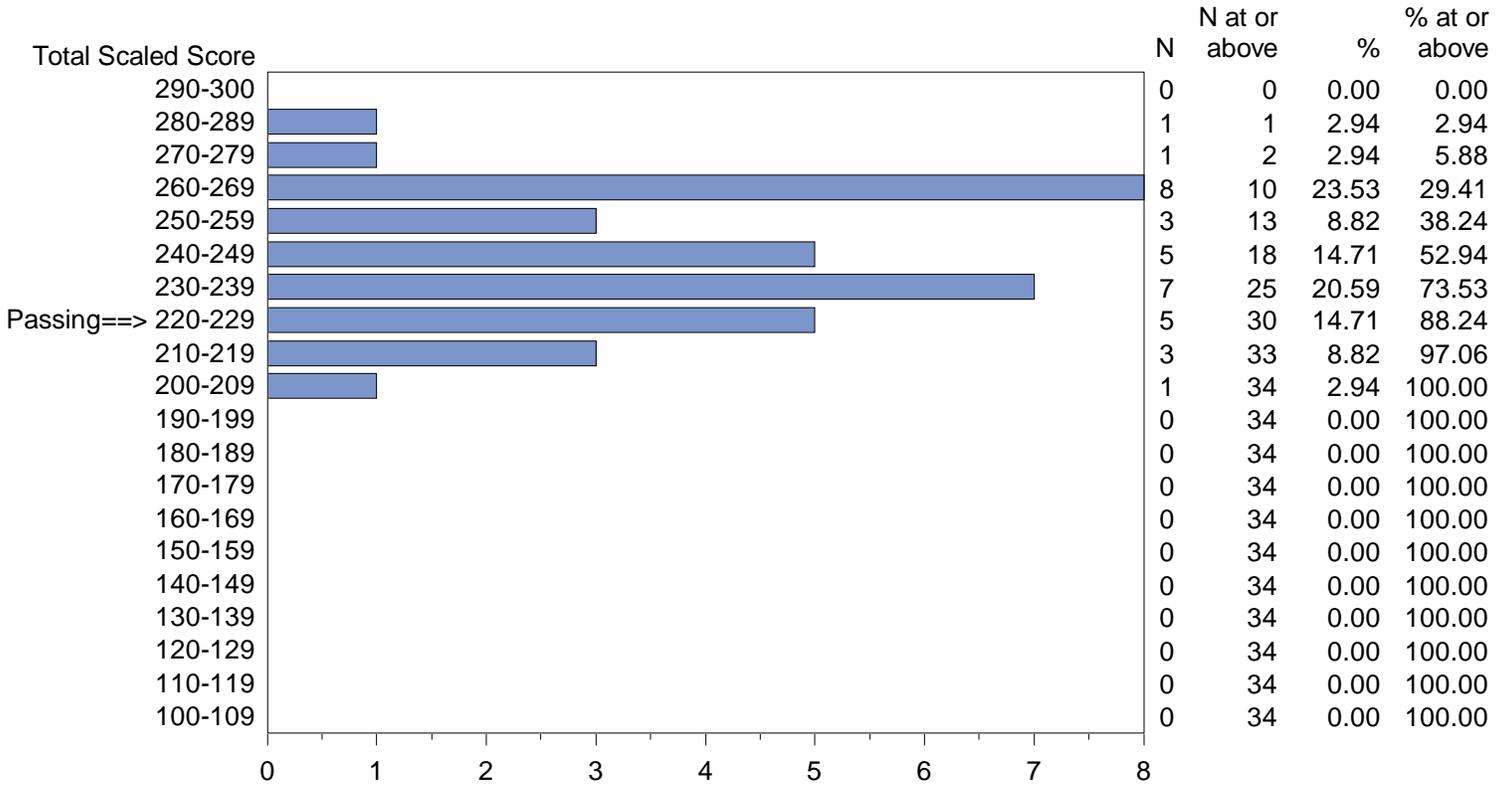
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=014 Middle School Education: Social Science



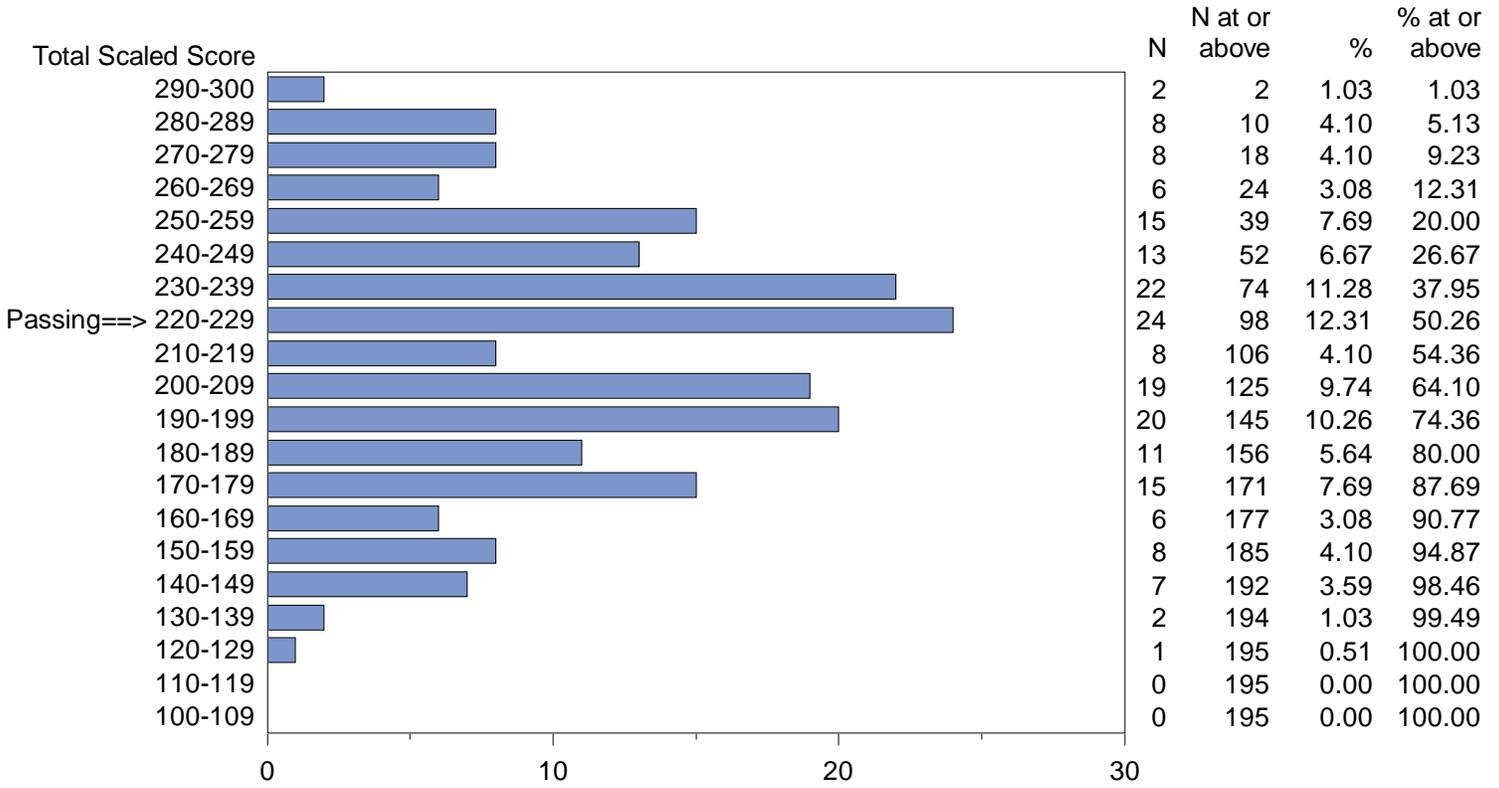
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=015 Agriculture



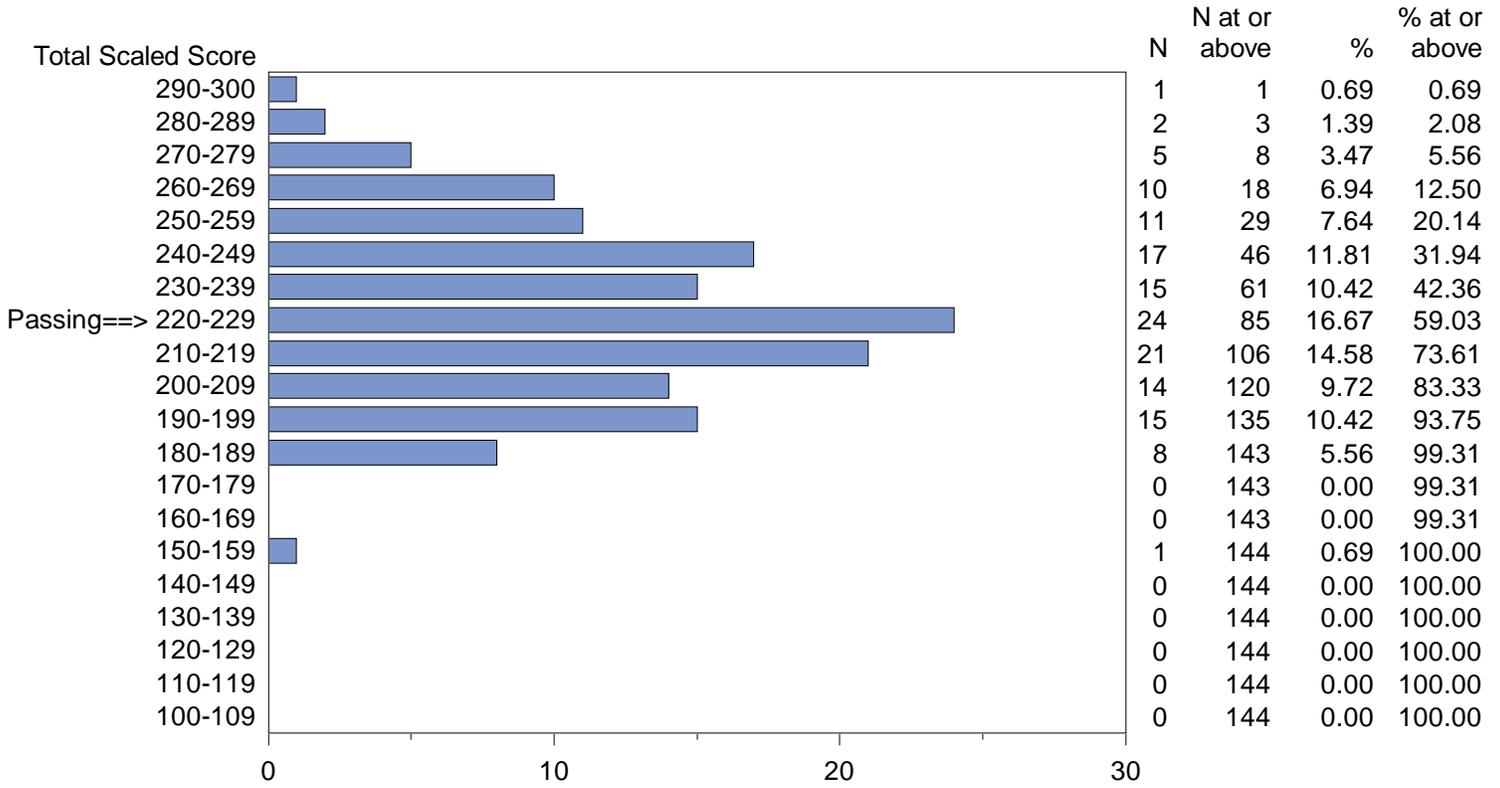
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=016 Biology



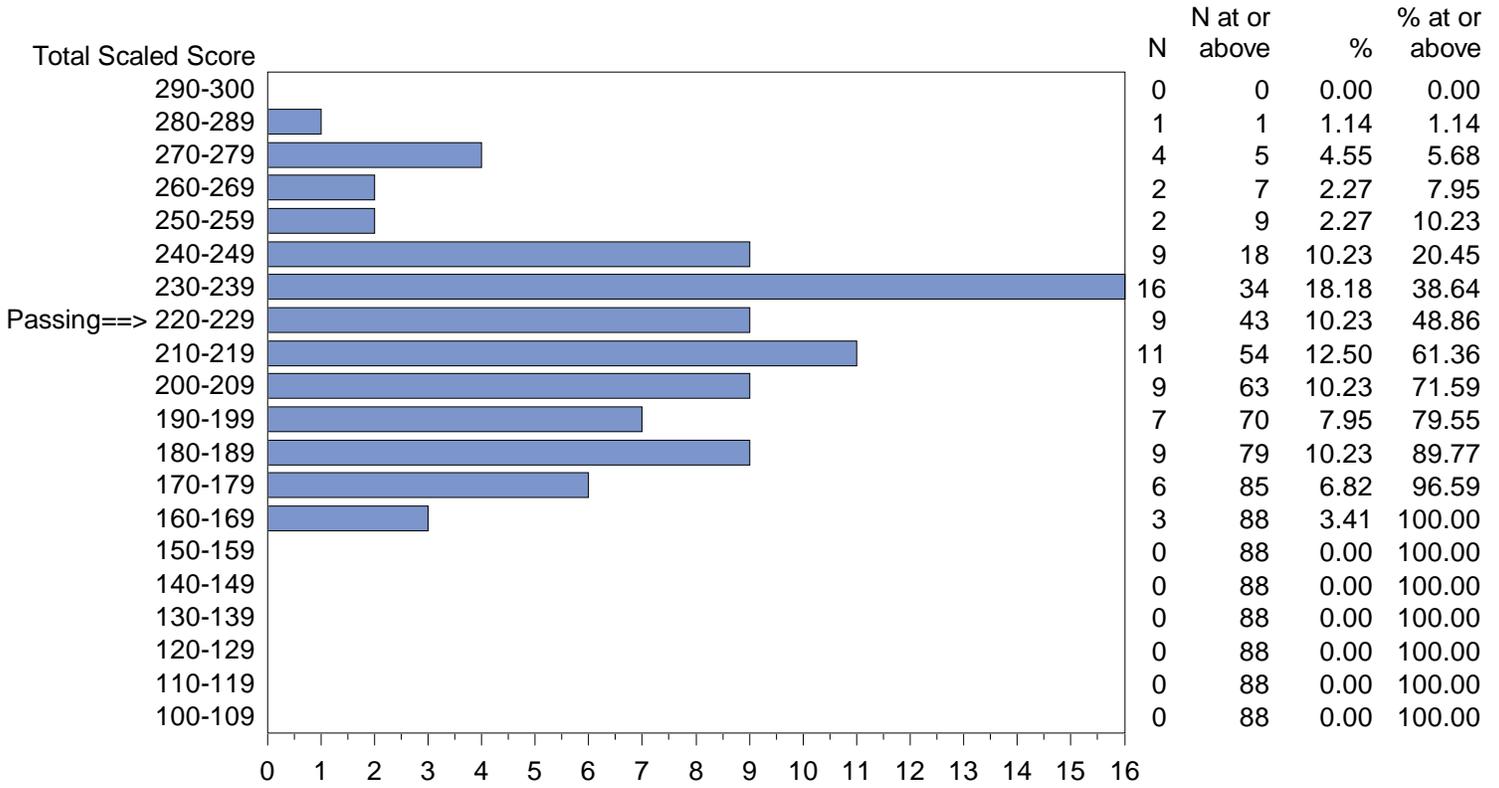
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=017 Business



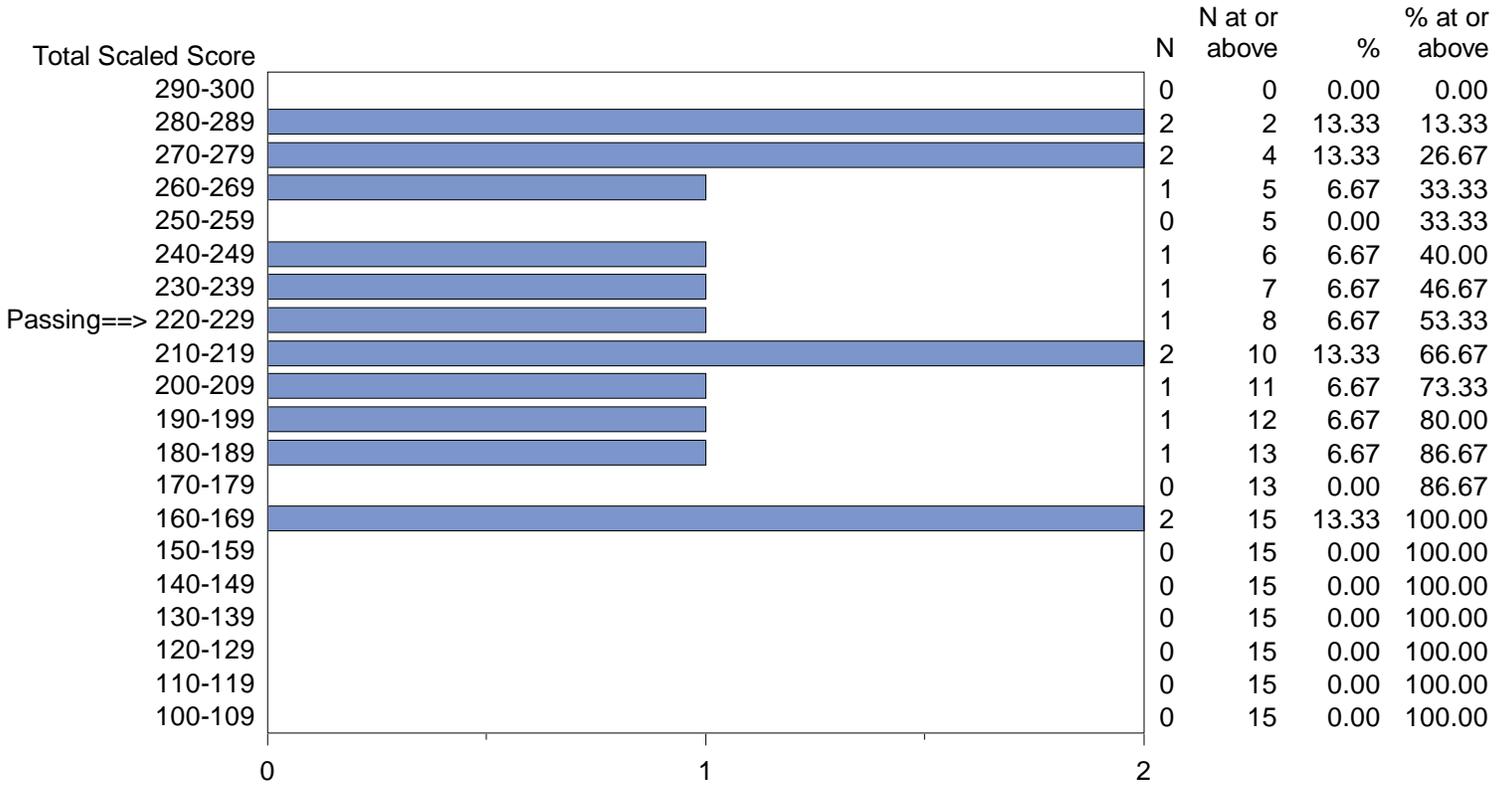
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=018 Chemistry



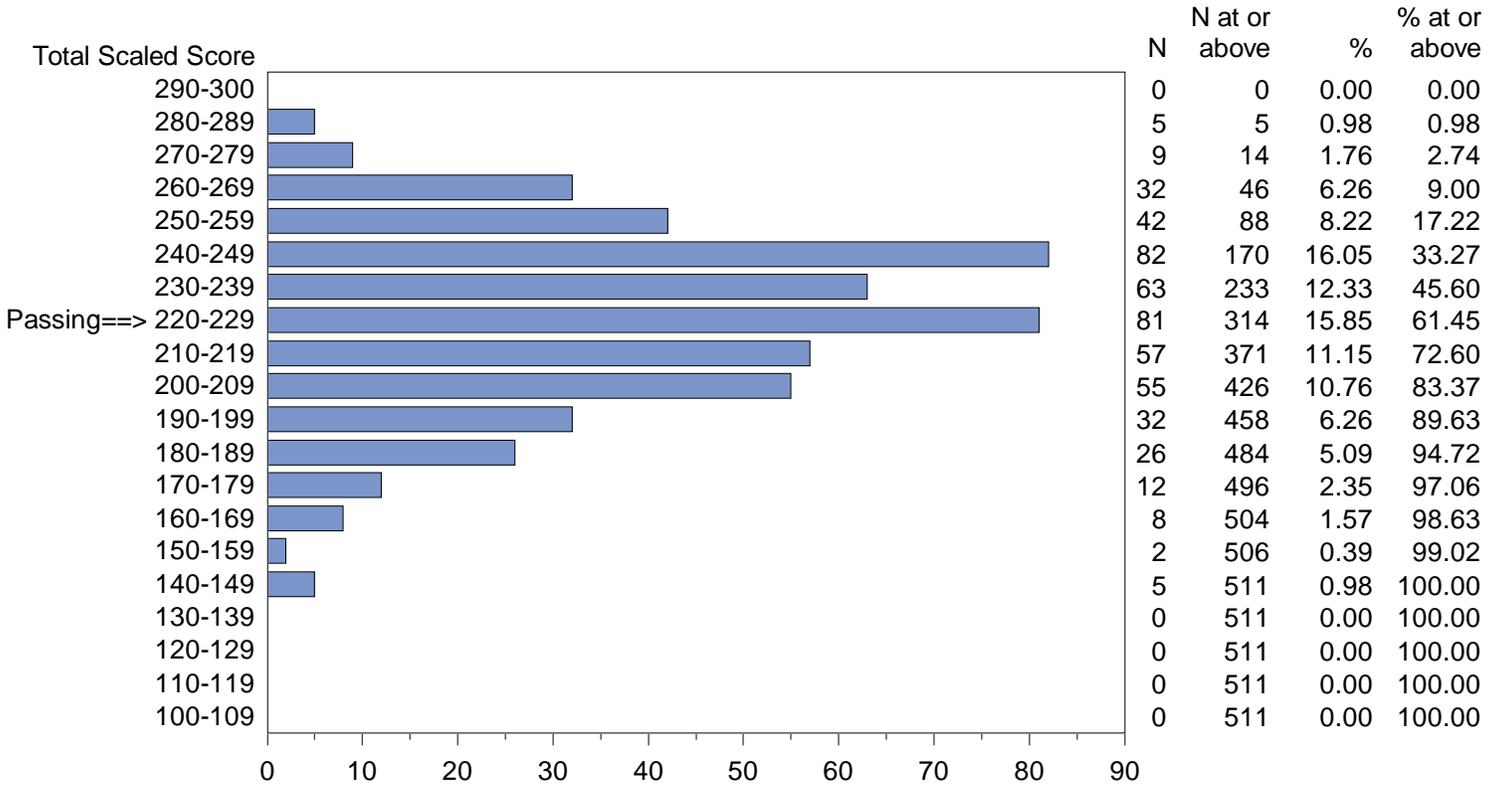
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=019 Earth Science



