



**Missouri**

DEPARTMENT OF ELEMENTARY & SECONDARY

**EDUCATION™**

**End-of-Course Assessments**

**Technical Report**

**2017–2018**

Government  
American History

Submitted to the  
Missouri Department of Elementary and Secondary Education

Presented by  
Questar Assessment Inc.



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## List of Abbreviations

Below is a list of abbreviations that appear in this technical report.

ALD	achievement level descriptor
ARC	Assessment Resource Center
AYP	adequate yearly progress
CLE	course-level expectation
CR	constructed-response
CSEM	conditional standard error of measurement
CTT	classical test theory
DESE	Department of Elementary and Secondary Education
DIF	differential item functioning
DOK	Depth of Knowledge
EFT	embedded field test
ELL	English language learner
EOC	end-of-course
ESEA	Elementary and Secondary Education Act
FRL	free and reduced lunch
GLE	grade-level expectation
GRF	general research file
IAP	Individualized Accommodation Program
IDEA	Individuals with Disabilities Education Act
IEP	Individualized Education Program
IRT	item response theory
ISR	Individual Student Report
ITS	Internet Testing Systems
LEP	limited English proficient
LOSS	lowest obtainable scale score
MAP	Missouri Assessment Program
MCDS	Missouri Comprehensive Data System
MH	Mantel-Haenszel
MLS	Missouri Learning Standard
MOSIS	Missouri Student Information System
NCLB	No Child Left Behind Act
PE	performance event
RS	raw score
RSS	raw-to-scale score
SD	standard deviation
SE	standard error
SEM	standard error of measurement
SR	selected-response
TAC	Technical Advisory Committee
TE	technology enhanced
WP	writing prompt

## Chapter Summaries

Below are summaries of the information contained in each chapter of this report.

### ***Executive Summary***

This section provides a high-level overview and summary of the MO EOC assessments and the results from the 2017–2018 administration.

### ***Chapter 1: Introduction***

Chapter 1 provides background information about the MO EOC assessments and the Missouri Assessment Program (MAP) in general. It also includes information about the organizational support provided by each contractor and subcontractor for the MO EOC assessment program. The chapter ends with a statement of purpose for this technical report.

### ***Chapter 2: Test Development***

Chapter 2 provides the test blueprints with target point distributions and test specifications for the Summer 2017, Fall 2017, and Spring 2018 administrations. Appendix A provides actual point distributions. Information about item writing, content and bias reviews, test form construction, and statistical item review is also presented. The evidence is important to the content-related validity of the MO EOC assessment scores. This chapter also covers principles of universal design and outlines the quality control processes employed throughout the test development process. Documentation of previous test designs can be found in the technical reports located on DESE’s website at <http://dese.mo.gov/college-career-readiness/assessment/assessment-technical-support-materials>.

### ***Chapter 3: Standard Setting***

Chapter 3 provides information about the 2010 standard setting workshop for the MO assessments in Government and American History. The test forms for Government and American History were original intact forms previously administered in other testing administrations. The *2009–2010 MO EOC Phase I Technical Report* and the *2009–2010 MO EOC Phase II Technical Report* contain additional information on the standard setting workshops. Both reports are located on the DESE website at <http://dese.mo.gov/college-career-readiness/assessment/assessment-technical-support-materials>.

### ***Chapter 4: Item Analysis***

Chapter 4 contains item-level analysis summary information, including item difficulty and item discrimination indices, for each content area for the Summer 2017, Fall 2017, and Spring 2018 operational items. The results indicate that the MO EOC assessments in Government and American History have sound psychometric properties. The items measure achievement across a broad range of difficulty and most items are appropriately correlated with the total test score.

### ***Chapter 5: Test Administration***

Chapter 5 contains information about the administration of the MO EOC assessments, beginning with a description of students for whom the assessments are appropriate. Details of the administration are then summarized. This summary includes a description of how the materials are distributed and how Test Examiners are trained, as well as information about the organization

of the assessments, preparation of students to take the assessments, and directions for administration. The chapter also includes information about the accommodations allowed on the MO EOC assessments and describes how materials are submitted for processing and scoring.

### ***Chapter 6: Scoring***

Chapter 6 covers the scoring processes for both the selected-response (SR) on the MO EOC assessments in Government and American History. It contains information on how Questar scored the MO EOC SR items for the Summer 2017, Fall 2017, and Spring 2018 administrations.

### ***Chapter 7: Scaling and Equating***

Chapter 7 begins with an introduction to the item response theory (IRT) model used for scaling and equating the MO EOC assessments. Next, information about the reports covering the scaling and equating procedures for the MO EOC assessments in Government and American History is provided. Finally, the raw-to-scale score (RSS) conversion tables for the Summer 2017, Fall 2017, and Spring 2018 operational forms are presented in Appendix C.

### ***Chapter 8: Reporting***

Chapter 8 contains information about the reports Questar produced for the MO EOC assessments, including the Individual Student Report (ISR) and Student Score Label. A brief description of the state's data portal and reporting system is also included.

### ***Chapter 9: Summary Statistics***

Chapter 9 provides descriptive statistics for raw scores and scale scores for the MO EOC assessments in Government and American History. Raw score statistics are summarized by test administration, content area, and cluster. Scale score statistics are summarized for each content area and are also broken down by gender and ethnicity, as well as migrant, free and reduced lunch (FRL), limited English proficient (LEP), Title I, Individualized Education Program (IEP), and accommodation statuses.

### ***Chapter 10: Reliability***

Chapter 10 begins by defining reliability and providing an overview of reliability estimation techniques. Raw-score internal consistency reliability coefficients are presented for all students and for each demographic group. Classification accuracy and classification consistency statistics are also presented. The results indicate acceptable reliability and measurement precision for the MO EOC assessments in Government and American History.

### ***Chapter 11: Validity***

Chapter 11 begins with an introduction to the validity evidence for the MO EOC assessments, followed by more specific evidence related to test content, the internal structure of the assessments, and other types of validity evidence proposed by the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014). The chapter summarizes and reiterates validity evidence presented in earlier chapters in addition to providing new information. It provides an argument supporting the validity of the MO EOC assessments for measuring Missouri students' mastery of the Missouri Learning Standards, for identifying students' strengths and weaknesses, for serving as a basis for evaluating accountability plans, and for program evaluation.

## Executive Summary

This technical report provides a summary of the 2017–2018 administrations of the Missouri End-of-Course (MO EOC) Assessments in Government and American History. More specifically, it is designed to provide validity evidence to support the use and intended interpretation of the MO EOC test scores. The report provides details that describe and verify the processes and procedures applied to the MO EOC assessments and confirms adherence to professional standards and practices of educational assessment.