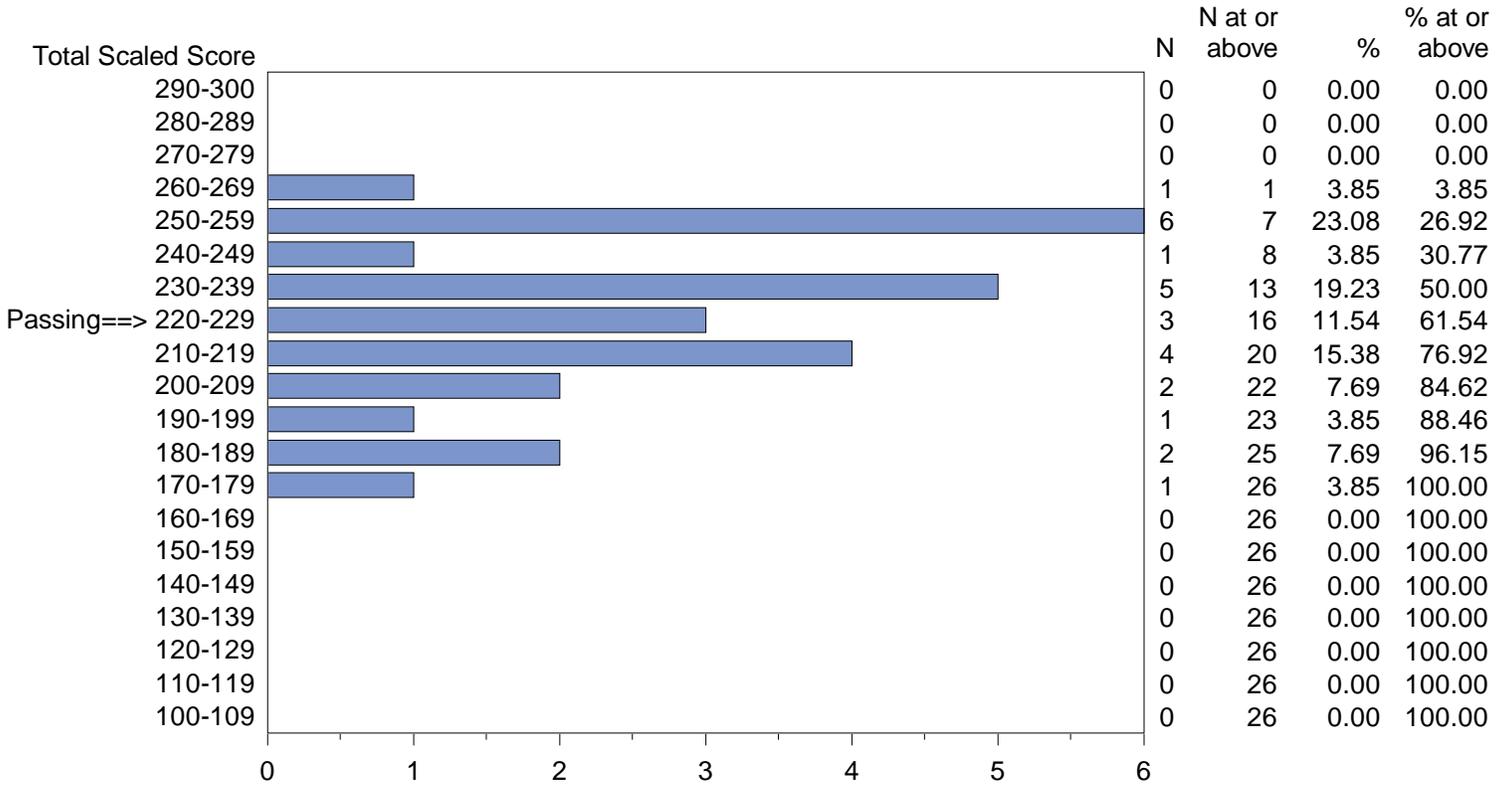
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=020 English



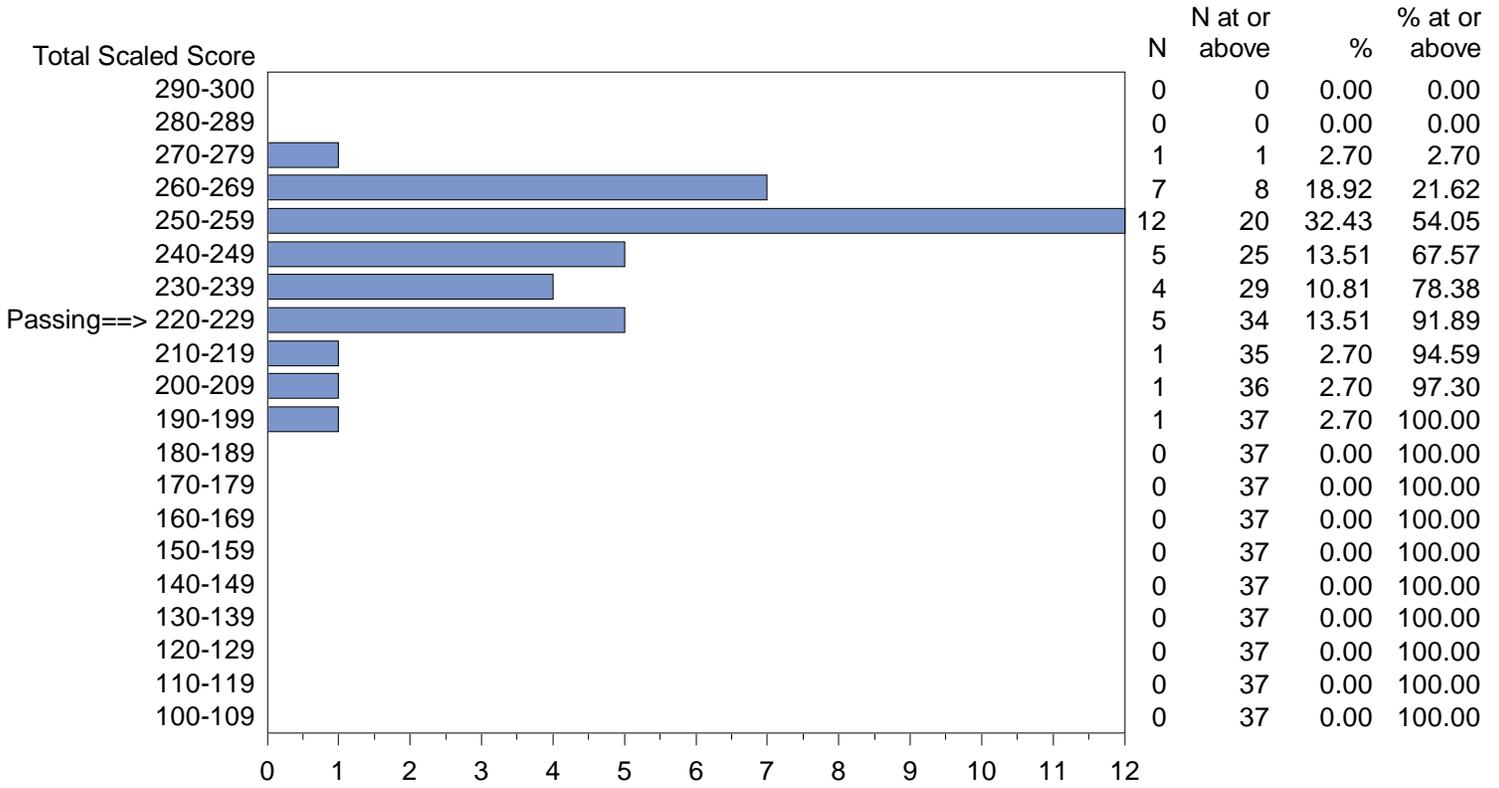
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=021 General Science



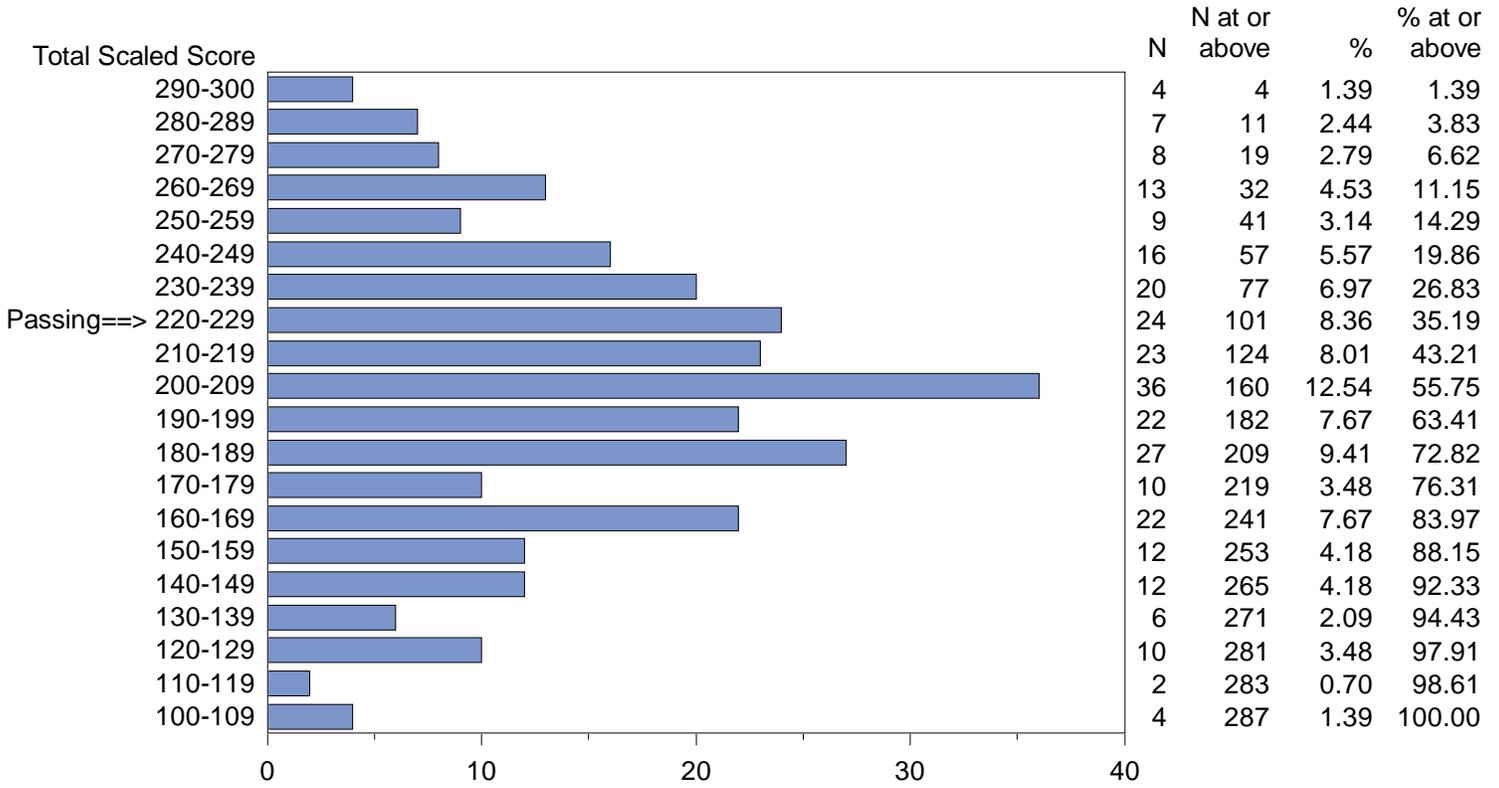
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=022 Marketing



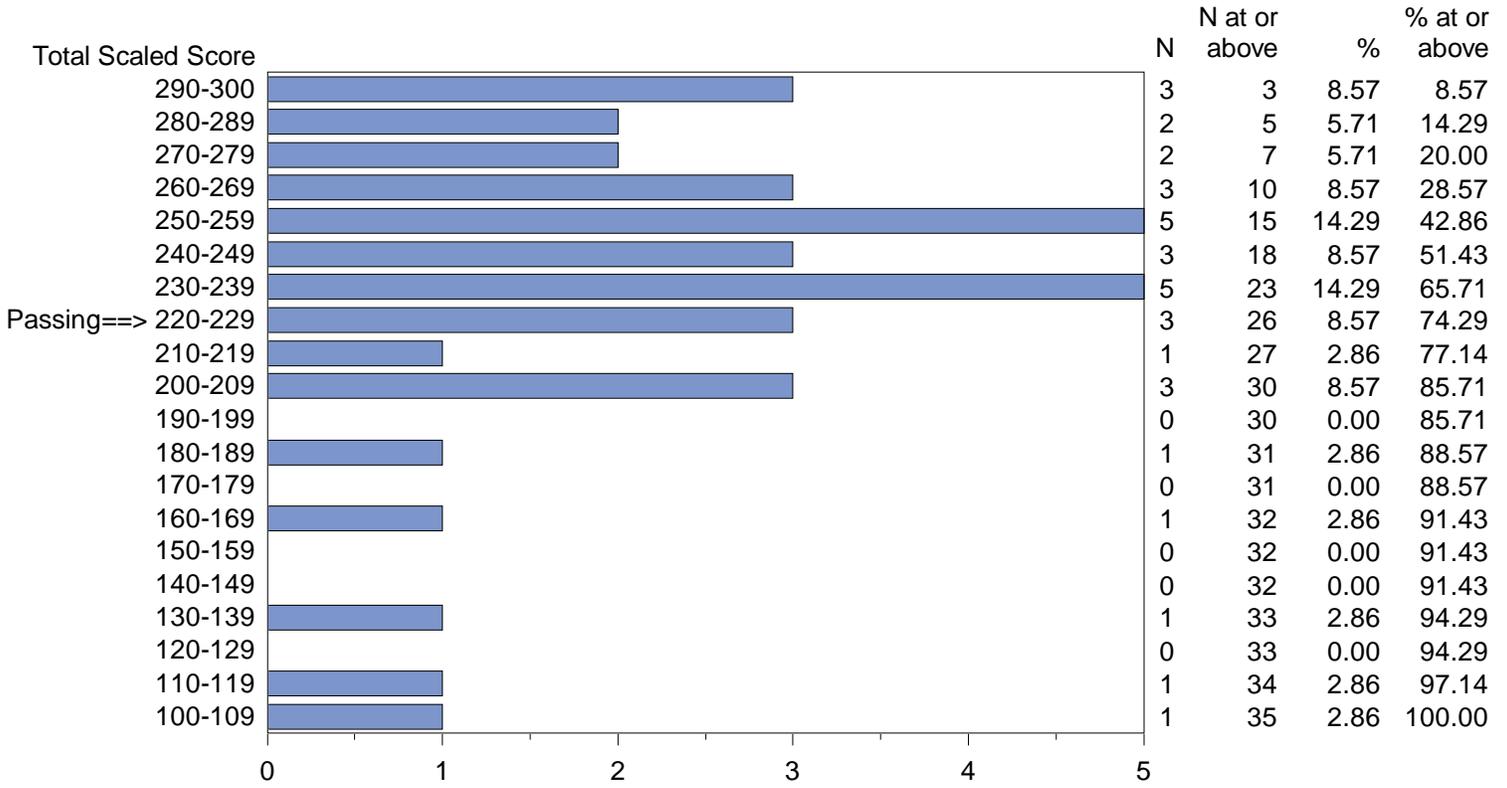
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=023 Mathematics



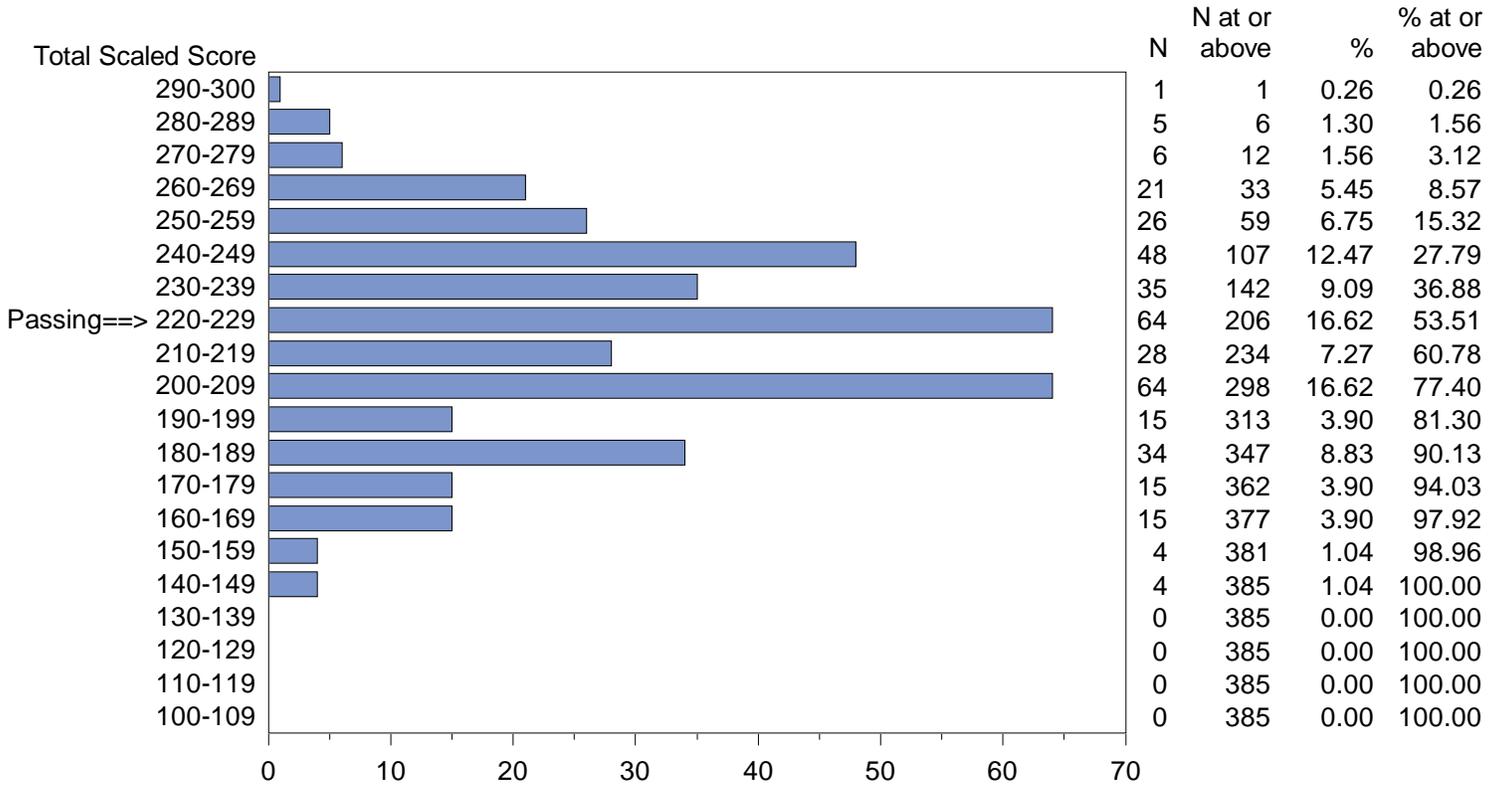
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=024 Physics



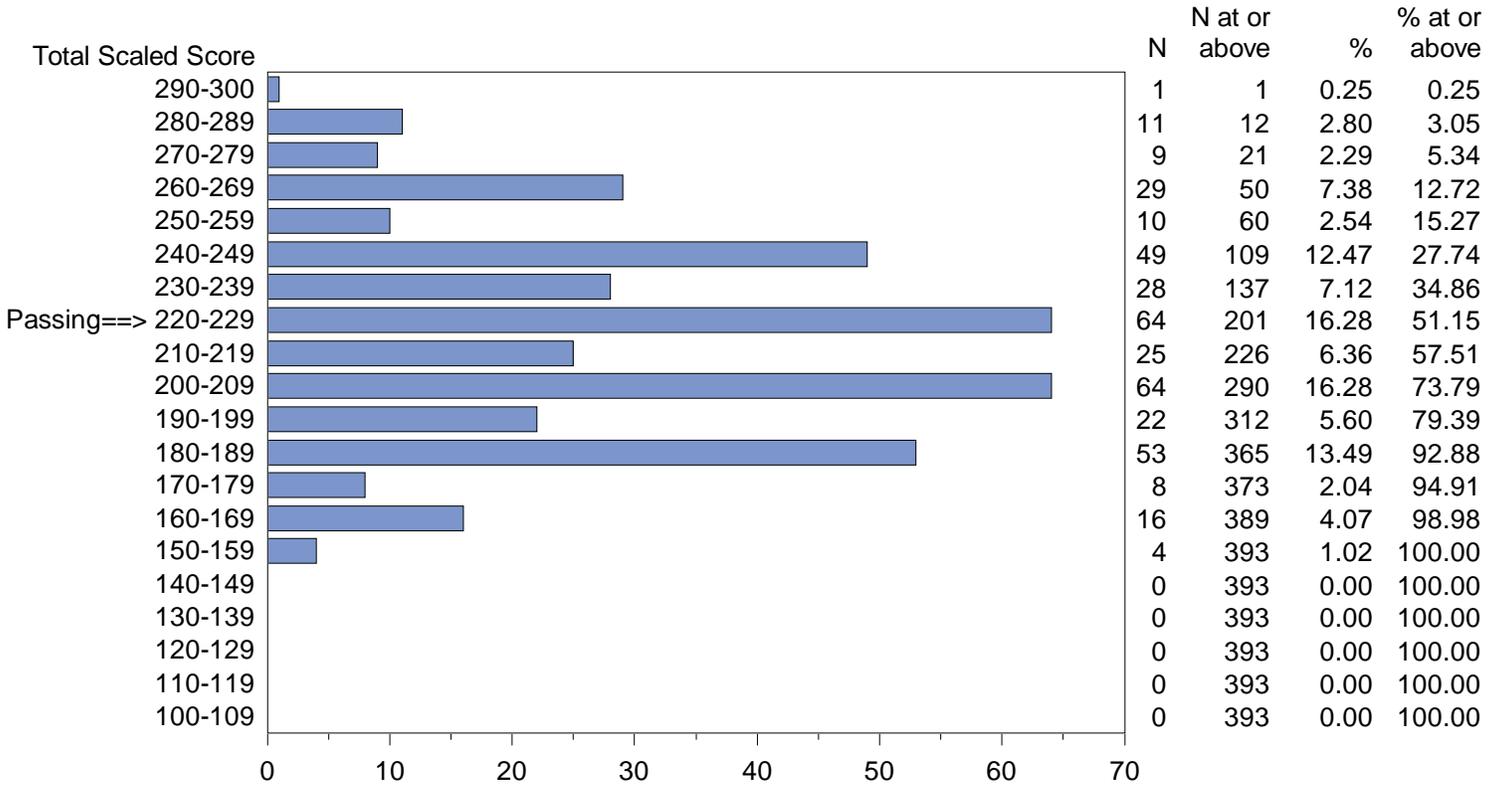
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=025 Social Science: United States History Subtest