On May 17, 2016, the Missouri State Board of Education approved a schedule for implementing assessments aligned to the newly adopted student expectations. The operational administration for the new Social Studies assessments will take place in 2019–2020. Field testing will occur during the 2018–2019 school year. Two Social Studies assessments (Government and American History) based on the old Standards were administered in the Summer 2017, Fall 2017, and Spring 2018. Those results are included in this report.

Previous technical reports are referenced for historical information purposes. They can be found on the Missouri Department of Elementary and Secondary Education (DESE) website at <http://dese.mo.gov/college-career-readiness/assessment/assessment-technical-support-materials>.

### E.1. Assessment Overview

The criterion-referenced MO EOC assessments are designed to assess students' knowledge of the Missouri Learning Standards. The 2017–2018 school year marked the ninth operational administration of the Government and American History Assessments. Prior to 2014–2015, all MO EOC assessments were required. However, beginning in Fall 2014, districts were required to administer the Government Assessments to all students prior to graduation; American History is optional. For the 2017–2018 administration, Government and American History test forms were original intact forms previously administered in other testing administrations.

### E.2. Background

In 1993, the Missouri legislature passed the Outstanding Schools Act (Senate Bill 380), requiring the Missouri State Board of Education to adopt challenging academic performance standards that define the skills and competencies necessary for students to successfully advance through the public school system, prepare for postsecondary education and the workplace, and participate as citizens in a democratic society. The Missouri State Board of Education formally adopted the academic standards known as the Show-Me Standards in January 1996.

In addition to mandating the development of rigorous academic standards, the Outstanding Schools Act of 1993 required the development and implementation of a comprehensive assessment program to measure student proficiency in the knowledge, skills, and competencies identified in the standards. Therefore, upon adoption of the standards in 1996, Missouri developed the MAP that included grade-level assessments for elementary, middle, and high school students in core academic content areas.

In January 2007, the Missouri State Board of Education approved a plan to replace the MAP for high school students with the MO EOC assessments beginning with English II, Algebra I, and

Biology in 2008–2009. English I, Algebra II, Geometry, Government, and American History were added the following year, and Physical Science was added in 2014–2015. The MO EOC assessments have been administered each summer, fall, and spring since:

- 2008–2009 for English II, Algebra I, and Biology (beginning with the Fall 2008 administration)
- 2009–2010 for English I, Algebra II, Geometry, Government, and American History (beginning with the Fall 2009 administration)
- 2014–2015 for Physical Science (beginning with the Fall 2014 administration)

### **E.3. Administration**

As defined by the Missouri State Board of Education, Missouri's goal is for every student to be Proficient. Therefore, EOC testing is conducted as close as possible to the end of each course to allow students the greatest opportunity to achieve the goal of proficiency.

The scope of this technical report includes the Summer 2017, Fall 2017, and Spring 2018 administrations. Data analyses for the total assessed population, which includes students who have not yet reached the secondary level, are based on a combination of assessment results and demographic criteria required by Missouri's approved Elementary and Secondary Education Act (ESEA) Flexibility Waiver.

Individual student reports (ISRs) are distributed to school districts following each assessment administration window. Building-, district-, and state-level reports are available following each Spring administration. Scores are used during the accountability year in which the tests are administered. The accountability year begins with the summer administration preceding the academic year. Therefore, the score reports for the 2017–2018 assessment year contained information from Summer 2017, Fall 2017, and Spring 2018.

### **E.4. Student Performance**

The MO EOC assessment scores match students' performance to a defined achievement level. The achievement level descriptors (ALDs) associated with each level provide details about the content expectations that students at that level meet or exceed. Missouri uses four achievement levels for the MO EOC assessments: Below Basic, Basic, Proficient, and Advanced.

- Table E.1 displays the percentage of students at each achievement level for the Summer 2017, Fall 2017, and Spring 2018 MO EOC assessments in Government and American History, as well as the overall percentages for all three administrations combined.
- Table E.2 displays the percentage of students at each achievement level from 2009–2010 to 2013–2014 for the MO EOC assessments in Government and American History. Table E.3 displays the percentage of students at each achievement level from 2014–2015 to 2017–2018 for the MO EOC assessments. The test design was changed in Fall 2014 for Government. Therefore, it is not recommended to make direct comparisons of the 2014–2015 to 2016–2017 test results to prior results for this content area.

**Table E.1. Achievement Level Distributions for 2017–2018**

Content Area	Achievement Level	Summer 2017		Fall 2017		Spring 2018		Overall	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%
Government	Below Basic	86	10.5	1,199	9.0	4,330	9.4	5,615	9.3
	Basic	214	26.0	3,680	27.7	11,463	24.8	15,357	25.5
	Proficient	348	42.3	5,757	43.4	18,328	39.6	24,433	40.5
	Advanced	175	21.3	2,628	19.8	12,134	26.2	14,937	24.8
	Below Basic + Basic	300	36.5	4,879	36.8	15,793	34.1	20,972	34.8
	Proficient + Advanced	523	63.6	8,385	63.2	30,462	65.9	39,370	65.2
	<b>Total</b>	<b>823</b>	<b>100.0</b>	<b>13,264</b>	<b>100.0</b>	<b>46,255</b>	<b>100.0</b>	<b>60,342</b>	<b>100.0</b>
American History	Below Basic	11	20.4	116	27.9	1,063	24.7	1,190	24.9
	Basic	13	24.1	113	27.2	1,124	26.1	1,250	26.2
	Proficient	21	38.9	134	32.2	1,296	30.1	1,451	30.4
	Advanced	9	16.7	53	12.7	820	19.1	882	18.5
	Below Basic + Basic	24	44.4	229	55.1	2,187	50.8	2,440	51.1
	Proficient + Advanced	30	55.6	187	45.0	2,116	49.2	2,333	48.9
	<b>Total</b>	<b>54</b>	<b>100.0</b>	<b>416</b>	<b>100.0</b>	<b>4,303</b>	<b>100.0</b>	<b>4,773</b>	<b>100.0</b>