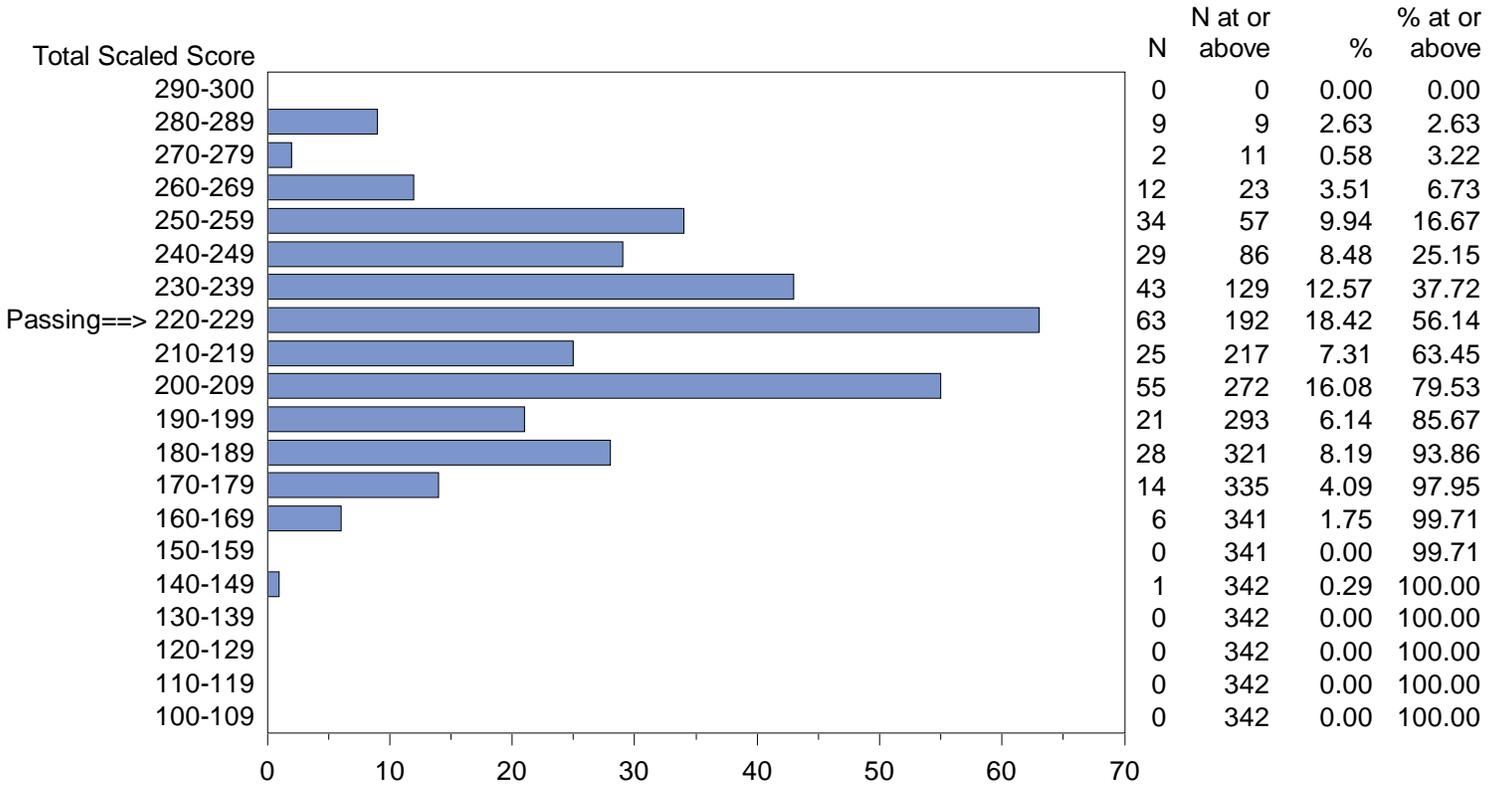
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=026 Social Science: World History Subtest



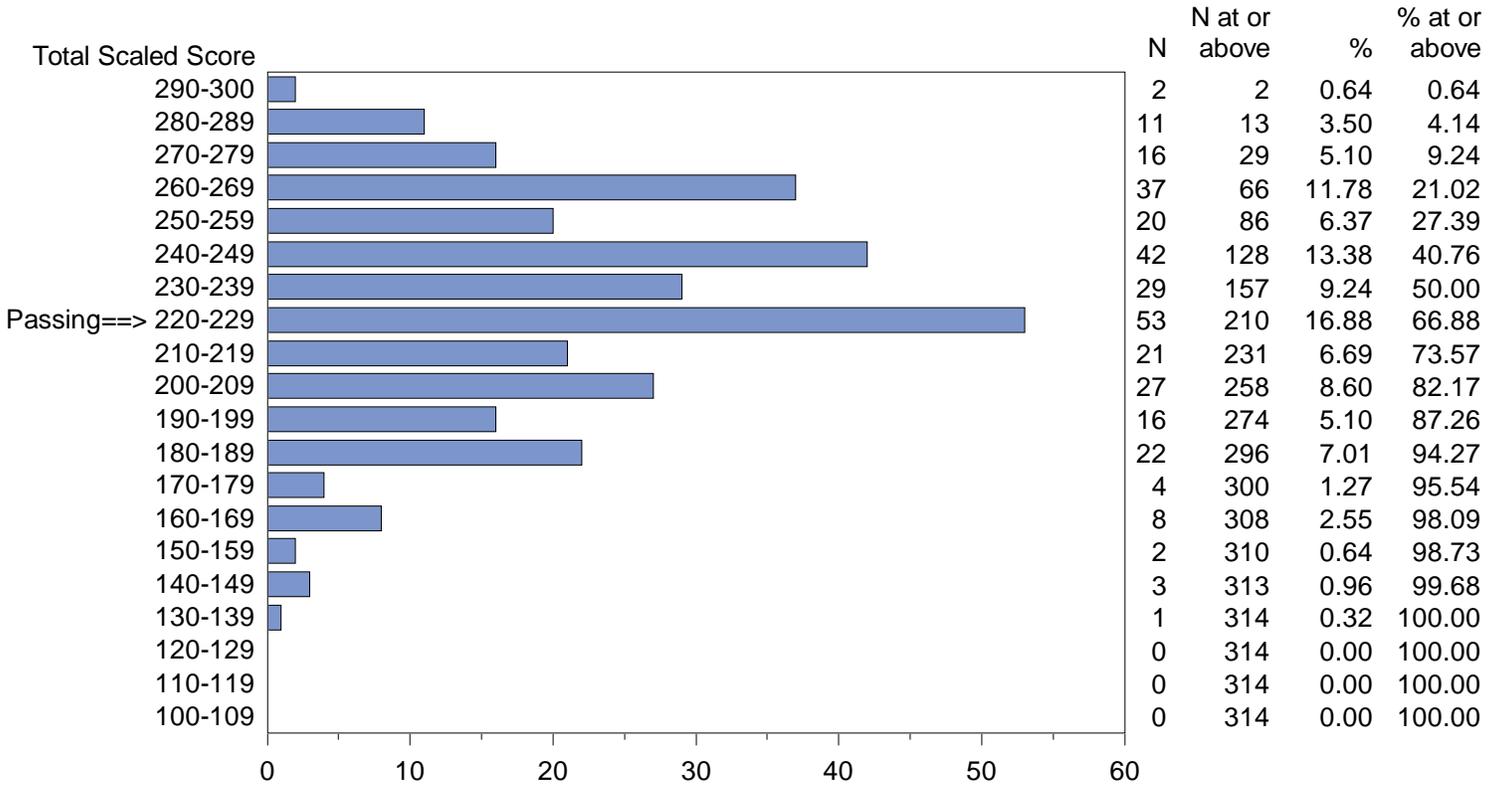
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=027 Social Science: Economics Subtest



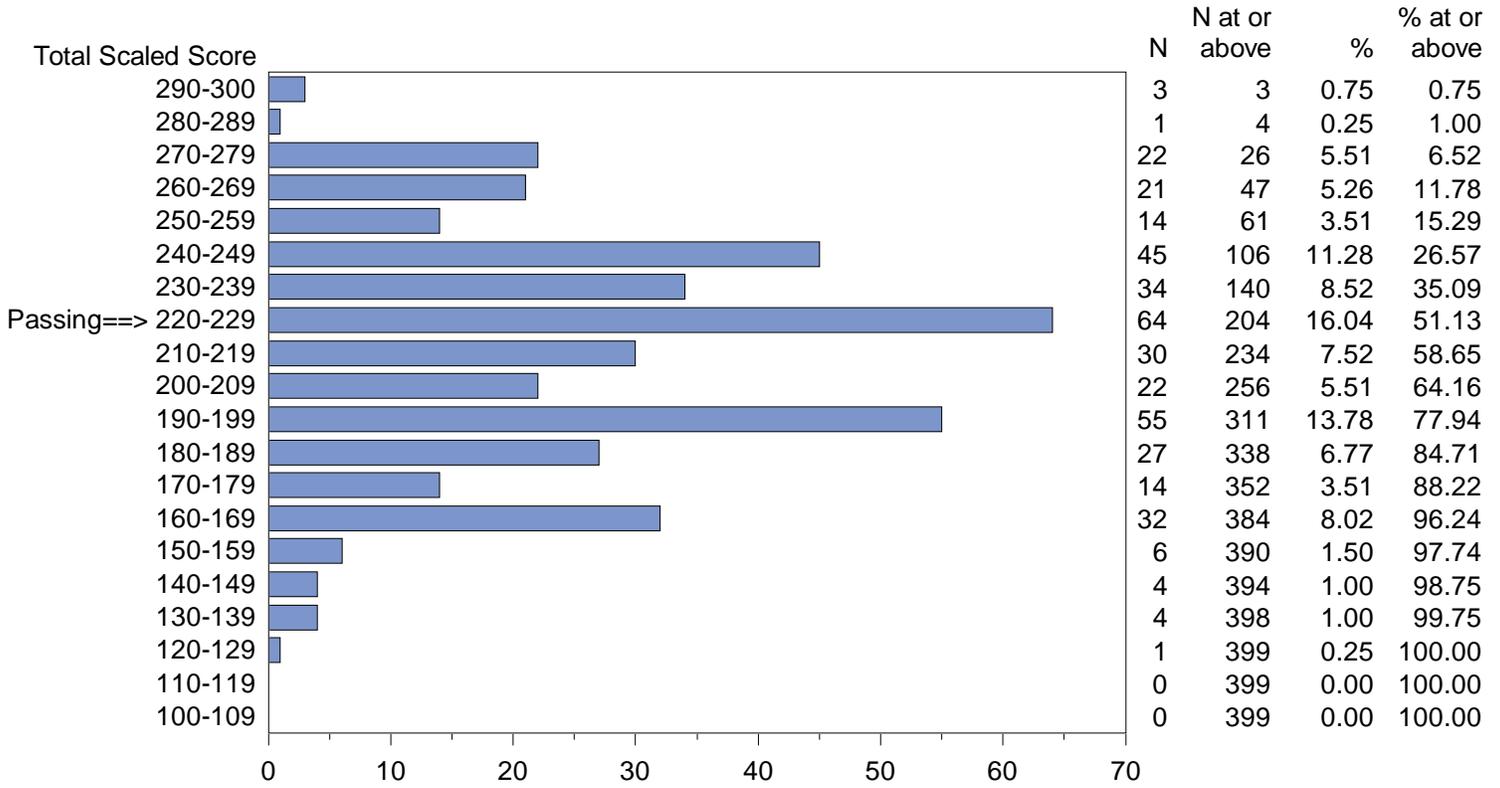
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=028 Social Science: Geography Subtest



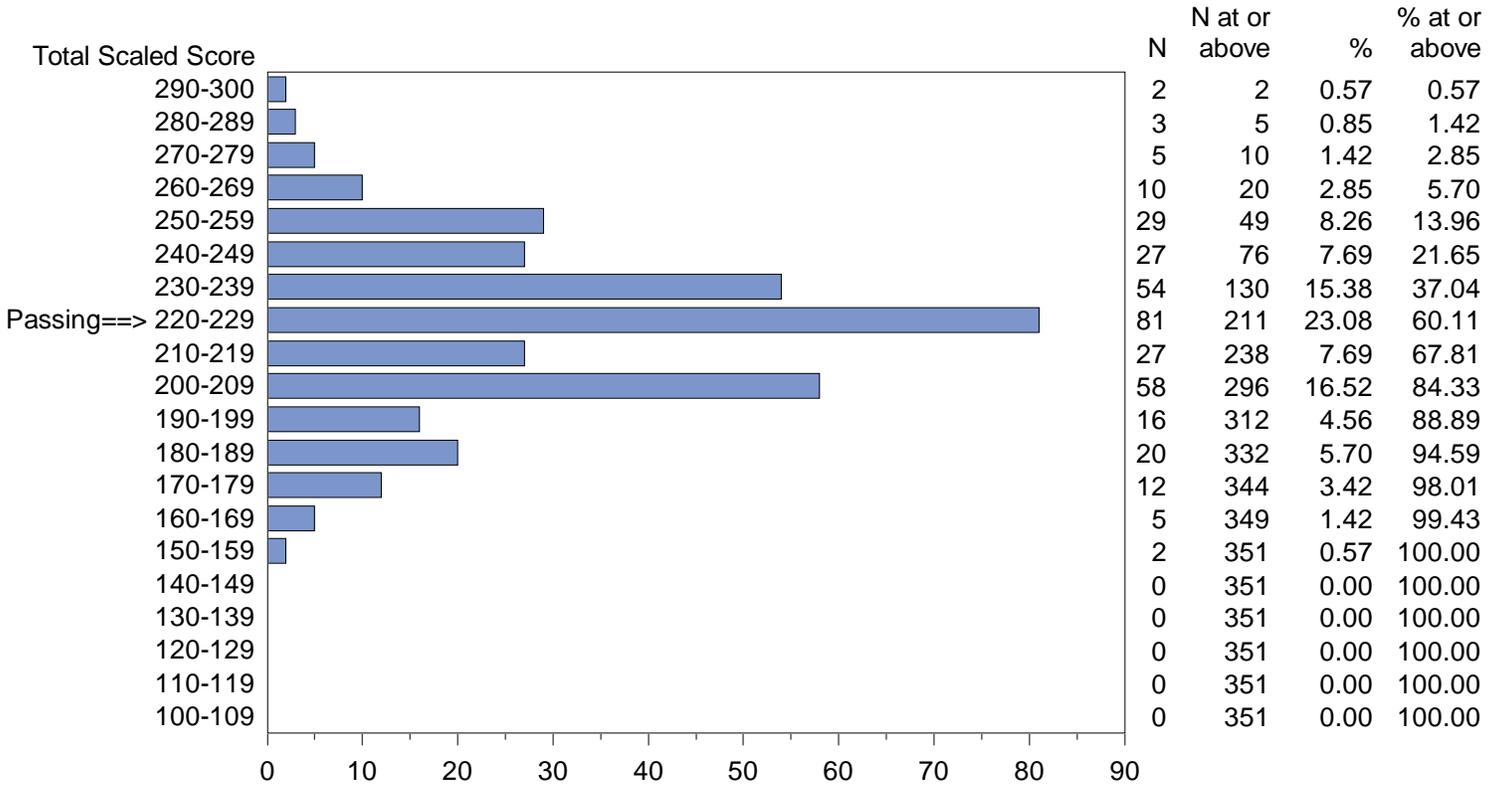
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=029 Social Science: Political Science Subtest



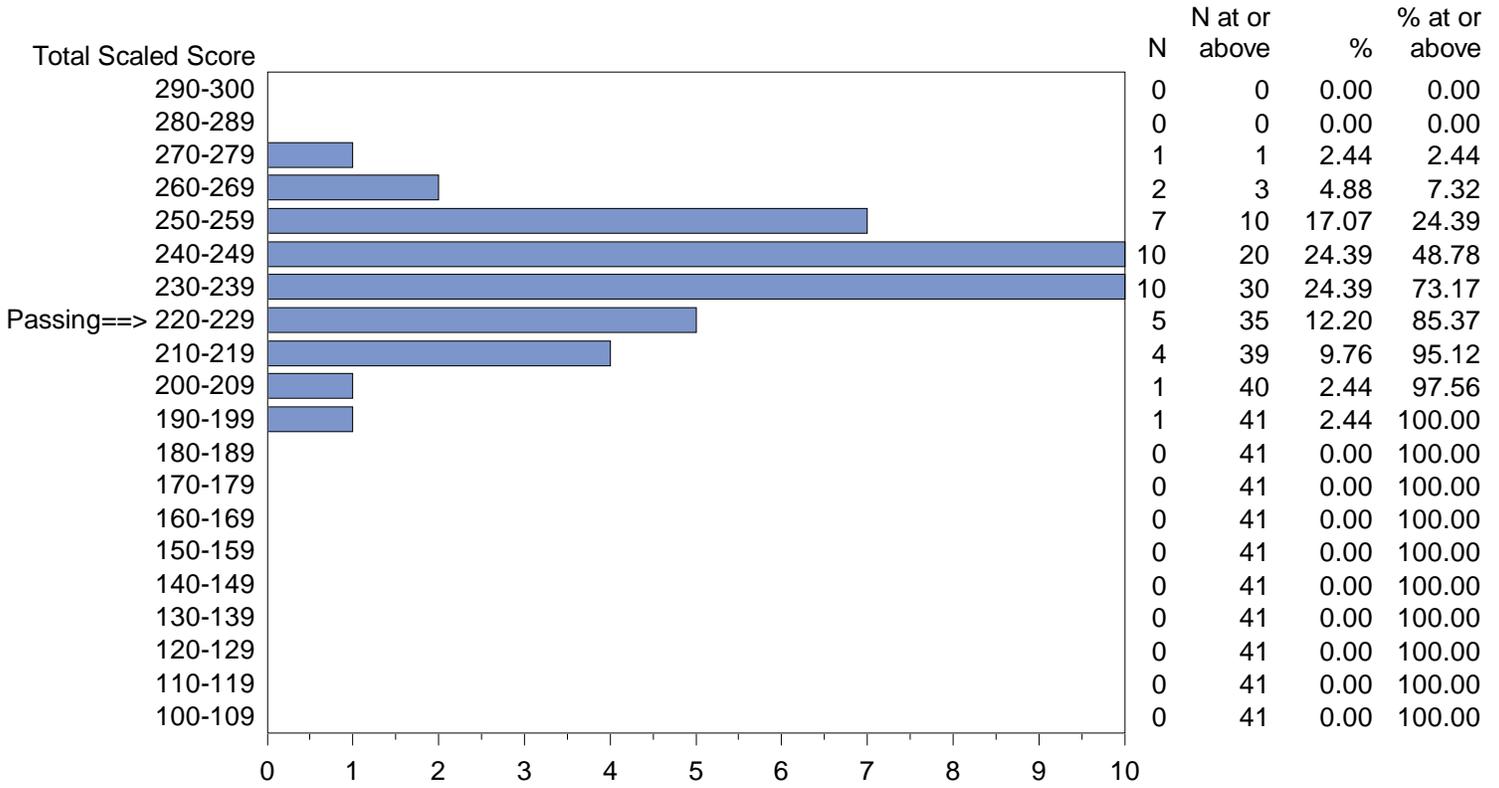
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=030 Social Science: Behavioral Sciences Subtest



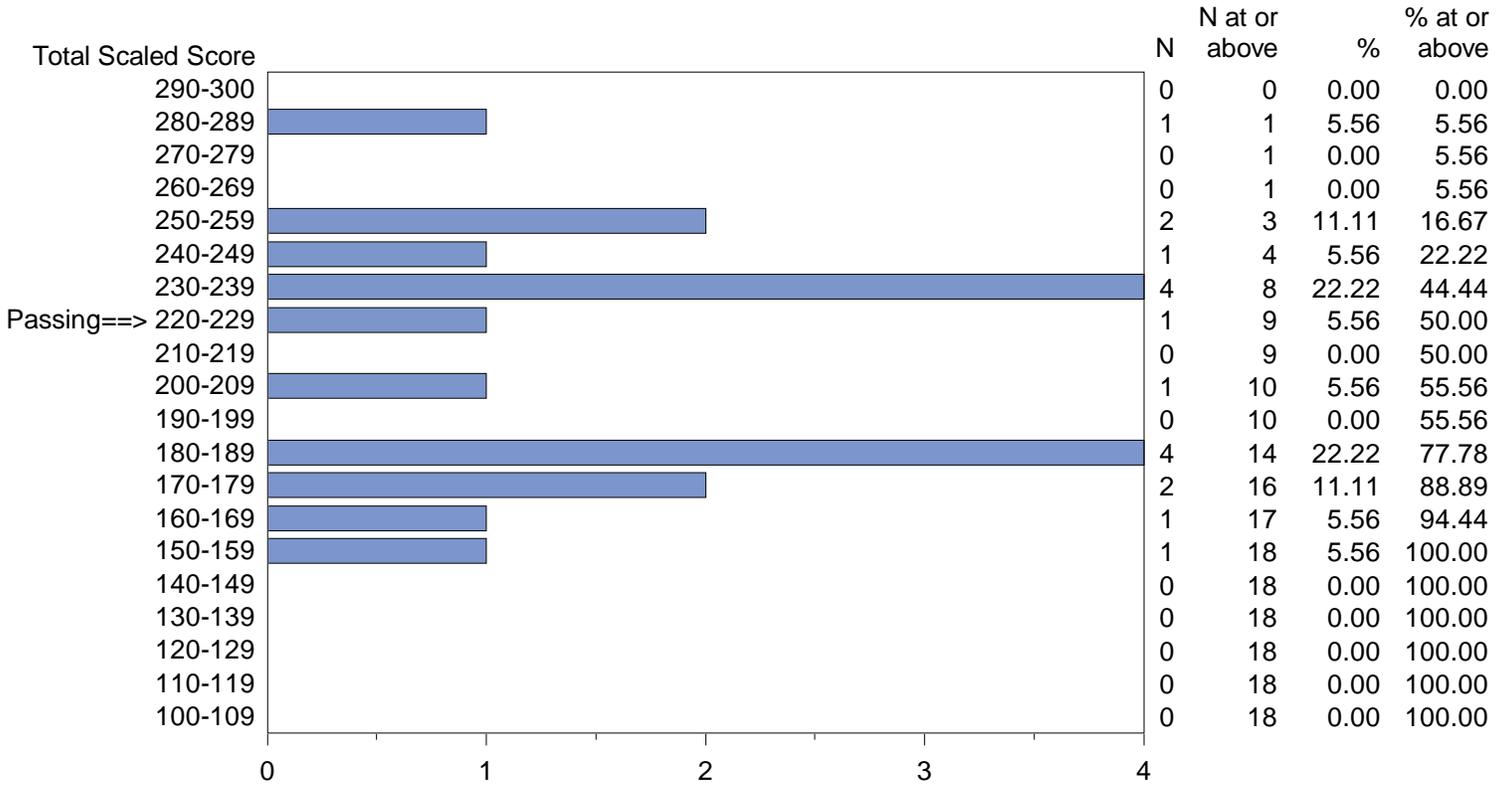
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=031 Speech & Theater