**Table E.2. Achievement Level Distribution across Years (2009–2014)**

Content Area	Achievement Level	2009–2010		2010–2011		2011–2012		2012–2013		2013–2014	
		Freq.	%								
Government	Below Basic	7,807	13.4	4,766	8.2	6,198	10.6	6,592	11.0	6,264	10.3
	Basic	21,211	36.5	19,466	33.3	21,975	37.7	20,899	34.9	16,975	27.8
	Proficient	20,614	35.5	25,283	43.3	21,466	36.9	22,207	37.1	24,726	40.5
	Advanced	8,466	14.6	8,862	15.2	8,609	14.8	10,164	17.0	13,058	21.4
	Below Basic + Basic	29,018	49.9	24,232	41.5	28,173	48.3	27,491	45.9	23,239	38.1
	Proficient + Advanced	29,080	50.1	34,145	58.5	30,075	51.7	32,371	54.1	37,784	61.9
	<b>Total</b>	<b>58,098</b>	<b>100.0</b>	<b>58,377</b>	<b>100.0</b>	<b>58,248</b>	<b>100.0</b>	<b>59,862</b>	<b>100.0</b>	<b>61,023</b>	<b>100.0</b>
Am. History	Below Basic	10,551	31.7	8,654	25.9	10,085	25.5	14,712	27.3	13,050	25.1
	Basic	9,223	27.7	9,015	26.9	10,403	26.3	13,926	25.8	13,957	26.8
	Proficient	9,510	28.5	13,423	40.1	14,757	37.3	16,661	30.9	16,329	31.4
	Advanced	4,050	12.1	2,384	7.1	4,342	11.0	8,612	16.0	8,653	16.6
	Below Basic + Basic	19,774	59.4	17,669	52.8	20,488	51.8	28,638	53.1	27,007	51.9
	Proficient + Advanced	13,560	40.6	15,807	47.2	19,099	48.3	25,273	46.9	24,982	48.0
	<b>Total</b>	<b>33,334</b>	<b>100.0</b>	<b>33,476</b>	<b>100.0</b>	<b>39,587</b>	<b>100.0</b>	<b>53,911</b>	<b>100.0</b>	<b>51,989</b>	<b>100.0</b>

**Table E.3. Achievement Level Distribution across Years (2014–2018)**

Content Area	Achievement Level	2014–2015		2015–2016		2016–2017		2017–2018	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%
Government	Below Basic	4,371	7.2	5,866	9.9	4,948	8.1	5,615	9.3
	Basic	17,811	29.5	15,943	27.0	16,418	27.0	15,357	25.5
	Proficient	26,871	44.5	23,586	39.9	26,178	43.1	24,433	40.5
	Advanced	11,321	18.8	13,717	23.2	13,181	21.8	14,937	24.8
	Below Basic + Basic	22,182	36.7	21,809	36.9	21,366	35.2	20,972	34.8
	Proficient + Advanced	38,192	63.3	37,303	63.1	39,359	64.8	39,370	65.2
	<b>Total</b>		<b>60,374</b>	<b>100.0</b>	<b>59,112</b>	<b>100.0</b>	<b>60,725</b>	<b>100.00</b>	<b>60,342</b>
Am. History	Below Basic	3,087	25.4	2,306	23.8	1,802	25.2	1,190	24.9
	Basic	3,047	25.1	2,598	26.8	1,752	24.5	1,250	26.2
	Proficient	3,640	30.0	3,151	32.5	2,148	30.0	1,451	30.4
	Advanced	2,369	19.5	1,642	16.9	1,445	20.2	882	18.5
	Below Basic + Basic	6,134	50.5	4,904	50.6	3,554	49.7	2,440	51.1
	Proficient + Advanced	6,009	49.5	4,793	49.4	3,593	50.3	2,333	48.9
	<b>Total</b>		<b>12,143</b>	<b>100.0</b>	<b>9,697</b>	<b>100.0</b>	<b>7,147</b>	<b>100.00</b>	<b>4,773</b>

Beginning with the 2012–2013 administration, Missouri began operating under the requirements of its approved ESEA Flexibility Waiver, which includes new high school EOC requirements beginning with the graduating class of 2017. This waiver, approved by the U.S. Department of Education in June 2012, gives Missouri flexibility from No Child Left Behind (NCLB) requirements and allows the state to use its own accountability system. In June 2015, the U.S. Department of Education renewed the approval of Missouri’s ESEA Flexibility Waiver for three years, through the end of the 2017–2018 school year. The waiver allows for one state accountability system, focus on continuous improvement, and targeting schools for support.<sup>1</sup>

Data for *all* tested students are used each year for purposes of item analysis, scaling, and equating. For this reason, the numbers and/or percentages of tested students reported in the MO EOC technical reports for the 2009–2010 through the 2011–2012 administrations do not match the numbers of students reported by DESE for accountability purposes in those years. Through the 2011–2012 administration year, all students who took the MO EOC assessments prior to entering high school were excluded from Missouri’s high school accountability data until they enrolled in high school.

### E.5. Validity Evidence

The MO EOC assessments are part of an integrated program of testing, accountability, and curricular and instructional support. This technical report provides details about the development and operation of the MO EOC assessments. While Chapter 11 of this report is devoted to the documentation of validity evidence for the MO EOC assessment scores, all information contained herein ultimately contributes to the argument for the validity of the interpretation and use of scores for their intended purposes.

<sup>1</sup> More information regarding Missouri’s ESEA Waiver is available at <http://dese.mo.gov/quality-schools/esea-flexibility-waiver>.

## Chapter 1: Introduction

### 1.1. Purpose of the Technical Report

This technical report provides extensive detail about the operation of the MO EOC assessments as well as the history of their development. The empirical reliability of the assessments and the validity of intended uses of the scores are reported in this document. Chapter 10 contains a discussion of reliability and Chapter 11 summarizes the validity argument. The validity of score use and interpretation for any assessment stems from

- the statement of the test’s purpose and the intended use of the scores;
- the steps taken in designing the test; and
- the processes of developing the content of the test, consulting with stakeholders, communicating about the test to users, scoring and reporting, and conducting data analysis.

The documentation of each of these steps is a necessary piece of a comprehensive, defensible validity argument for the intended uses of the assessment scores. While a specific chapter is devoted to validity, other parts of this document provide evidence necessary to assess the validity of the MO EOC assessment scores for their intended purposes.

In reading this technical report, it is critical to remember that the assessment program does not exist in a vacuum; it is not just a test. It is one part of a complex network intended to help schools to improve student learning. The MO EOC assessments are an integrated program of testing and accountability, as well as curricular and instructional support. The assessments can be evaluated properly only within their full context.

### 1.2. Summary of the MO EOC Assessments

The MO EOC assessments are criterion-referenced assessments designed to assess students’ knowledge of the Missouri Learning Standards, which define the knowledge and skills students need in each grade level and course for success in college, other postsecondary training, and careers.

English II, Algebra I, and Biology were developed and first administered in 2008–2009. English I, Algebra II, Geometry, Government, and American History were developed and first administered in 2009–2010. Physical Science was first administered in 2014–2015. Therefore, the 2017–2018 administration of the MO EOC assessments marked the tenth operational year for English II, Algebra I, and Biology; the ninth operational year for English I, Algebra II, Geometry, Government, and American History; and the fourth operational year for Physical Science. Previously used operational test forms were re-administered for all content areas in the summer 2017 and for American History and Government for the Fall 2017 and Spring 2018. New assessments in English I, English II, Algebra I, Algebra II and Geometry were administered in Fall 2017 and Spring 2018. Table 1.1 provides the major events that have occurred for the MO EOC assessments from 2008–2009 to 2017–2018 to assist with the understanding and interpretation of test results throughout this report.

**Table 1.1. Summary of Major Events from 2008–2009 to 2017–2018**

Accountability Year	Event(s)
2008–2009	<ul style="list-style-type: none"> <li>English II, Algebra I, and Biology were administered operationally in both paper/pencil and online format (dual platform) starting in Fall 2008. These assessments consisted of both SR items and PE/WPs.</li> </ul>
2009–2010	<ul style="list-style-type: none"> <li>English I, Algebra II, Geometry, Government, and American History were administered operationally in both paper/pencil and online format (dual platform) starting in Fall 2009. These assessments consisted of SR items only.</li> </ul>
2010–2011	<ul style="list-style-type: none"> <li>PE/WPs were temporarily suspended from English II, Algebra I, and Biology starting in Summer 2010.</li> <li>Assessments with SR items only (which include English I, Algebra II, Geometry, American History, and Government) were available in online format only.</li> </ul>
2011–2012	<ul style="list-style-type: none"> <li>All assessments were administered online.</li> </ul>
2012–2013	<ul style="list-style-type: none"> <li>PE/WPs were added back to English II, Algebra I, and Biology starting in Fall 2012.</li> </ul>
2013–2014	<ul style="list-style-type: none"> <li>iPad and Chromebook administration was available for SR items in Summer 2013.</li> <li>iPad and Chromebook administration was available for PE/WPs starting in Fall 2013.</li> </ul>
2014–2015	<ul style="list-style-type: none"> <li>Physical Science was administered for the first time in Fall 2014.</li> <li>Changes occurred for English I, English II, Algebra I, Algebra II, and Geometry, including revised blueprints, new test forms, and alignment of existing items to the Missouri Learning Standards.</li> <li>Beginning in Fall 2014, English II, Algebra I, Algebra II, Biology, and Government are required and English I, Geometry, Physical Science, and American History are optional.</li> </ul>
2015–2016	<ul style="list-style-type: none"> <li>A new Biology RSS table was used to score students for the Spring 2016 administration following a recalibration study.</li> </ul>
2016–2017	<ul style="list-style-type: none"> <li>Student performance data revealed form comparability issues for the Algebra I and English II assessments. The results for these two tests were excluded from federal accountability.</li> </ul>
2017–2018	<ul style="list-style-type: none"> <li>A standard setting workshop was held to set new standards for English I, English II, Algebra I, Algebra II and Geometry after the first administration of new operational forms.</li> </ul>

For 2017–2018, the English I, English II, Algebra I, Algebra I and Geometry Assessments contained selected-response (SR), technology enhanced (TE) items, and performance events/writing prompts (PE/WPs). The Government and American History assessments contained only SR items. An SR item presents students with a question followed by four response options. TE items include a variety of item types, such as drag and drop, free draw, text entry, extended text, line match, and graphing. PEs are open-ended items that require students to perform more complicated tasks. A PE measures depth of understanding and interpretative and analytical abilities in a format that allows for more than one approach to arrive at a correct response. The advantage of this item type is that it provides insight into a student’s ability to apply knowledge and understanding in real-life situations. The WP, a special type of PE that appears in the English I and II Assessments, is an open-ended item that requires students to demonstrate their writing proficiency.

Testing for the MO EOC assessments is conducted during three state-designated windows each year for summer, fall, and spring. These tests are designed to be administered in approximately

one testing period and are not strictly timed. The 2017–2018 MO EOC assessments were offered primarily in an online administration mode with Paper/Pencil, Braille, and Large Print forms available for students requiring accommodations.

### **1.3. Purpose and Intended Use of Test Scores**

According to the *Standards for Educational and Psychological Testing* (AERA, APA, and NCME, 2014), Standard 1.1 states that:

The test developer should set forth clearly how test scores are intended to be interpreted and consequently used. The population(s) for which a test is intended should be delimited clearly, and the construct or constructs that the test is intended to assess should be described clearly. (p. 23)

The Missouri State Board of Education identified the following purposes for the MO EOC assessments:

- Measuring and reflecting students’ mastery toward postsecondary readiness
- Identifying students’ strengths and weaknesses
- Communicating expectations for all students
- Serving as the basis for state and national accountability plans
- Evaluating programs

The MO EOC assessments assess the Missouri Learning Standards and were created to meet the needs of Missouri districts, schools, teachers, and students while also meeting state and federal requirements. Evidence of students’ progress in meeting the Missouri Learning Standards is obtained from the MO EOC assessments. These assessments provide the data that DESE uses to inform students, parents, the public, and the state legislature about student performance to help make informed decisions about educational issues and to drive student services throughout the state.

The interpretative argument involves the interpretation of student performance in terms of individual achievement on the state standards and the conversion of these scores to performance levels (Kane, 2006). Student scores should facilitate proper interpretations while minimizing misinterpretations and unwarranted inferences. The intended interpretation of the MO EOC assessment scores is that the scores indicate students’ progress toward mastering the Missouri Learning Standards. The MO EOC assessments incorporate the meaning of the test scores by anchoring the performance level cut scores to known scale score values.

The valid interpretation and appropriate use of MO EOC assessment scores are supported in a variety of ways, including the training and consultation provided by DESE personnel and publications such as the *Test Coordinator’s Manual, Guide to Interpreting Results*, and this technical report. The training and documentation provided to test users help them better administer, understand, and use test score results.

#### 1.4. Administration

Table 1.2 displays the 2017–2018 MO EOC testing windows. Each MO EOC assessment is tailored to each EOC content area and is designed to be administered when a student has completed the content defined for that course. Multiple testing windows allow school districts the flexibility to schedule MO EOC testing as close as possible to the end of each course so that they can provide students the greatest opportunity to demonstrate proficiency in the course content.

**Table 1.2. Testing Windows**

Test Period	Dates
Summer 2017	June 5–Aug. 25, 2017
Fall 2017	Oct. 4, 2017–Jan. 19, 2018
Spring 2018	Feb. 19–May 25, 2018

Districts can offer EOC course content in any grade and in a variety of configurations. Although many districts offer EOC course content within a course bearing the same name, EOC course content can also be embedded within a course or across several courses. MO EOC assessments are administered according to a "right test, right time" philosophy when students have completed the appropriate content.