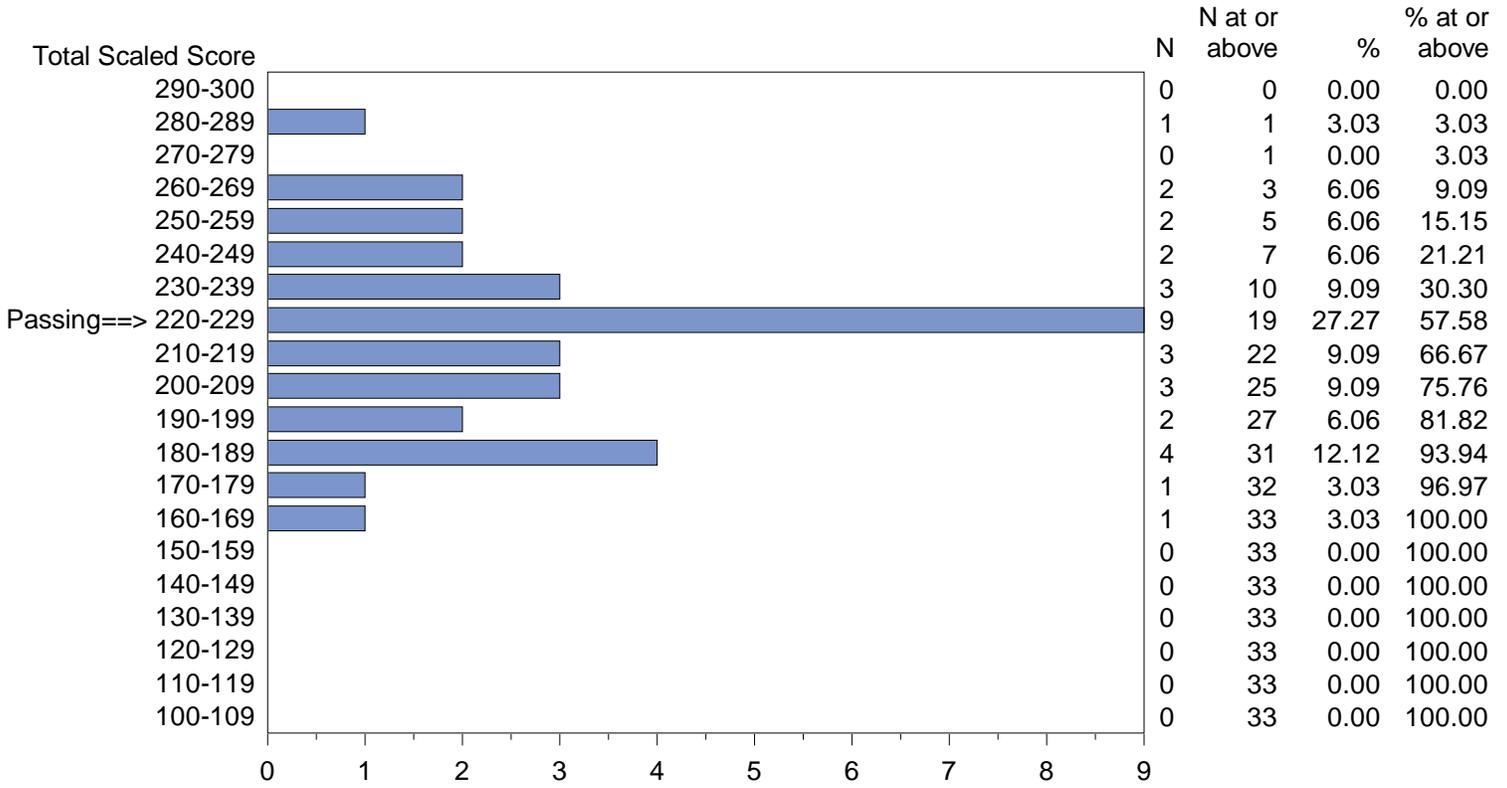
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=032 Unified Science: Biology



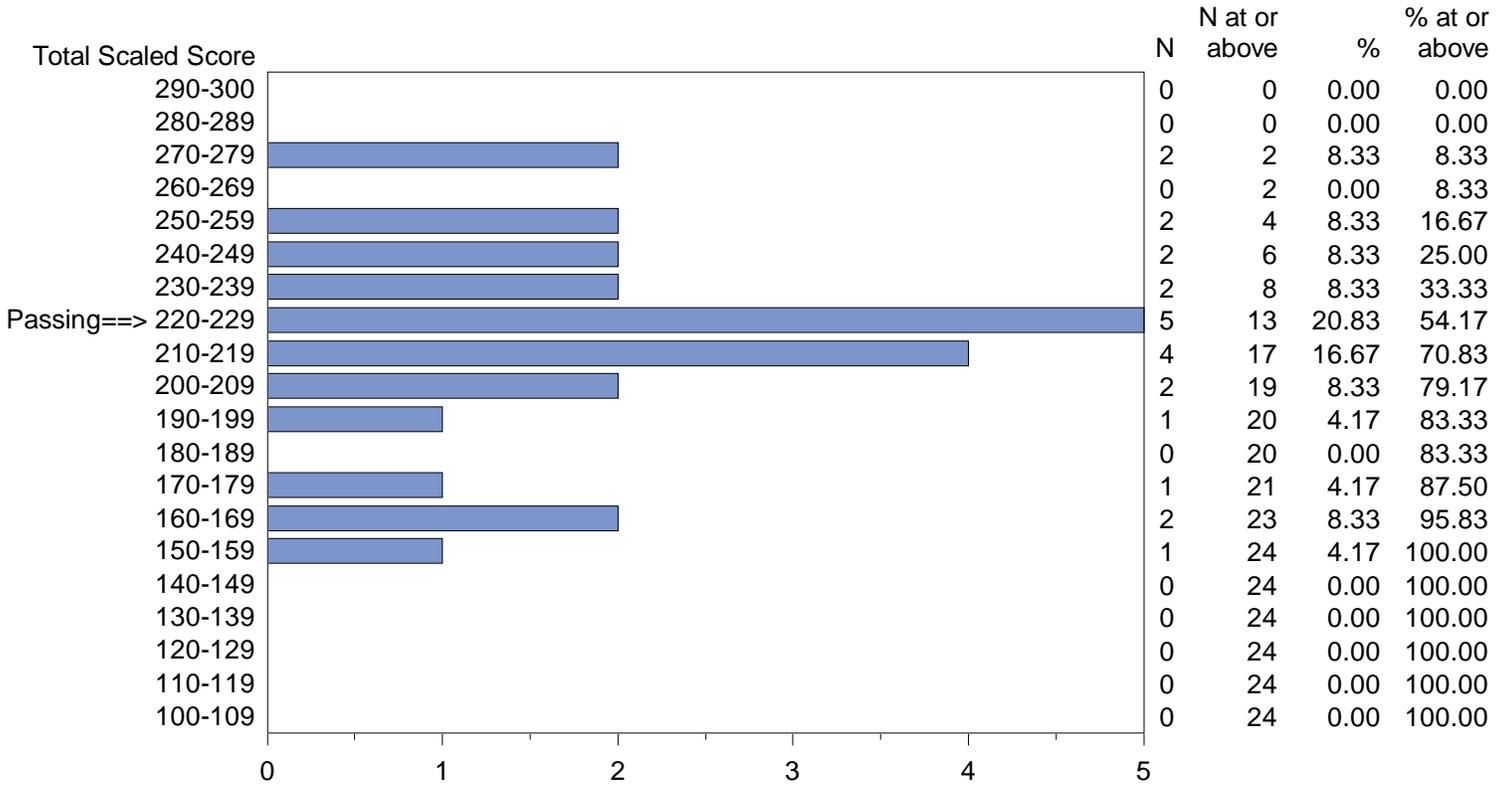
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=033 Unified Science: Chemistry



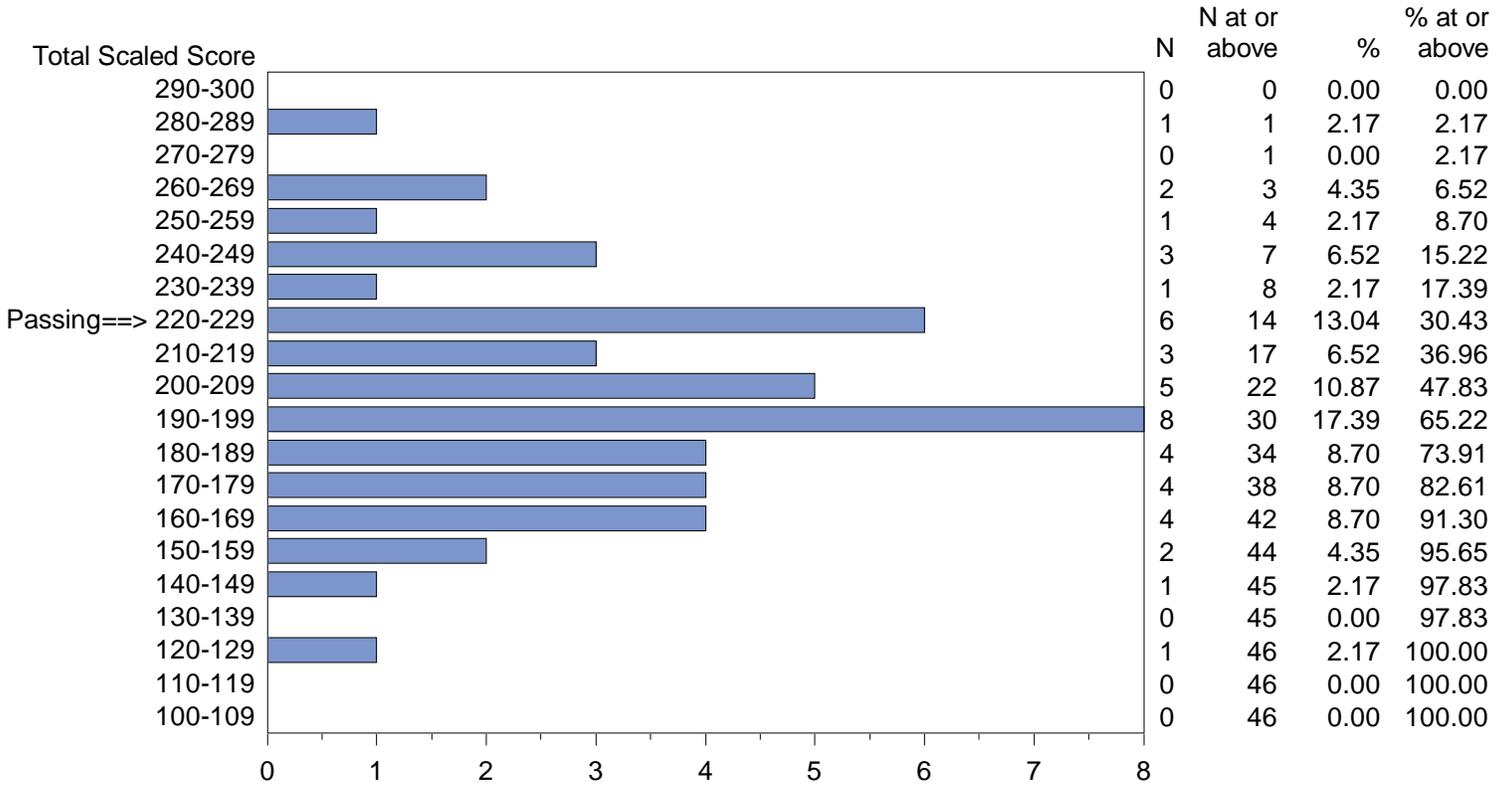
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=034 Unified Science: Earth Science



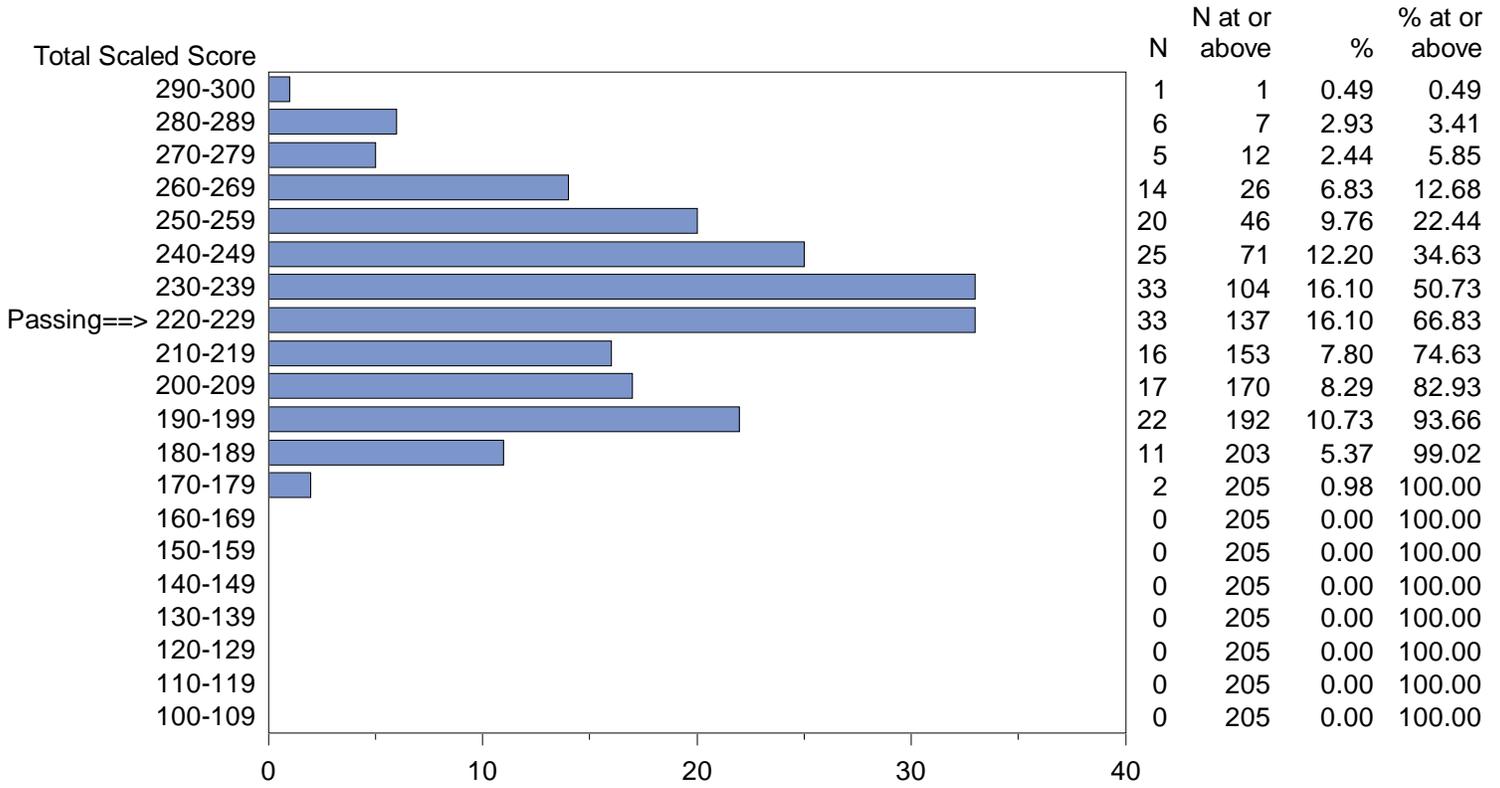
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=035 Unified Science: Physics



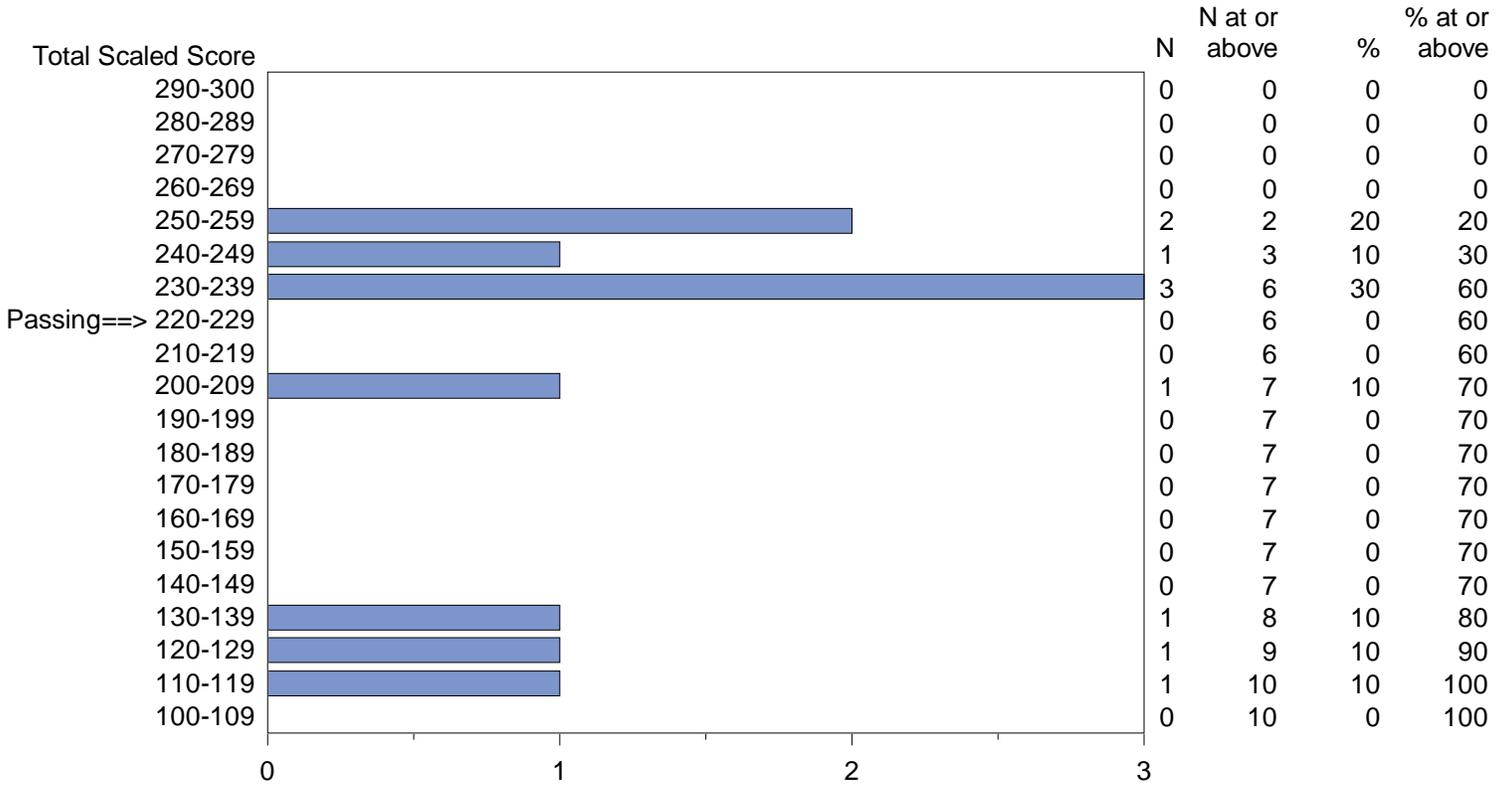
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=036 Art



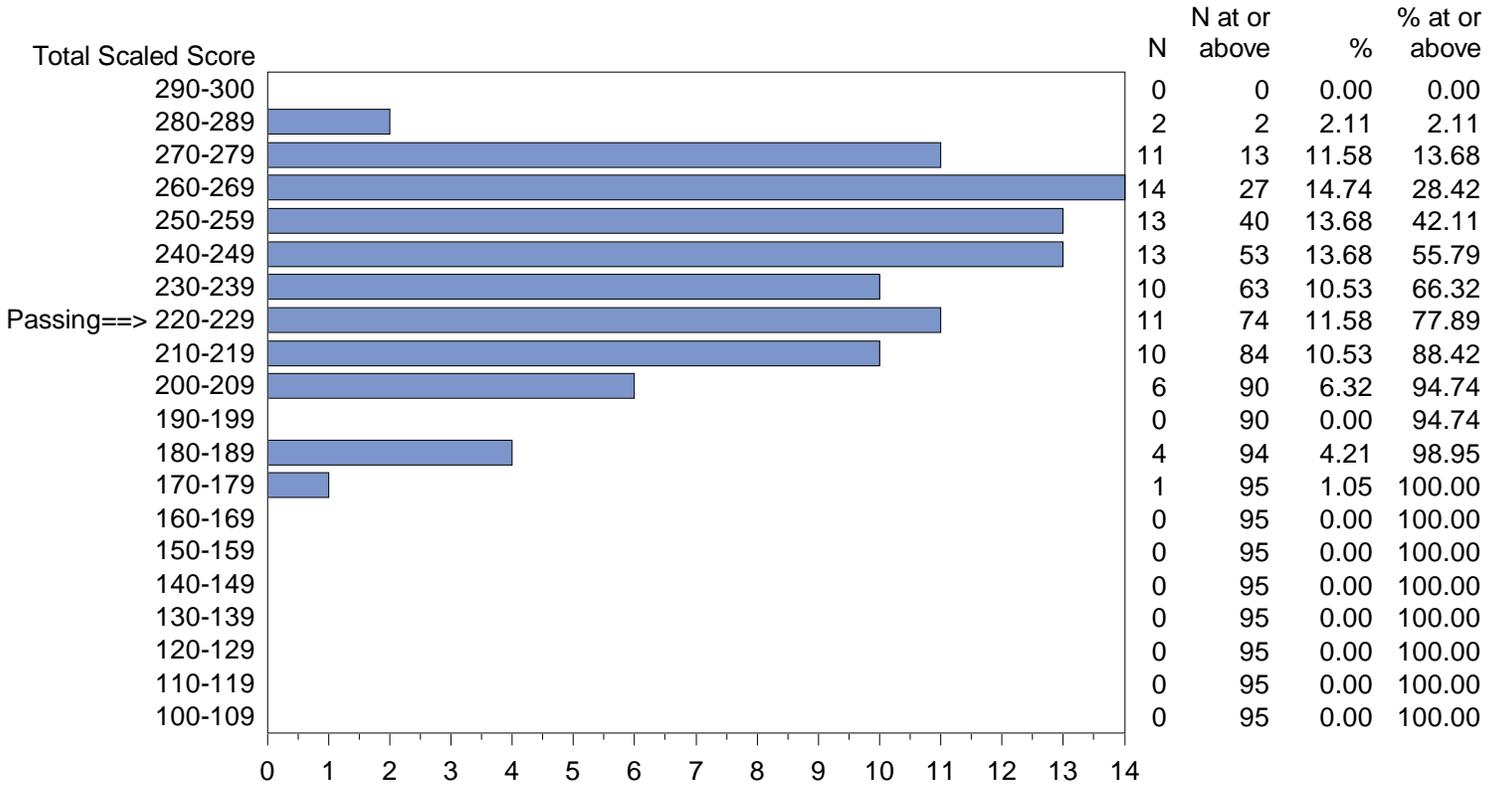
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=037 World Languages: Chinese-Mandarin