#### 1.5. Reporting the Results

The MO EOC assessment reports provide useful information for determining the performance of students in a particular school and classroom. These reports help identify students who are below Proficient in a particular content area so that the school may determine a course of action that will meet the students' specific needs. Districts may also use locally designed assessments aligned to the Missouri Learning Standards to provide more detailed information for each student in specific content areas.

Individual Student Reports (ISRs) and student raw scores are available to a district five business days after the close of their district testing window. Timely availability of score reports allows teachers the option to consider MO EOC assessment results in assigning course grades. ISRs are only available in an online format unless an order is placed by the district for paper reports. However, due to the standard setting activities for the new assessments in English I, English II, Algebra I, Algebra II, and Geometry, the ISRs were delayed pending approval of the cut scores. Only Government and American History results for districts were reported on the five-day schedule.

#### 1.6. Accountability

The U.S. Department of Education bases accountability on a school's achievement of annual measurable objectives (AMOs) in Reading/Language Arts and Mathematics. AMO determinations refer to the target percent proficient for each school and district during the course of one year. For Missouri schools and school districts, AMOs are set in terms of the percentage of all students, and all student groups of sufficient size, scoring Proficient or above on the required assessments.

In the 2008–2009 and 2009–2010 administration years, districts were required to administer the English II, Algebra I, and Biology Assessments to all students prior to graduation, unless students completed coursework prior to the operational administration of the assessments. In 2010–2011, Government was added to the list of required EOC Assessments. In 2012–2013 and 2013–2014, districts were required to administer the English II, Algebra I, Biology, English I, Government, and American History Assessments to all students prior to graduation. Beginning in Fall 2014, districts were required to administer the English II, Algebra I, Biology, and Government Assessments to all students prior to graduation. For students who completed the Algebra I Assessment prior to high school, Algebra II is the required high school mathematics assessment for accountability purposes.

Through the 2011–2012 administration year, Missouri reported English II, Algebra I, and Biology EOC scores in accordance with NCLB, which requires states to assess all students at least once in high school in Mathematics, English/Communication Arts, and Science. All students who took the MO EOC assessments in English II, Algebra I, and/or Biology prior to entering high school were excluded from Missouri’s high school accountability data until they enrolled in high school. Their scores were “banked” until they actually reached high school, at which time they were rolled into the high school accountability data for that year. However, beginning with the 2012–2013 administration with the approved ESEA Flexibility Waiver, scores are no longer banked. Scores are considered for accountability purposes at the time the student is assessed and in the building that provided the instruction.

Data analyses included in this technical report are for the total assessed population, which includes students who have not yet reached the secondary level. The data analyses are based on a combination of assessment results and DESE-provided demographic criteria required under Missouri's approved ESEA Flexibility Waiver.

### **1.7. Missouri’s Current Assessment System**

The current MAP system includes the following assessment components for elementary and middle school:

- Grades 3–8 Communication Arts
- Grades 3–8 Mathematics
- Grades 5 and 8 Science

The MO EOC assessments include the following content areas:

- English II
- Algebra I
- Biology
- Physical Science
- English I
- Algebra II
- Geometry
- Government

- American History

The statewide assessment program also includes the Missouri Assessment Program–Alternate (MAP-A) for students with severe cognitive disabilities, WIDA ACCESS for English language learners (ELLs), and a Personal Finance assessment for high school students who do not enroll in a personal finance course or who are receiving personal finance credit for embedded coursework.

### **1.8. History of the MO EOC Assessments**

In 1993, the Missouri legislature passed the Outstanding Schools Act (Senate Bill 380) requiring the Missouri State Board of Education to adopt challenging academic performance standards defining the skills and competencies necessary for students to successfully advance through the public school system, prepare for postsecondary education and the workplace, and participate as citizens in a democratic society. The Missouri State Board of Education formally adopted the academic standards known as the Show-Me Standards in January 1996.

These 73 standards are organized around four broad goals that address application, communication, problem-solving, and responsible decision-making. Thirty-three process standards emphasize the importance of engaging students of all ages in hands-on, active learning and integrating practical, challenging learning across all content areas. An additional 40 content standards define the academic skills and knowledge that provide the foundation for student learning in six content areas: Communication Arts, Mathematics, Science, Social Studies, Fine Arts, and Health/Physical Education. Content standards serve as the vehicle through which students demonstrate proficiency in the broader process standards. The Show-Me Standards are available for review on the Missouri Department of Elementary and Secondary Education (DESE) website at <http://dese.mo.gov/show-me-standards>.

In 2001, DESE developed Grade-Level Expectations (GLEs) to assist districts in articulating the Show-Me Standards across grade levels and content areas. GLEs were developed for Mathematics, Communication Arts, Science, Social Studies, Physical Education, Health, Music, Visual Arts, and Theater. In 2008, the high school GLEs were clustered into Course-Level Expectations (CLEs) to define content within typical high school courses of study in English, Mathematics, Social Studies, and Science. Archived GLEs and CLEs are available on the DESE website at <http://dese.mo.gov/college-career-readiness/curriculum/missouri-learning-standards>.

The MO EOC assessments measures students’ progress toward the Missouri Learning Standards, which are Missouri’s content standards that are aligned to the Show-Me Standards. They define the knowledge and skills students need in each grade level and course for success in college, other postsecondary training, and careers. The Missouri Learning Standards include clearer, fewer, and deeper expectations for English Language Arts and Mathematics, and literacy standards in other subjects. These standards help ensure students learn basic and higher-order skills, including problem solving and critical thinking. They give school administrators, teachers, parents and students a road map for learning expectations for each grade and course.

In addition to mandating the development of rigorous academic standards, the Outstanding Schools Act of 1993 also required the development and implementation of a comprehensive assessment program to measure student proficiency in the knowledge, skills, and competencies identified

within the standards. Upon adoption of the standards in 1996, Missouri began developing the Missouri Assessment Program (MAP) in collaboration with contractor CTB/McGraw-Hill.

The Missouri State Board of Education adopted the purposes listed below to serve as guiding principles for developing the MAP:

- Improving students' acquisition of important knowledge, skills, and competencies
- Monitoring the performance of Missouri's educational system
- Empowering students and their families to improve their educational prospects
- Supporting the teaching and learning process

The first MAP assessments administered to students statewide were grade-span Mathematics assessments in Grades 4, 8, and 10 in Spring 1998. A voluntary grade-span Communication Arts assessment for students in Grades 3, 7, and 11 was also administered in Spring 1998 and became mandatory in Spring 1999. Required Science and Social Studies grade-span assessments (Grades 3, 7, and 10, and Grades 4, 8, and 11, respectively) were added to the program in subsequent years. A voluntary Health/Physical Education assessment was available in 2000 and was required until Spring 2002; a Fine Arts assessment was field tested in 2001. Due to budget constraints, development of the Fine Arts assessment was suspended and the Health/Physical Education assessment was discontinued. Science and Social Studies grade-span assessments returned to voluntary status in Spring 2003. Social Studies assessments were discontinued in Spring 2008; required assessments in Science were implemented in Grades 5, 8, and 11 to comply with No Child Left Behind (NCLB) requirements.

Through the Spring 2005 administration, the MAP statewide assessment program included grade-span assessments in the following grade levels and content areas:

- Mathematics at Grades 4, 8, and 10
- Communication Arts at Grades 3, 7, and 11
- Science at Grades 3, 7, and 10 (required Spring 1998 through Spring 2002; returned to voluntary status in Spring 2003)
- Social Studies at Grades 4, 8, and 11 (required Spring 1999 through Spring 2002; returned to voluntary status in Spring 2003)

All MAP assessments included three types of items: selected-response (SR), constructed-response (CR), and performance events (PEs). For all content areas, MAP assessments included SR items from the TerraNova® Survey Edition. CR items and PEs were custom-developed with significant input from Missouri educators.

During the initial MAP development and implementation period, DESE developed two to four equivalent forms for each content area and grade-level assessment, using the first form for a voluntary testing cycle and administering the next form(s) in subsequent years. Early in the development phase, DESE tried out new items using separate field tests that usually occurred in the fall of the school year. As the program continued, each test form contained embedded field test items. Small-scale pilots continued as well.

As each content area and grade-level assessment was administered, DESE used the Bookmark method to set achievement levels, defining student performance through Spring 2005 as Advanced, Proficient, Nearing Proficiency, Progressing, or Step 1.

After nearly a decade of MAP administration, new federal and state legislation prompted change in the program. To comply with NCLB requirements, Missouri's assessment program needed to incorporate Mathematics and Communication Arts assessments at all elementary and middle school grade levels (Grades 3–8) and at one high school grade level. As a result, new grade-level assessments were developed for both content areas. These assessments were administered for the first time in Spring 2006.

Additional NCLB requirements necessitated the addition of a mandatory Science assessment once in the elementary grade range, once in the middle school grade range, and once in the high school grade range beginning in Spring 2008. The voluntary Science assessment in Grades 3, 7, and 10 became a requirement and was moved to Grades 5, 8, and 11. The voluntary Social Studies MAP assessment was eliminated following the Spring 2007 administration.

Missouri's assessment system changed further in 2008–2009 when MAP assessments in high school content areas were replaced by the MO EOC assessments. In 2008–2009, the MO EOC assessments included English II, Algebra I, and Biology. In 2009–2010, the EOC assessments in English I, Algebra II, Geometry, Government, American History, Integrated Mathematics II, and Integrated Mathematics III were added to the program. However, following the 2009–2010 administration year, the Integrated Mathematics II and Integrated Mathematics III assessments were discontinued due to extremely low enrollment. Similarly, beginning in Summer 2010, PE/WPs were suspended from the English II, Algebra I, and Biology assessments due to budget constraints but were added back in beginning with the Fall 2012 administration.

The test forms for English I, English II, Algebra I, Algebra II, and Geometry were newly developed for the 2017–2018 administration cycle. A standard setting workshop took place in July 2018 to set cut scores for performance levels. The test forms for Government and American History were original intact forms previously administered in other testing administrations.

### **1.9. Organizational Support**

DESE coordinates the development and implementation of the MO EOC assessments. In addition to planning, scheduling, and directing all EOC activities, the staff is extensively involved in numerous test reviews, security, and quality assurance procedures. At the outset of the 2008 contract award, Riverside Publishing was the primary contractor working in partnership with Questar Assessment Inc. (Questar), the Assessment Resource Center (ARC), Internet Testing Systems (ITS), Bookette, and others. Beginning with the Summer 2011 administration, DESE contracted operational activities with Questar. Table 1.3 summarizes the main activities for each group involved with the 2017–2018 MO EOC administrations.

**Table 1.3. Organizational Support**

<b>Group</b>	<b>Responsibilities</b>
<b>Questar Assessment Inc. (Questar)</b>	<ul style="list-style-type: none"> <li>• Provide program management, including primary contact with DESE; coordinate all meetings; handle all administrative costs/activities; generate all program management reports and status reports</li> <li>• Create and update the <i>Test Coordinators Manual</i>, <i>Software Installation Guides</i>, and other ancillary materials</li> <li>• Conduct psychometric analyses, reporting, linking/equating studies, and associated tasks</li> <li>• Provide all needed prepress work for program materials through camera-ready art</li> <li>• Produce all materials, including online, Paper/Pencil, Braille, and Large Print versions of the test, as well as online testing tools and content area-specific tutorials</li> <li>• Account for secure test books received after testing</li> <li>• Provide a direct customer service line, including technical support and general support to the program and customer interactions</li> <li>• Store materials after testing</li> <li>• Participate in and present at Technical Advisory Committee (TAC) meetings</li> <li>• Score all SR items and the PE/WPs</li> <li>• Produce and distribute all score reports and the Guide for Interpreting Results</li> <li>• Complete the technical report for DESE</li> <li>• Provide online enrollment and pre-ID system for use by Missouri districts</li> <li>• Provide online testing interface and online test administration site</li> <li>• Package and distribute materials</li> <li>• Barcode test books with security IDs</li> </ul>
<b>Educational Testing Service (ETS)</b>	<ul style="list-style-type: none"> <li>• Facilitated the standard setting workshop for the English I, English II, Algebra I, Algebra II and Geometry EOC assessments in July 2018.</li> </ul>
<b>Districts</b>	<ul style="list-style-type: none"> <li>• Distribute materials to school buildings, track all secure materials, and promptly return all materials, including transcribed test forms, for scoring</li> <li>• Assist in the timely resolution of scoring alerts</li> <li>• Act as a liaison between Questar and buildings</li> </ul>
<b>School Buildings</b>	<ul style="list-style-type: none"> <li>• Administer tests, track all secure materials, and promptly return materials to districts for scoring</li> </ul>
<b>SeaChange Print Innovations</b>	<ul style="list-style-type: none"> <li>• Print Large Print versions</li> </ul>
<b>American Printing House for the Blind (APH)</b>	<ul style="list-style-type: none"> <li>• Print Braille versions</li> </ul>

## Chapter 2: Test Development

### 2.1. Introduction

On April 19, 2016, the Missouri State Board of Education approved new MLS for ELA, Mathematics, Science, and Social Studies. For the Social Studies Assessments, census field testing will take place in 2018–2019 and operational testing will begin in 2019–2020. The 2017–2018 administration was the final year items developed by Riverside Publishing were reused on the American History and Government test forms.