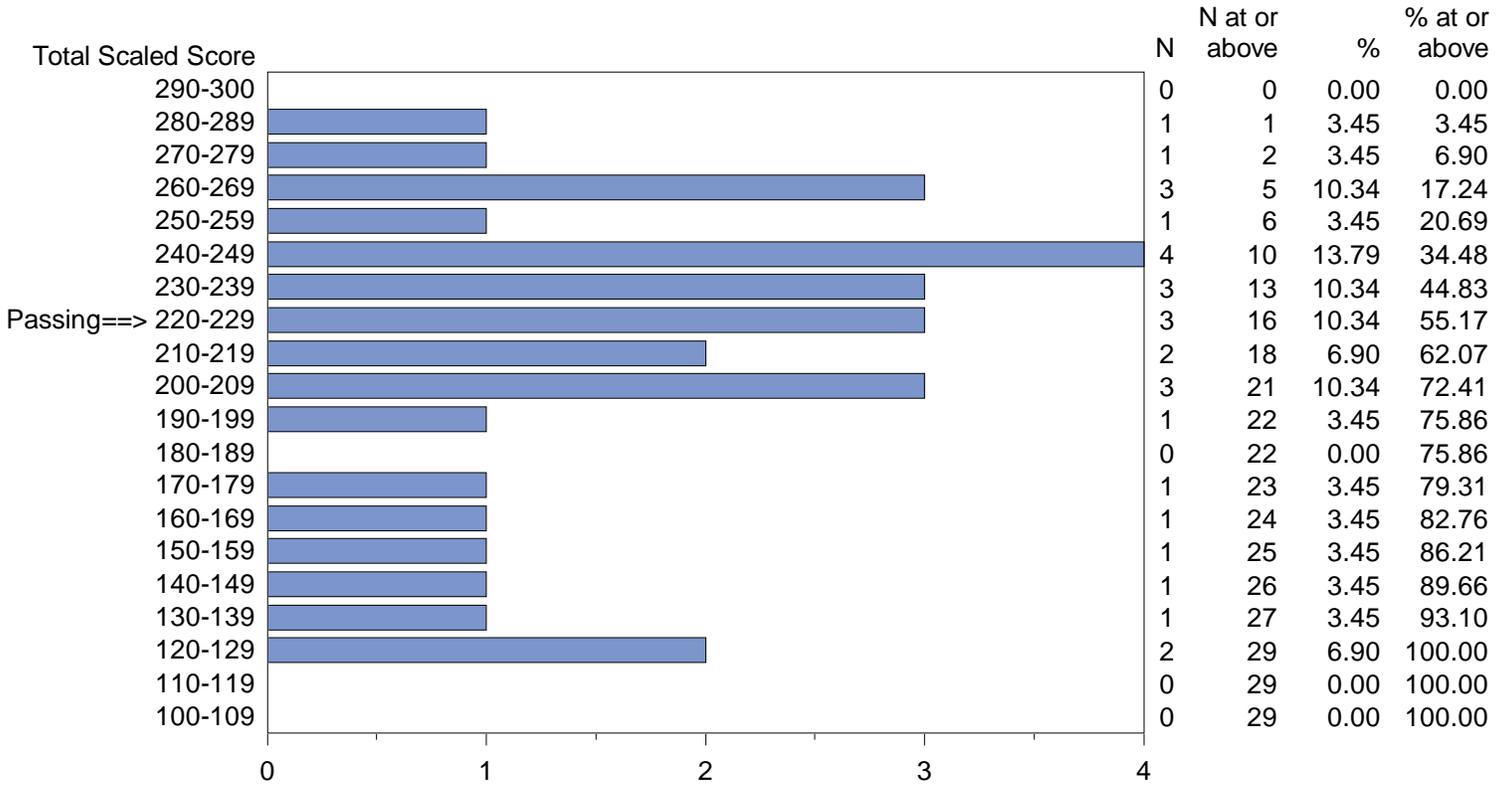
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=038 Family & Consumer Sciences



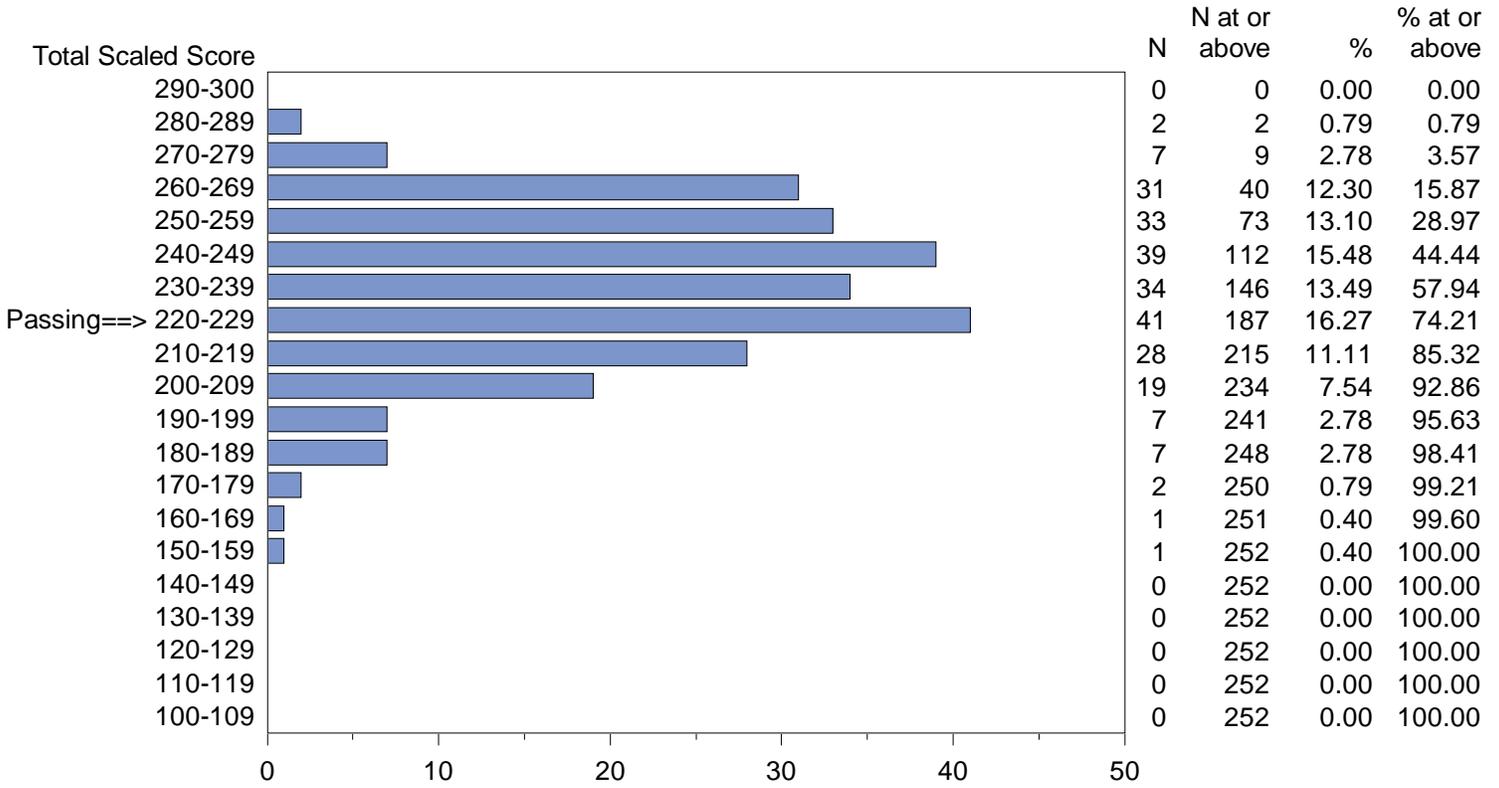
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=039 World Languages: French



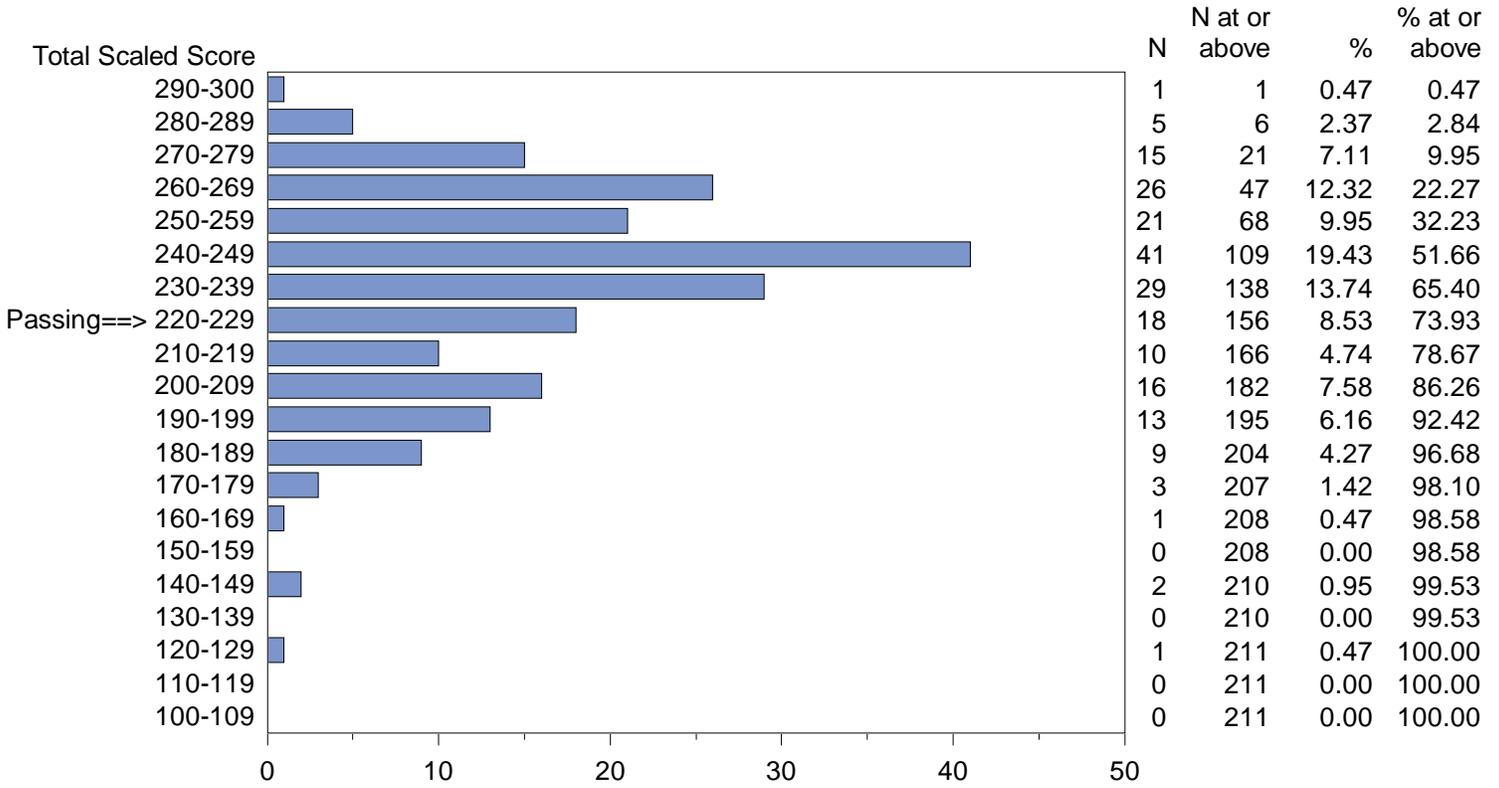
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=041 Health



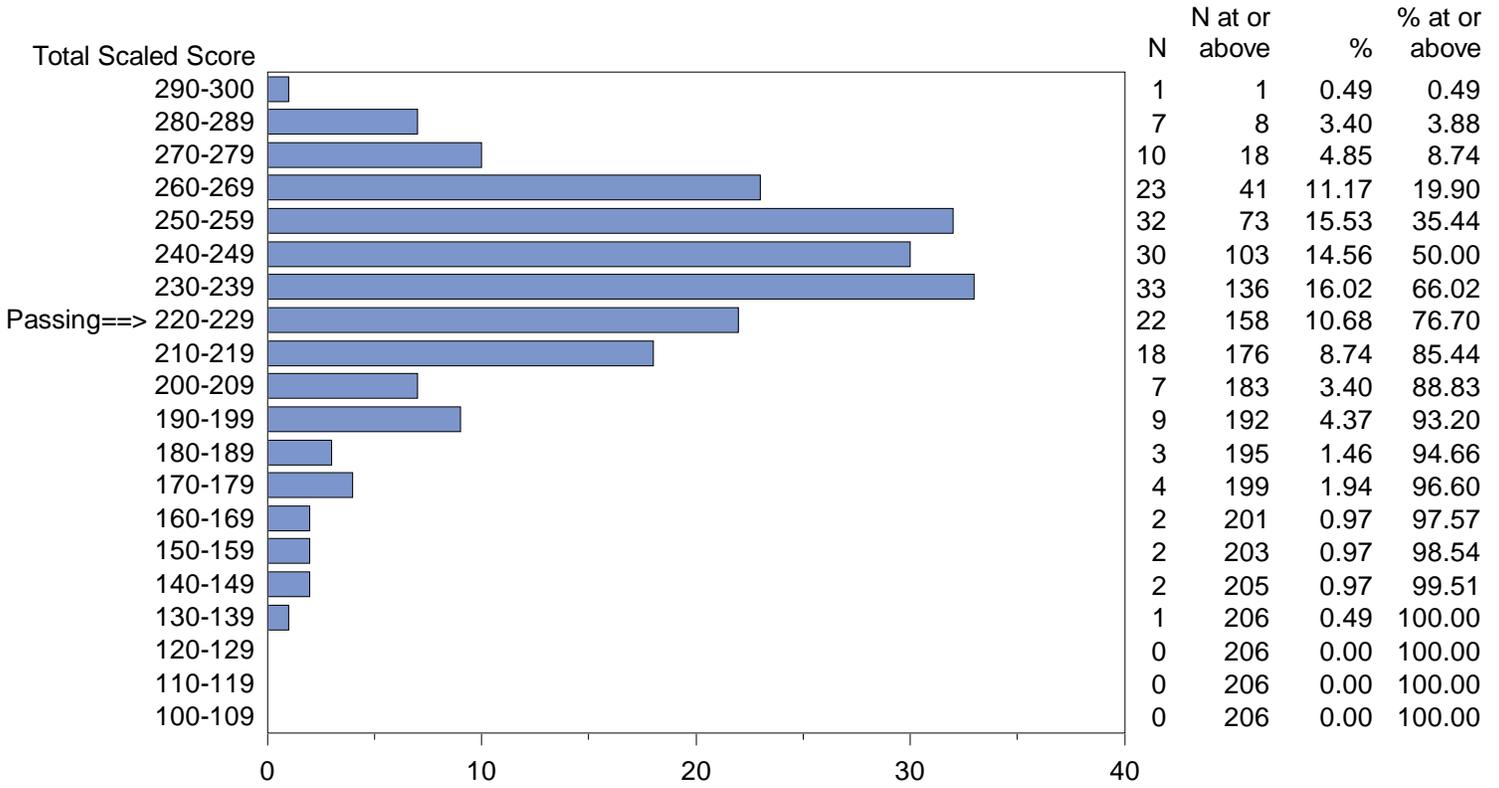
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=042 Library Media Specialist



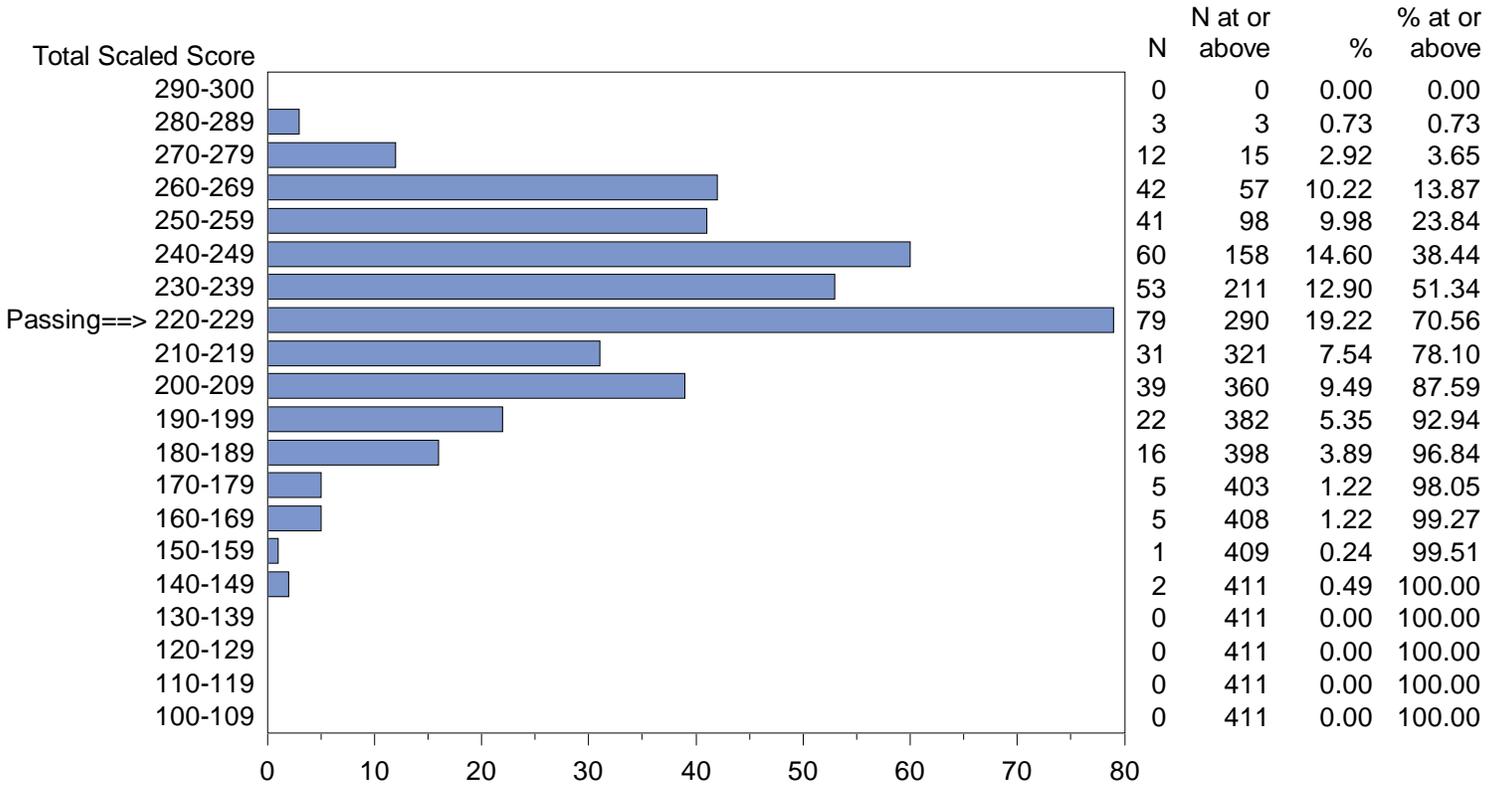
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=043 Music: Instrumental & Vocal



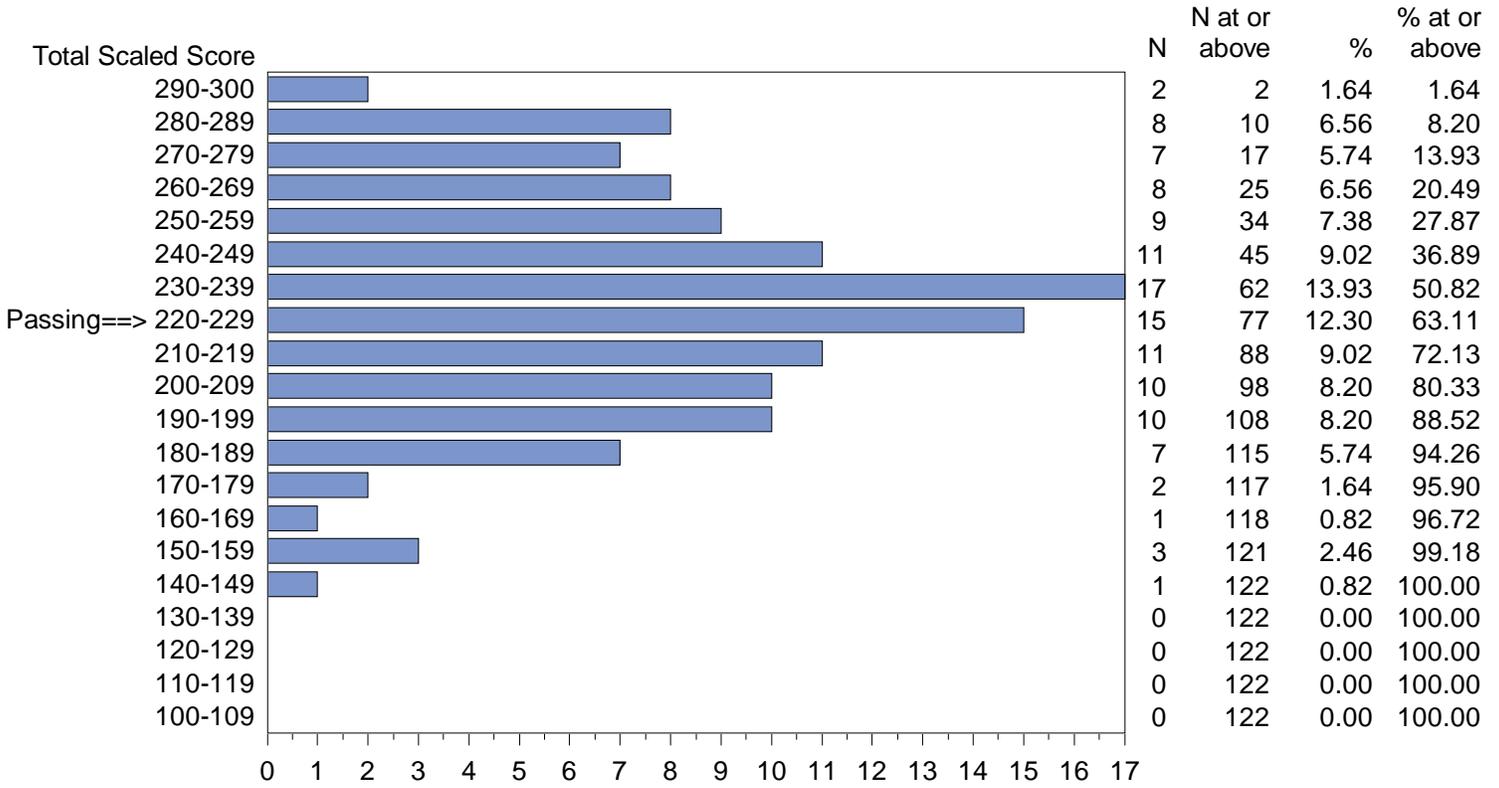
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=044 Physical Education



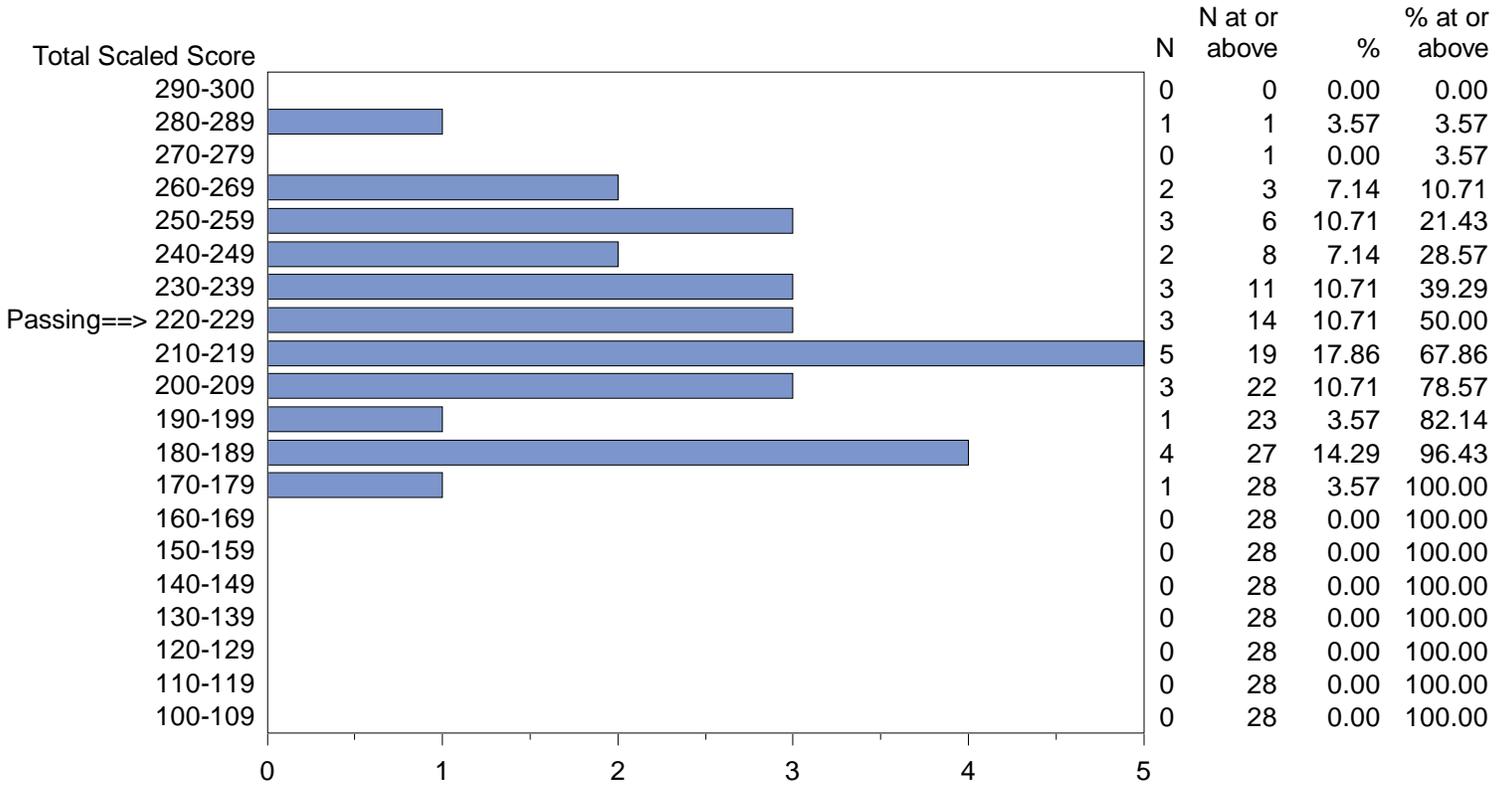
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=045 World Languages: Spanish



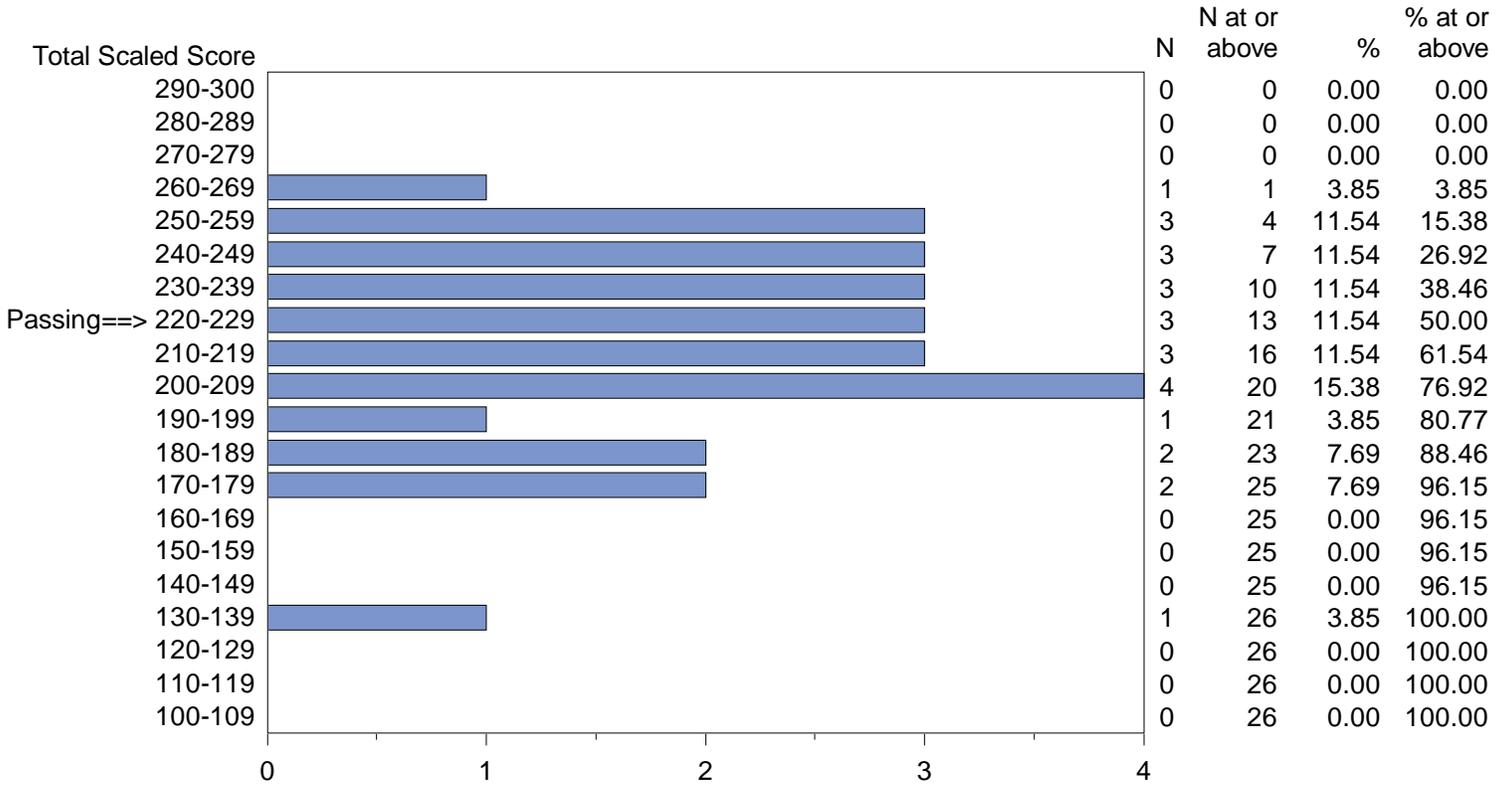
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=046 Technology & Engineering



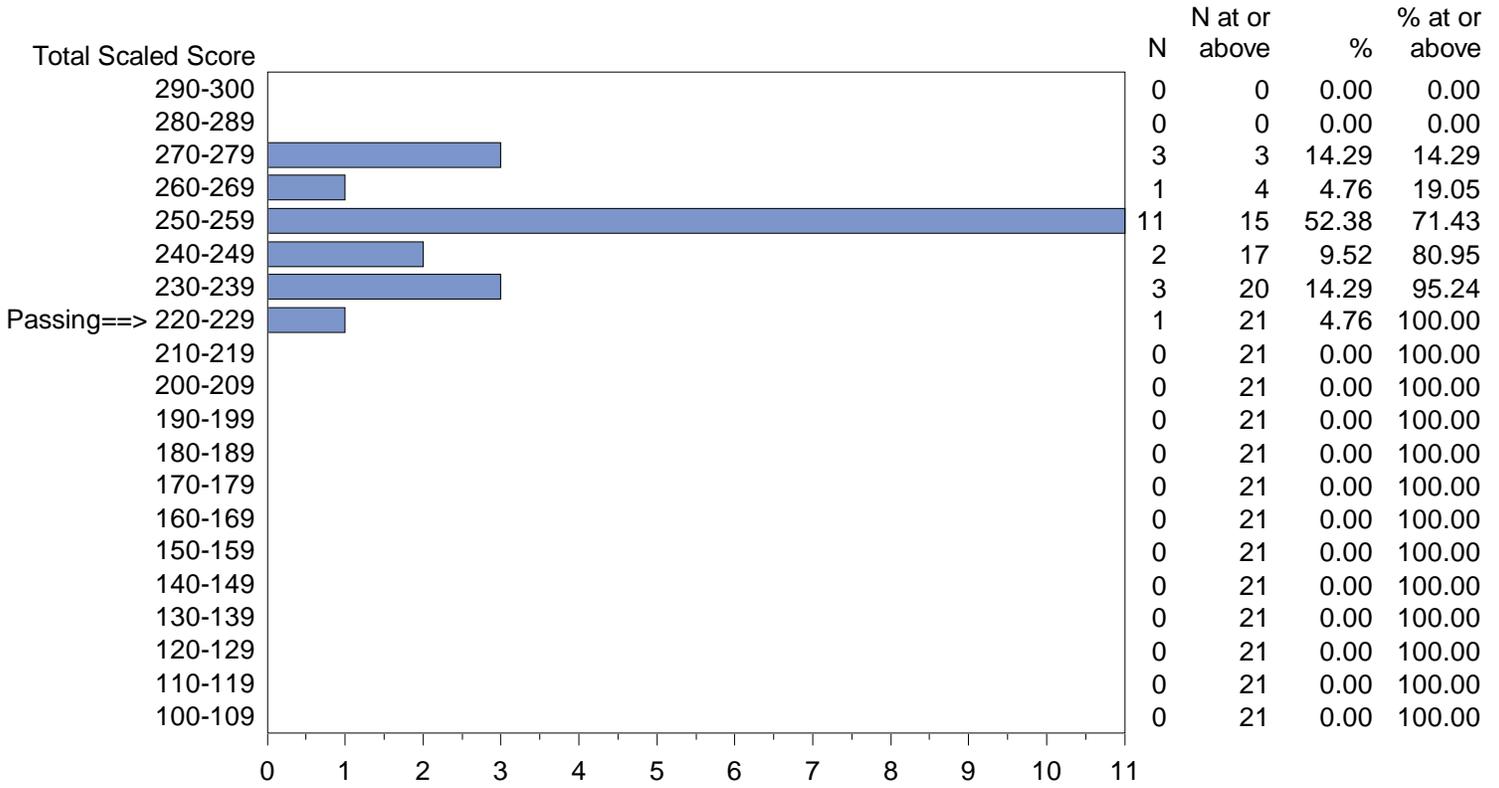
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=047 Blind & Low Vision



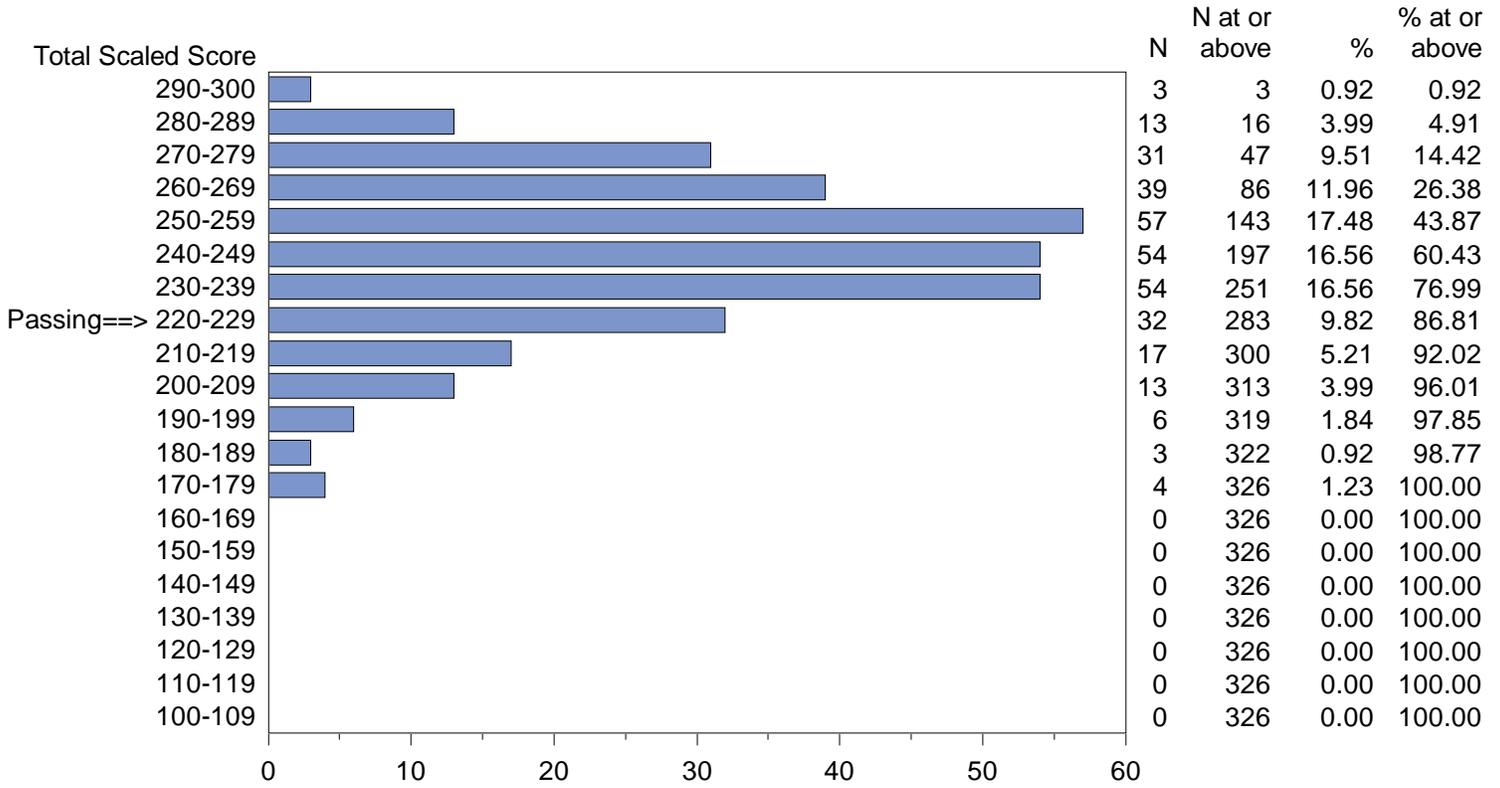
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=048 Deaf & Hard of Hearing



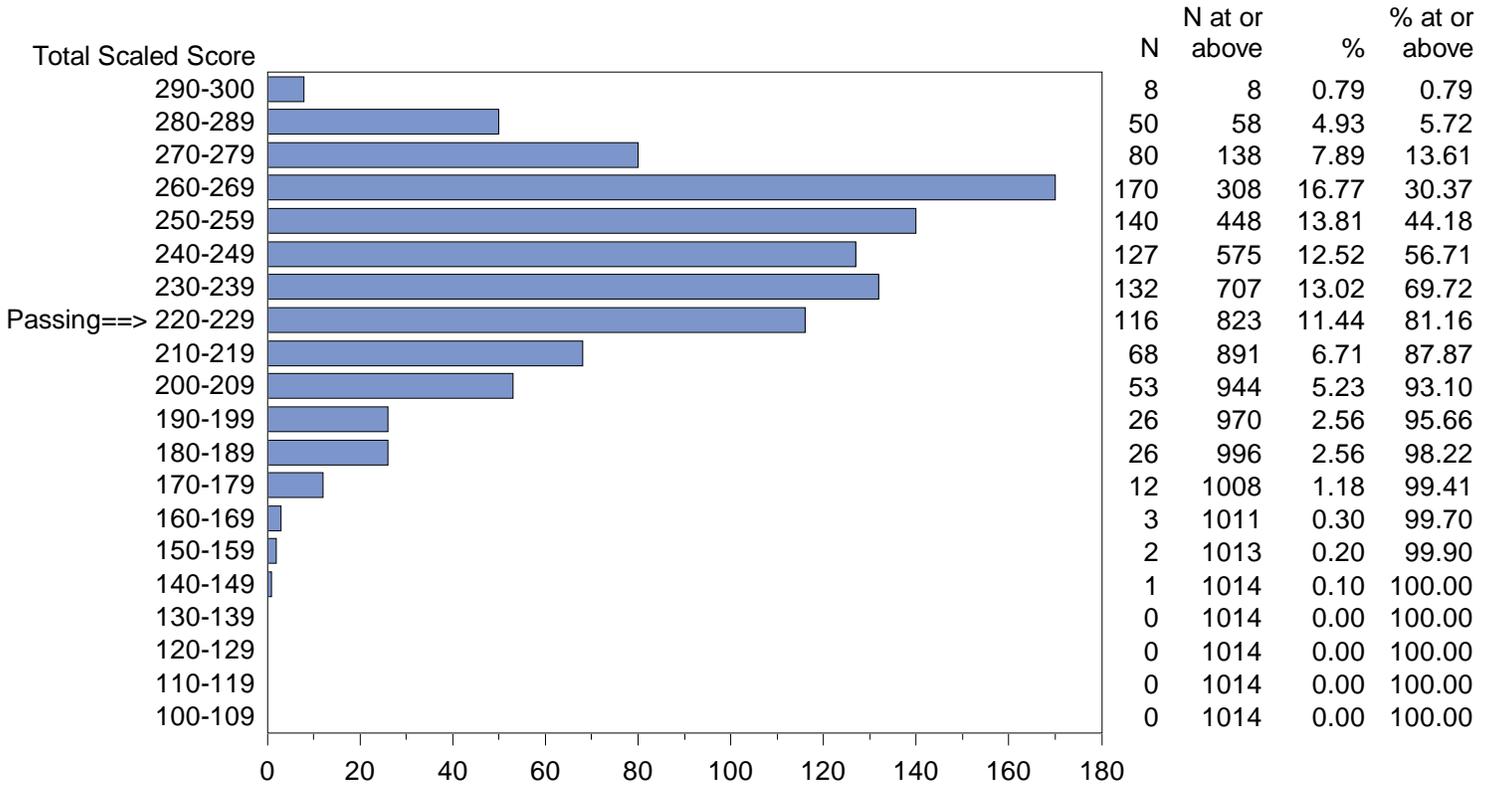
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=049 Early Childhood Special Education