According to the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014), “Important validity evidence can be obtained from an analysis of the relationship between the content of a test and the construct it is intended to measure” (p. 14). Accordingly, the descriptions of the test development procedures included in the MO EOC technical reports provide validity evidence of the MO EOC assessments. Documentation of test development from previous administrations, including the test designs, can be found in previous technical reports, located on DESE’s website at <http://dese.mo.gov/college-career-readiness/assessment/assessment-technical-support-materials>.

### 2.2. Test Blueprints

Test blueprints specify the relative percentage of items in each high-level content strand. Tables 2.1–2.2 provide the Summer 2017, Fall 2017, and Spring 2018 test construction blueprints for the MO EOC assessments in Government and American History. The test blueprints for the Fall and Spring administrations are presented for the operational tests only.

**Table 2.1. Test Construction Blueprint—Government**

Content Strand	Point Range	Range of Emphasis
Principles of Constitutional Democracy	18–22	45-55%
Principles and Processes of Governance Systems	18–22	45-55%
<b>Total</b>	40	100%

**Table 2.2. Test Construction Blueprint—American History**

Content Strand	Point Range	Range of Emphasis
Missouri, United States, and World History	40	100%
<b>Total</b>	40	100%

### 2.3. Test Specifications

Standard 1.11<sup>2</sup> addresses the appropriateness of test content and its relationship to a solid validity argument. Additionally, Standard 4.2<sup>3</sup> defines test specifications and provides examples of the type of information that should be included in a specifications document. The test specifications describe the content and format of the test and delineate the ideal number of items and points assessed for each standard.

While Tables 2.1–2.2 provide the target point distributions, Appendix A contains the actual point distributions. Details on the development and use of the test specification documents for previous MO EOC test forms can be found in previous technical reports on DESE’s website at <http://dese.mo.gov/college-career-readiness/assessment/assessment-technical-support-materials>.

The following are overviews of the 2017–2018 test specifications:

- **Government**
  - The Government assessment measures a student’s ability to understand U.S. history and participate in civic life as citizens and consumers. The Government forms consist of 40 SR items that are aligned to the following strands:
    - Principles of Constitutional Democracy
    - Principles and Processes of Governance Systems
- **American History**
  - The American History assessment measures a student’s ability to understand U.S. history and participate in civic life as citizens and consumers. The American History forms consist of 40 SR items that are aligned to the Missouri, United States, and World History strand. Individual CLEs within that strand report out to the following categories:
    - History
    - Government
    - Economics
    - Geography

### 2.4. Item Development

The construction process of the 2017–2018 test forms is discussed in this section. Specifically, historical information regarding both item-development procedures and content coverage from Riverside Publishing is presented. Content-related validity evidence that supports test

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<sup>2</sup> **Standard 1.11:** When the rationale for test score interpretation for a given use rests in part on the appropriateness of test content, the procedures followed in specifying and generating test content should be described and justified with reference to the intended population to be tested and the construct the test is intended to measure or the domain it is intended to represent. If the definition of the content sampled incorporates criteria such as importance, frequency, or criticality, these criteria should also be clearly explained and justified (AERA, APA, NCME, 2014, p. 26).

<sup>3</sup> **Standard 4.2:** In addition to describing intended uses of the test, the test specifications should define the content of the test, the proposed test length, the item formats, the desired psychometric properties of the test items and the test, and the ordering of items and sections. Test specifications should also specify the amount of time allowed for testing; directions for the test takers; procedures to be used for test administration, including permissible variations; any materials to be used; and scoring and reporting procedures. Specifications for computer-based tests should include a description of any hardware and software requirements (AERA, APA, NCME, 2014, p. 85–86).

interpretation is presented in terms of how the MO EOC assessments in Government and American History were assembled.

The American History and Government forms included only items from the Riverside test form build. Riverside Publishing test development specialists created a detailed item and passage development plan based on the blueprints for each content area. The plans included the number of items necessary for each assessed CLE and an outline of the review process for developed items and passages. This process included internal Riverside Publishing reviews, DESE item review, and a content and bias review by Missouri educators. During the process of building the forms for the operational test administrations, statistical characteristics (i.e.,  $p$ -values and point-biserial correlations) were used to evaluate the items and test forms.

#### *2.4.1. Item Writing*

Missouri educators, DESE staff members, Regional Instructional Facilitators (curriculum and assessment specialists housed in each of Missouri's nine Regional Professional Development Centers), and Riverside Publishing test development specialists created all the test items.

In January 2008, Riverside Publishing conducted item-writing workshops to develop SR items for Algebra II, Geometry, Government, and American History. These workshops were conducted at the Assessment Resource Center (ARC) in Columbia, MO. Participants in the workshops included Missouri educators, DESE staff, Regional Instructional Facilitators, and Riverside Publishing test development specialists. The workshops were held over a five-day period; fifteen to twenty teacher participants were assigned to each content area. Teacher participants were selected by DESE to represent school districts throughout Missouri. The content developed at the workshops was based on the Missouri Show-Me Standards and CLEs.

During the item-writing workshops, Riverside Publishing test development specialists conducted training sessions with the item writers and provided instructions on avoiding bias and stereotyping of groups and individuals based on gender, race, ethnicity, religion, age, language, socioeconomic group, and/or disability. Riverside Publishing test development specialists also trained item writers to write items that adhere to the principles of universal design, making the items accessible to the widest range of students. For example, items and passages were written using clear and concise language; additionally, all art, graphs, and tables were labeled and were not overly crowded with extraneous information. Instruction was also provided on developing items at particular cognitive levels based on Norman Webb's DOK levels.

Riverside Publishing test development specialists trained item writers to enter content into the company's electronic content management system. During training, each item writer wrote several items and received feedback on them. Participants also received feedback through the content management system as Riverside Publishing test development specialists responded to teachers' items as they were submitted. As items were produced, they were continuously reviewed, revised, edited, and evaluated by Riverside Publishing test development specialists and DESE staff. Item writers who generated high-quality work on or ahead of schedule were given additional assignments.

As items were written, they were tracked according to the item development plan. Riverside Publishing kept records to maintain a workflow that generated items in assessment strands and CLEs as required by the test blueprint. All items and passages went through several rounds of internal reviews, including content and editorial reviews. Riverside Publishing test development specialists reviewed each item with respect to alignment, clarity, and correspondence with item specifications.