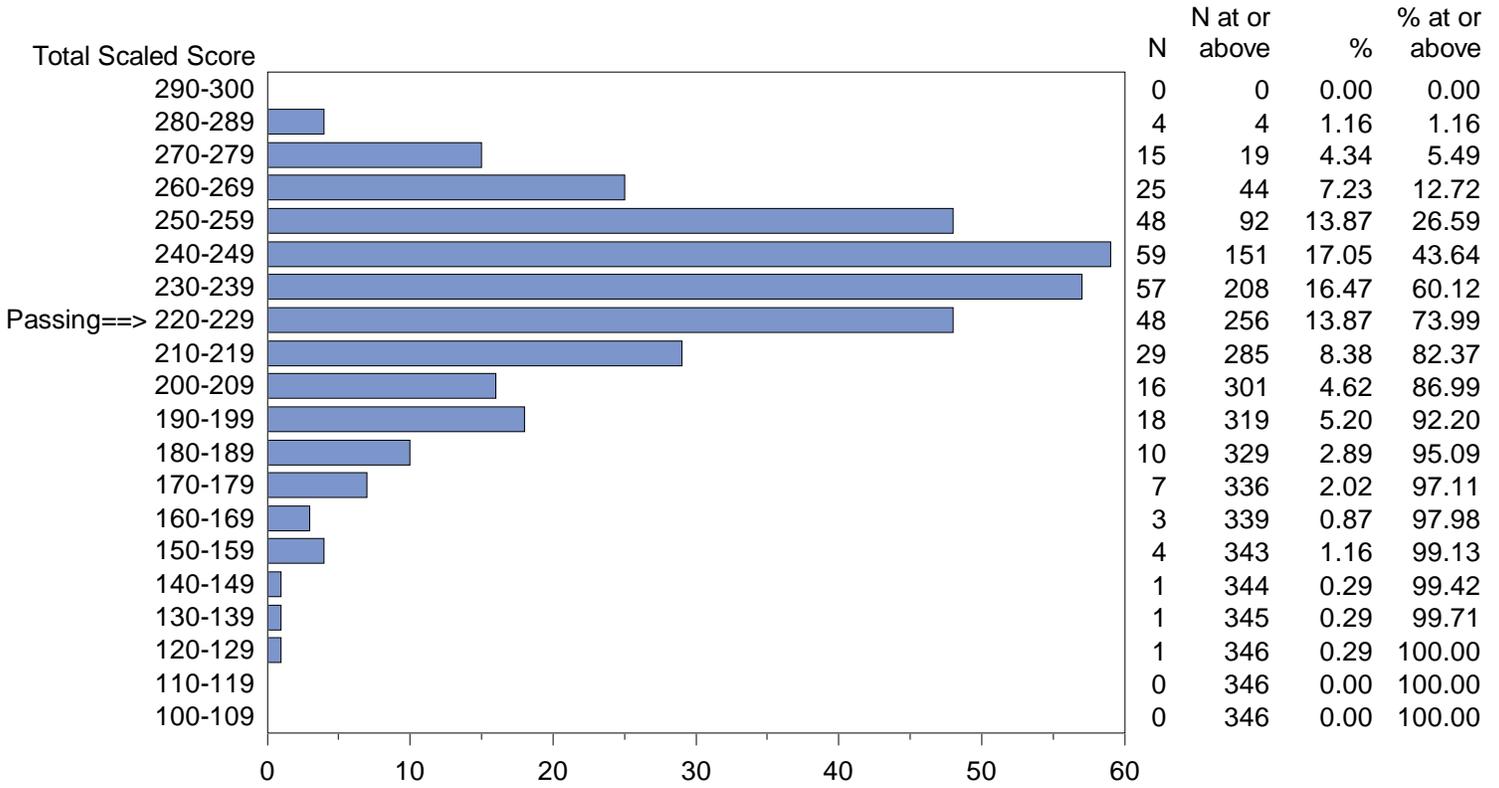
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=050 Mild/Moderate Cross Categorical Special Education



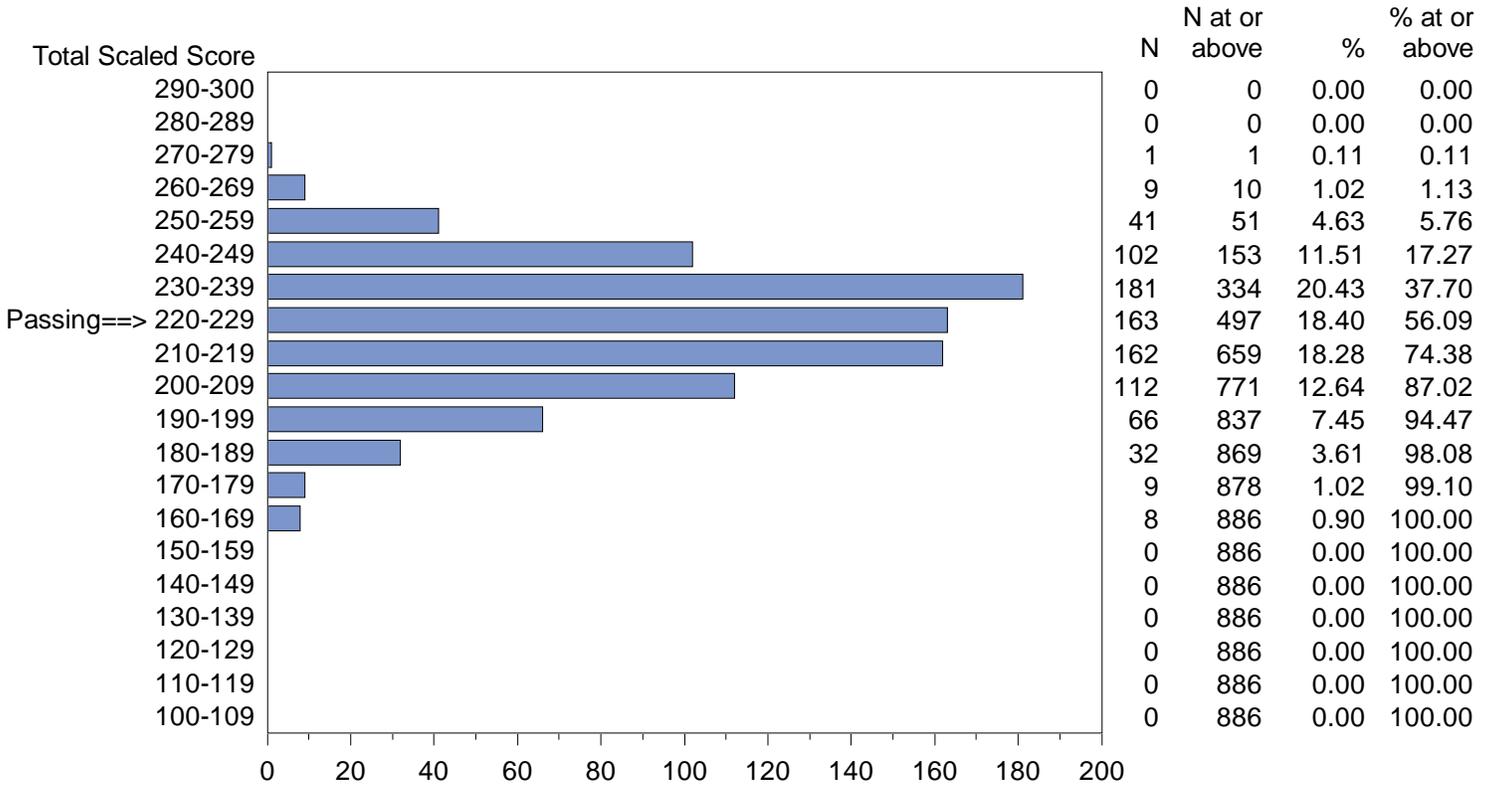
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=056 Counselor



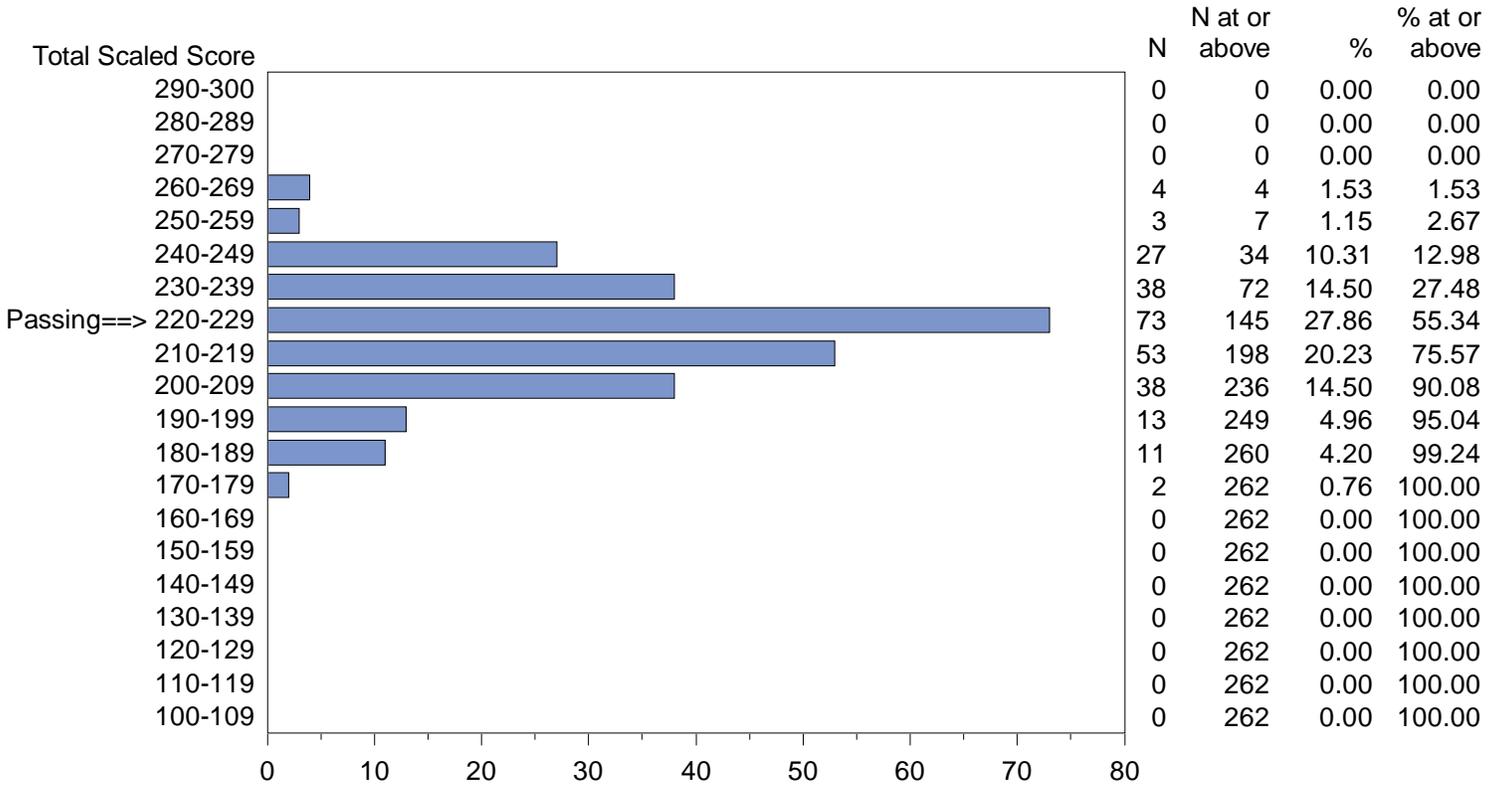
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=058 Building-Level Administrator



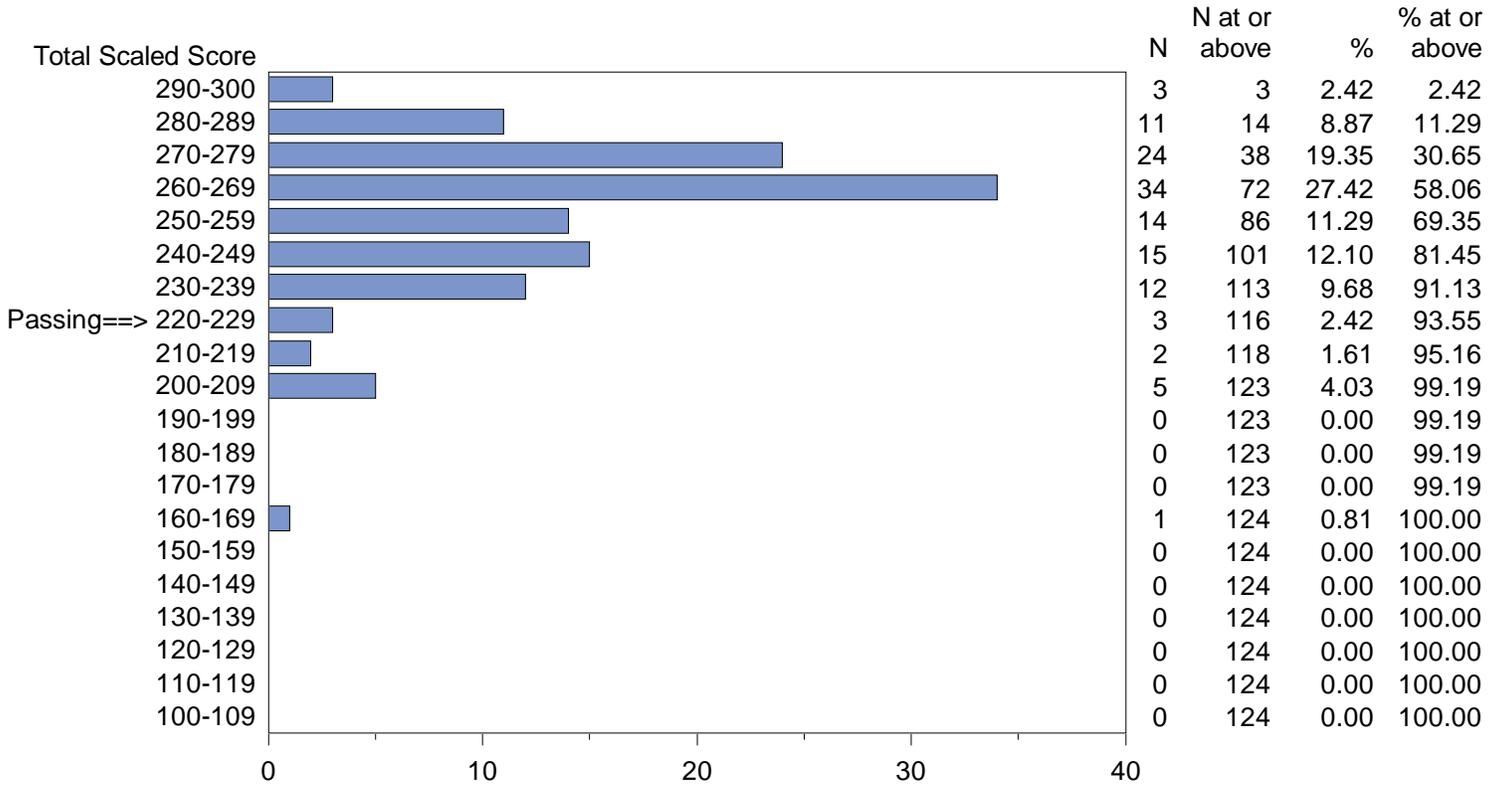
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=059 Superintendent



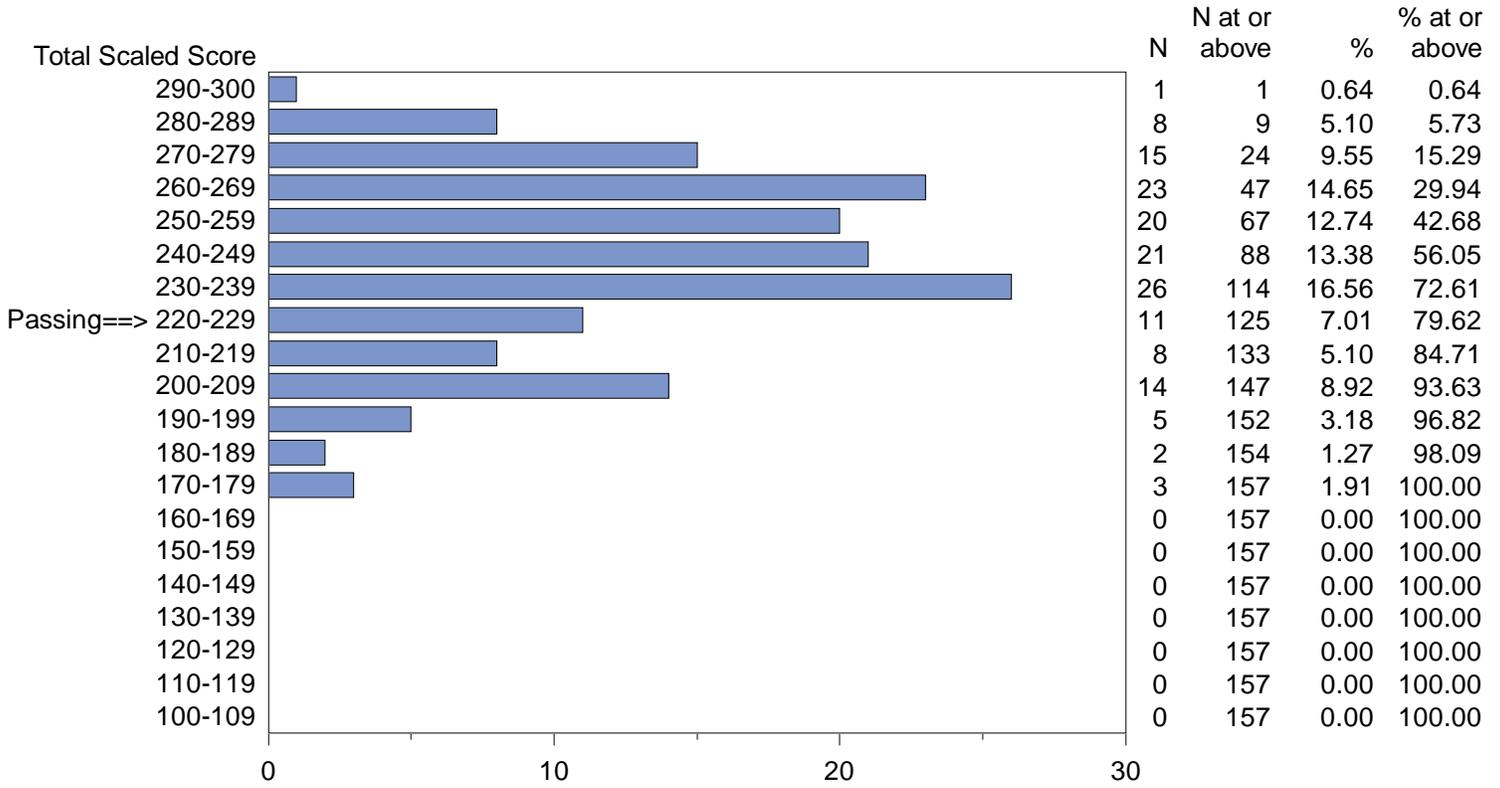
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 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=062 Professional Knowledge: Middle School



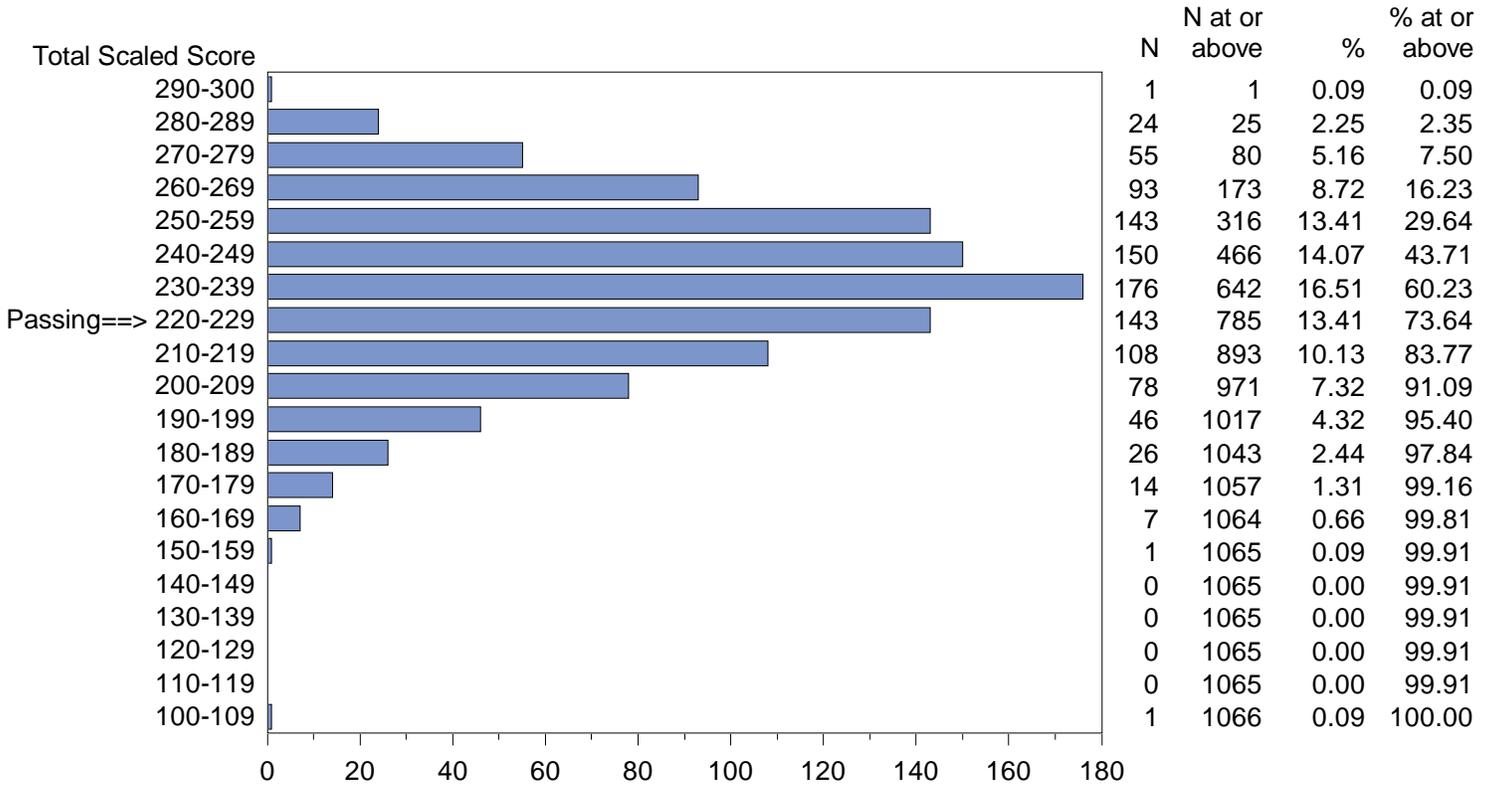
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 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=063 Professional Knowledge: Secondary



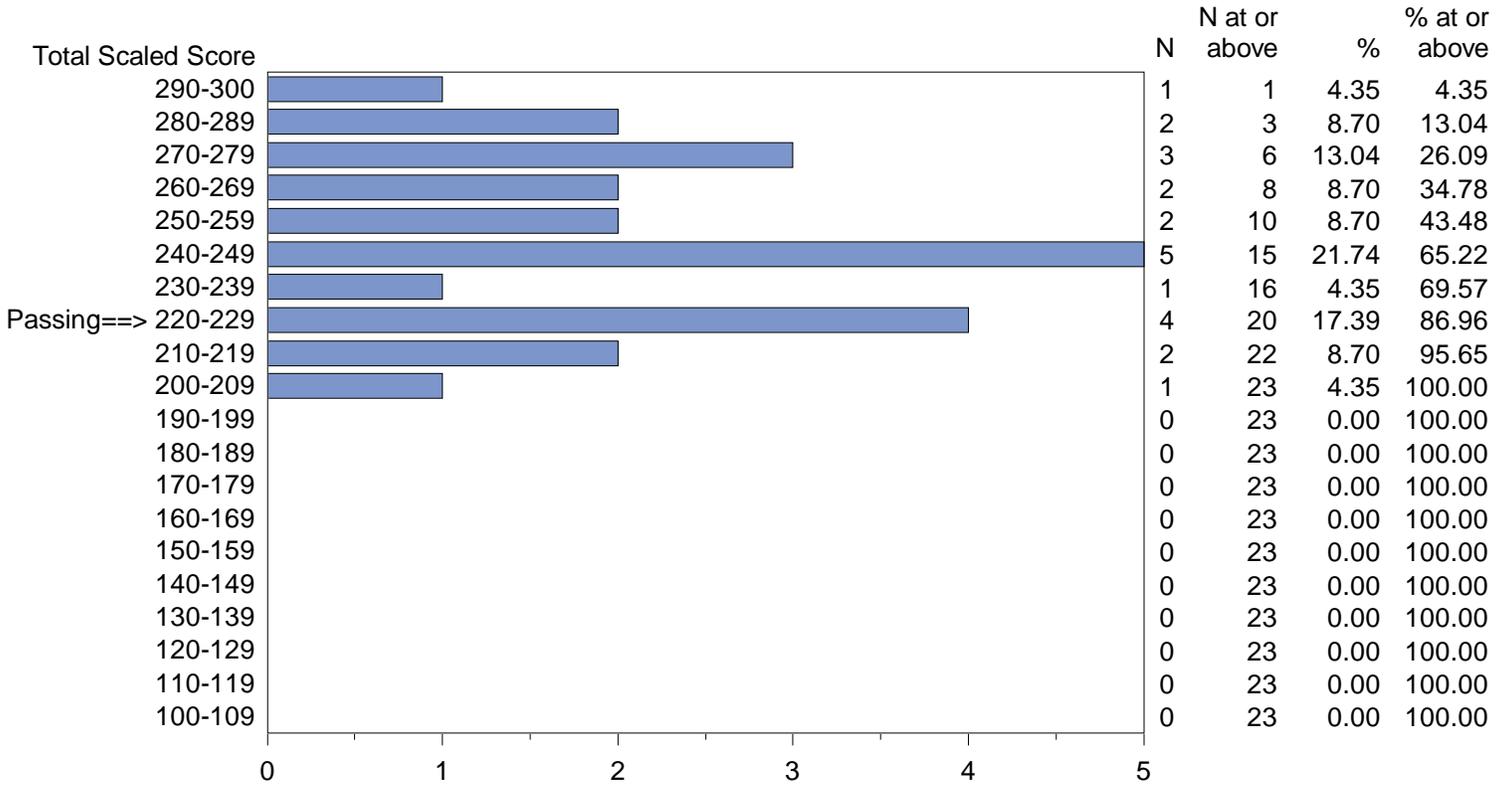
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 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=064 Early Childhood Education



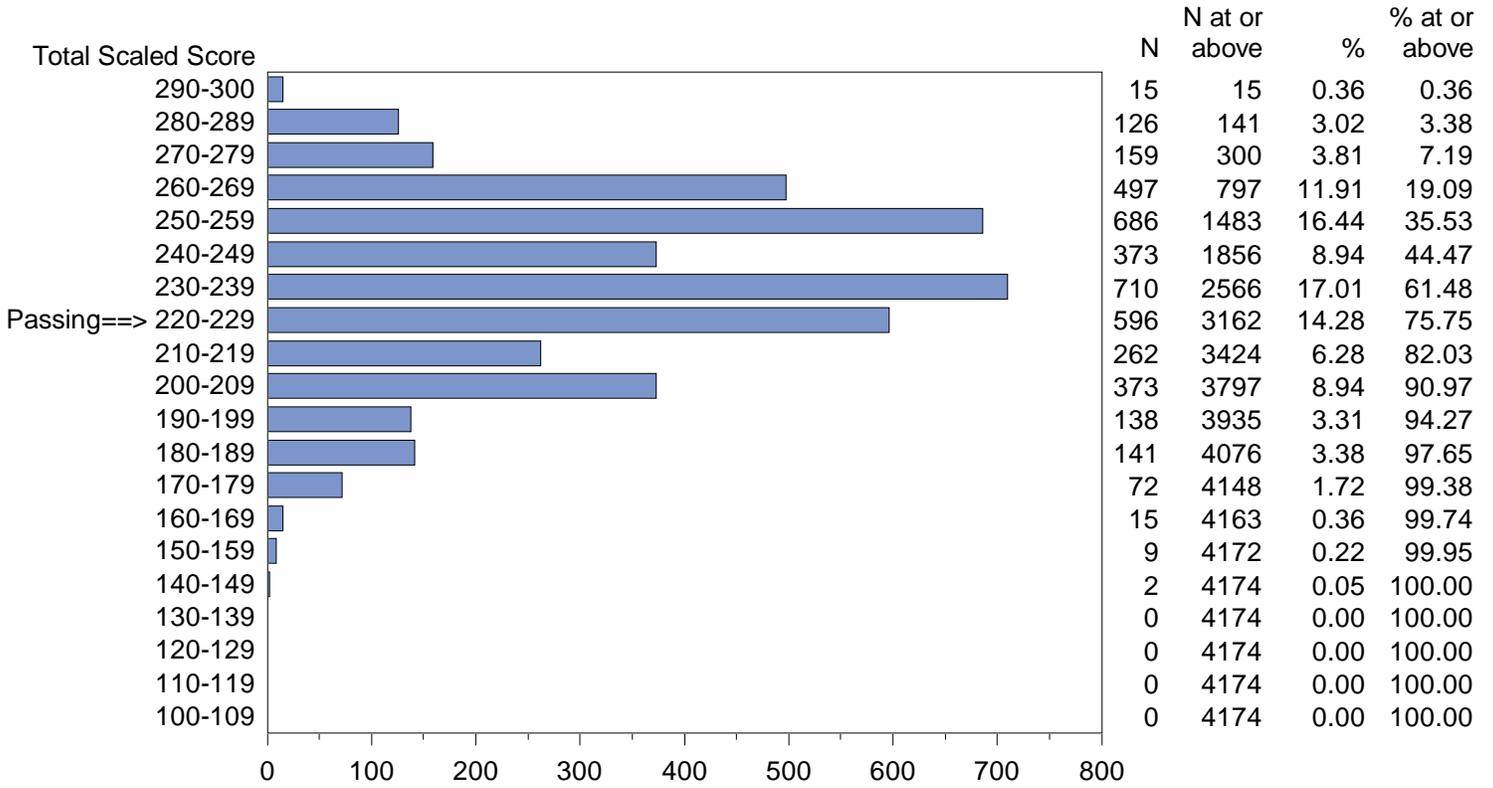
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 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=065 Elementary Mathematics Specialist



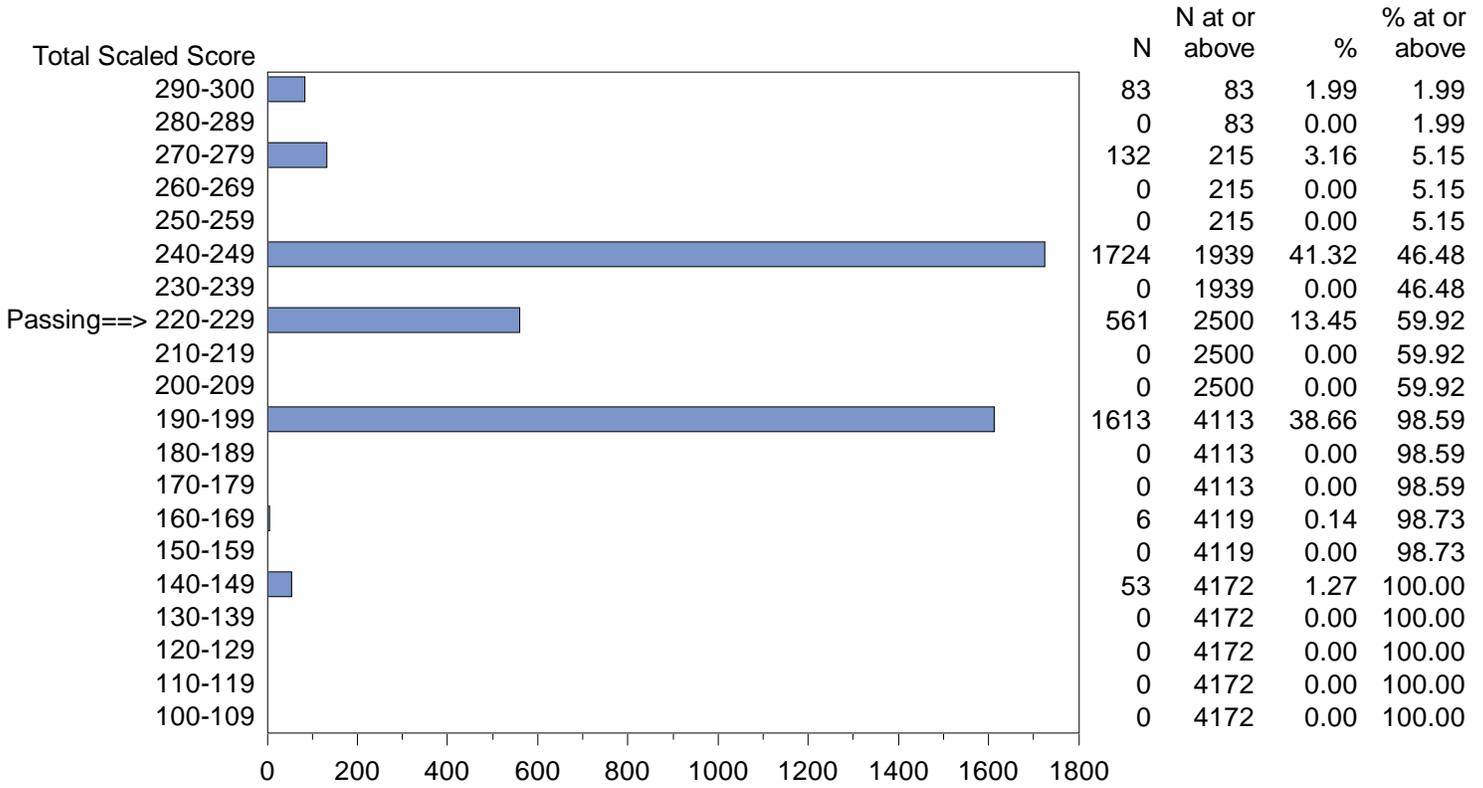
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=066 Reading Comprehension and Interpretation



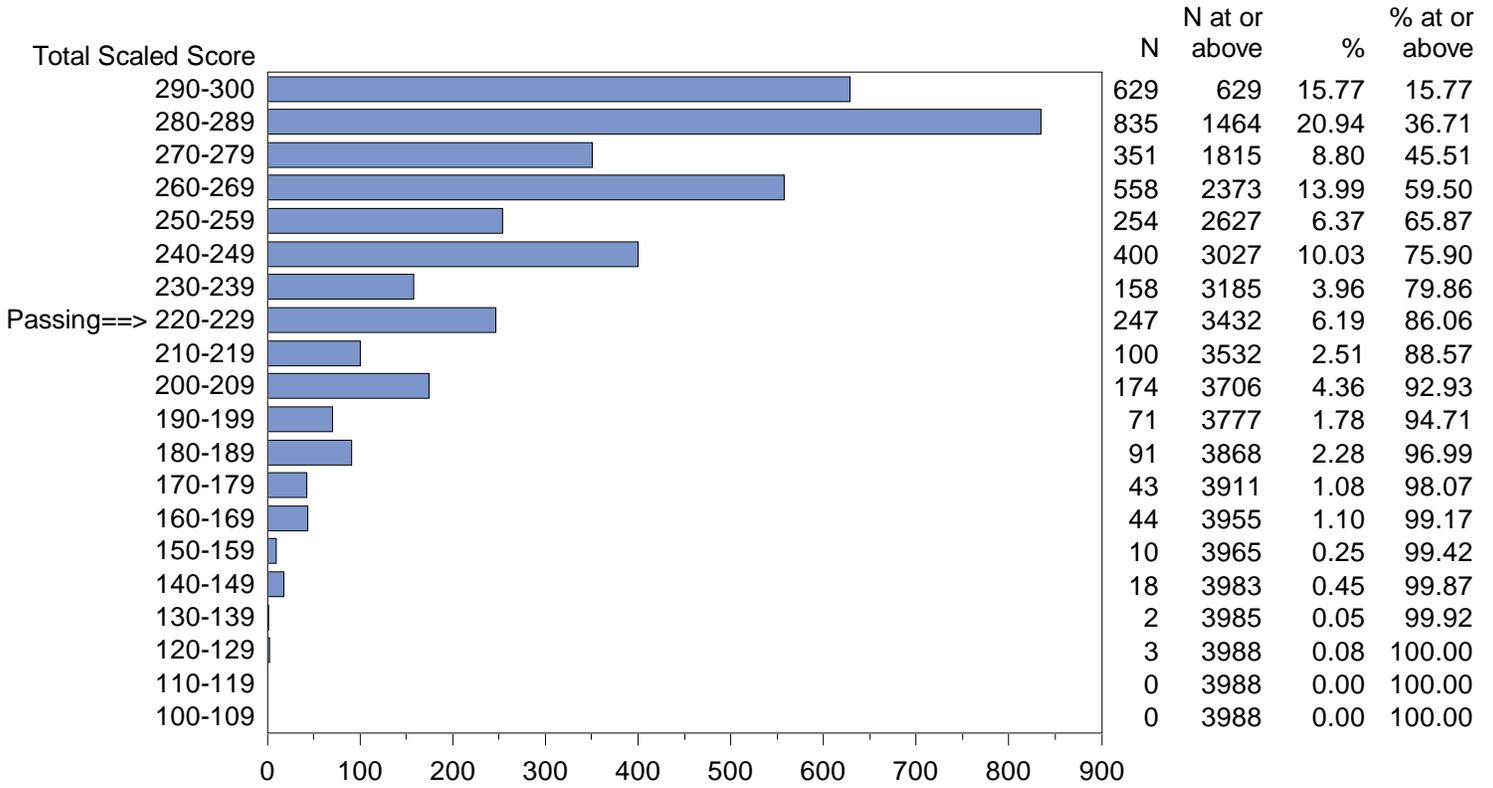
Missouri Educator Gateway Assessments
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 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=067 Writing



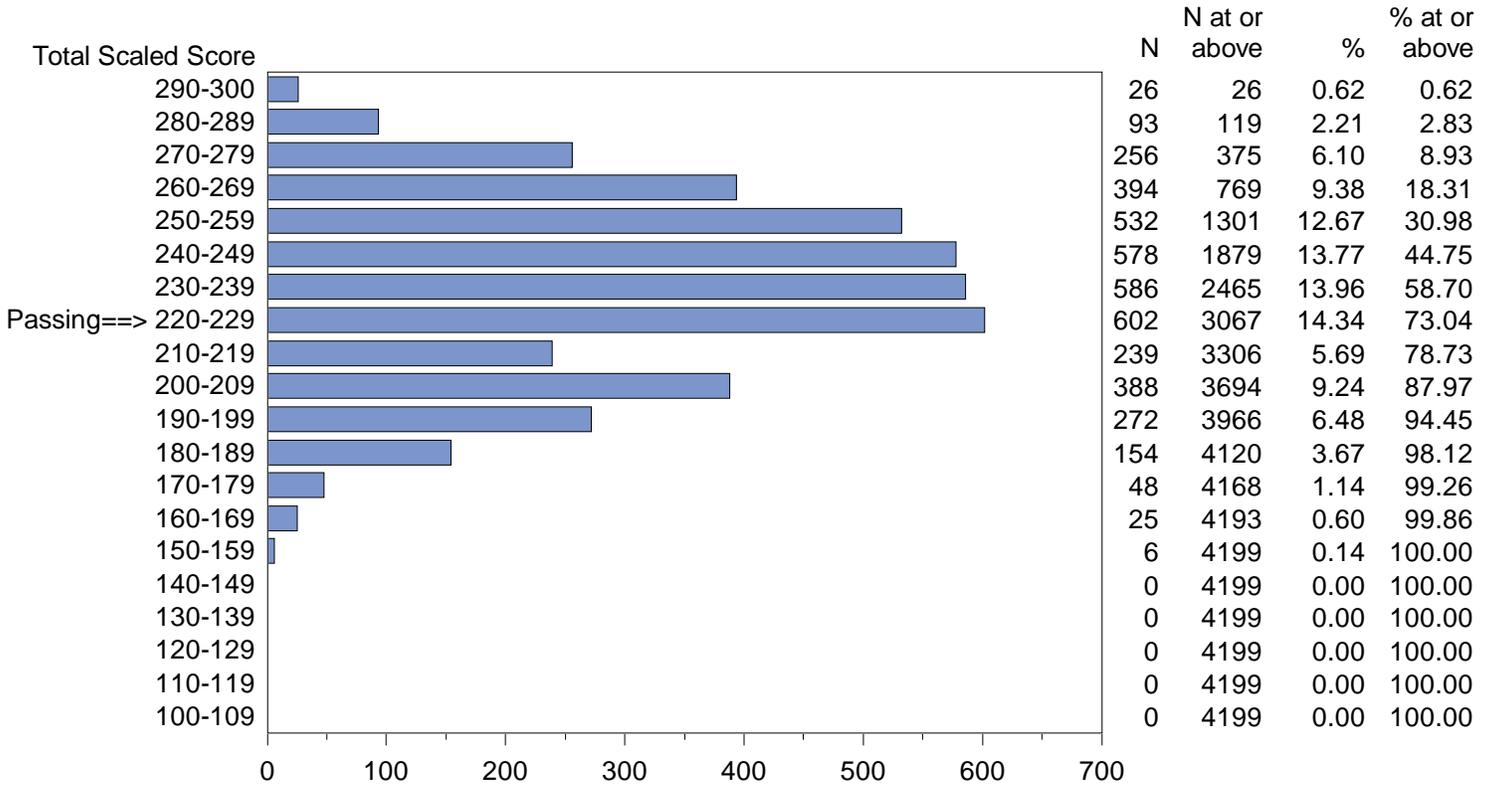
Missouri Educator Gateway Assessments
 September 1, 2016 - August 31, 2017
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=068 Mathematics



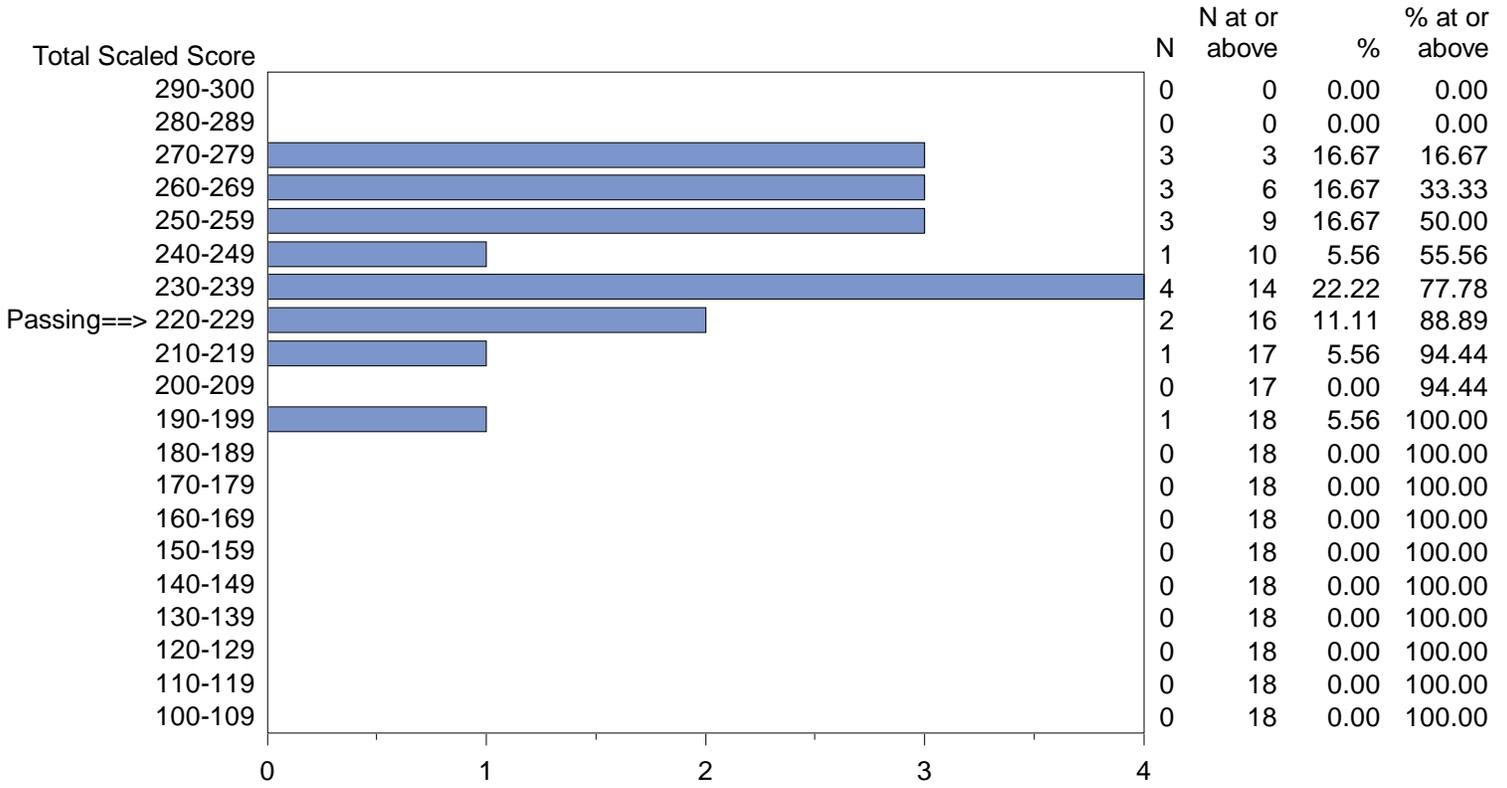
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 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=069 Science and Social Studies



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 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=070 Journalism



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