#### 2.4.2. Universal Design

Riverside Publishing test development specialists were experienced in employing the principles of universal design in item development so that all students have equal access to the assessments. Riverside Publishing included these principles when training Missouri teachers to write the items.

According to the *Universal Design Applied to Large Scale Assessments* (Thompson, Johnstone, & Thurlow, 2002), universally designed assessments have seven elements:

1. Inclusive assessment population
2. Precisely defined constructs
3. Accessible, nonbiased items
4. Amenable to accommodations
5. Simple, clear, and intuitive instructions and procedures
6. Maximum readability and comprehensibility
7. Maximum legibility

All items for the MO EOC assessments were developed with these elements in mind. Riverside Publishing ensured the development of MO EOC items in accordance with these principles in the following manner:

- Items were developed to include a wide array of contexts and cultures. These item types may make students feel more included, increase motivation, and avoid bias.
- The test and item specifications served as a model for precisely defining the constructs that the tests would measure. These specifications indicated to the item writer, content reviewer, and test development specialists exactly what was to be measured. The item could assess a particular part of a standard or a combination of elements within a standard. The reviews served as a method for eliminating items that included assessment of knowledge outside the standard.
- The review of items, which included Missouri teachers from diverse ethnic and geographic backgrounds, served to ensure that all items were accessible to as many students as possible.
- Riverside Publishing staff members trained Missouri teachers to create clear and simple instructions so that students would have a clear understanding of the task needed to answer an item. Teacher review committees had an opportunity to review the instructions to ensure that they were appropriate for the grade levels and content areas. To ensure the appropriateness of the level of the vocabulary, Children’s Writer’s Word Book and EDL Core Vocabulary were employed by test developers and item review committees.
- Finally, items with text, art, tables, maps, and diagrams were constructed with maximum legibility.

### 2.4.3. Content and Bias Review Process

Standard 4.8<sup>4</sup> addresses the importance of item review by an examination of the item statistics and the use of expert panels of judges. This section details the steps taken to ensure that the items chosen for the operational forms of the MO EOC assessments were of high technical quality and were free from bias. Content and bias reviews were conducted in November 2007 and July 2008 in Columbia, MO. The content review committees included DESE staff, Missouri educators from around the state, Regional Instructional Facilitators, and Riverside Publishing staff.

The content and bias review committees reviewed SR items using the following criteria:

- Overall quality and syntactical clarity
- Content coverage and content appropriateness
- Alignment to the specified CLE
- Appropriate contexts
- One clearly correct answer and plausible distractors for SR items
- Free from bias or any racial, socioeconomic, gender, or other sensitivity issues

The bias review committee was held separately from the content review committee and focused on reviewing items on the last criterion above. Suggestions from the bias review committee were then shared with the content review committee for their review and a determination on how to incorporate the edits.

Before reviewing the items, a group training session was held with all committee members. Riverside Publishing presented a PowerPoint that described the MO EOC program, test development process, and content and bias review procedures. After the large-group session, the committee members went to their respective break-out rooms to discuss the week's activities in more detail. The committee members were provided with copies of the CLEs and item specifications for the courses for the items they were to review. Each Riverside Publishing content facilitator reviewed these documents with the committee and answered any questions. The committee members were given the following checklists that could be referenced throughout the review process:

For SR items:

- Does the item assess the assigned CLE?
- Is the item clear, concise, and complete?
- Does the item contain accurate and sufficient content information?
- Is the item grade-level appropriate, and are the vocabulary and syntax appropriate for the students at the intended grade? (Reference the EDL Core Vocabularies.)
- Is the item fair to all students and free of bias and sensitivity issues?
- Does the item have correct punctuation, and is it grammatically correct?
- Is the item free from spelling and typographical errors?

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<sup>4</sup> **Standard 4.8:** The test review process should include empirical analyses and/or the use of expert judges to review items and scoring criteria. When expert judges are used, their qualifications, relevant experiences, and demographic characteristics should be documented, along with instructions and training in the item review process that the judges receive (AERA, APA, NCME, 2014, p. 88).

- Is clueing avoided within an item stem and options, as well as among items?
- Does the item stand alone? (The answer to one item should not be dependent on the content of another item.)
- Are the equations, tables, charts, graphs, and other art clear, accurate, and necessary?
- Does the item have only one correct answer?
- Does the item have unique, plausible distractors containing common errors students would make?
- Are all the options parallel in form and arranged in logical order?
- Is the item free from absolutes (“none of the above,” “all of the above”) as options and free from the use of negatives (“not,” “none,” “except”) in the stem?
- Does the item avoid repeating words from the stem in the options?
- Does the item pose a single problem (although the solution may require more than one step)?

Missouri educators participated in the review process for each content area. The committee members read and reviewed each item. Discussions were held about whether the items met the criteria listed above. The committees then rejected or revised any items they deemed unsatisfactory. If there was disagreement about how to proceed with an item, the Riverside Publishing facilitator polled the group and followed the direction of the majority. Between approximately 95% and 98% of the items were accepted (as-is or with edits) by the content and bias committees. Table 2.3 shows the number of items reviewed in 2008. The accepted items in Table 2.3 were placed on embedded field test (EFT) forms in the 2009 operational administrations.

To further preserve validity, all item review sessions were held in secure meeting rooms; all materials were confidential. Committee members were required to sign confidentiality agreements so that the integrity of the test content was not compromised. Although educators were encouraged to share information with their colleagues about the process of the item review, they were made fully aware of the expectation that any information about specific items and passages was to remain secure and confidential.

**Table 2.3. 2008 Content/Bias Item Review Acceptance Rates**

<b>Content Area</b>	<b>Total #Items Presented for Review</b>	<b>#Items Accepted (as-is or with edits)</b>	<b>Acceptance Rate (items accepted as-is or with edits)</b>
Government	492	474	96%
American History	494	470	95%

## **2.5. Form Construction**

### *2.5.1. Field-Test Selection and Administration*

The items accepted at the content/bias review were used to build the standalone field-test forms administered in Spring 2009. Field-test items were selected so that each form met the established operational blueprint requirements for content coverage as closely as possible. For any standalone field-test form that deviated slightly from the blueprint, another field-test form made up for that difference so that the entire pool of field-tested items met the blueprint requirements.

The MO EOC Spring 2009 field test consisted of 10 SR forms of 36 items each for Government and American History. All field-test forms were reviewed and approved by DESE. Both standalone field tests were census tests of all students enrolled in courses corresponding to the MO EOC assessments. The forms for each course were spiraled at the student level across the state.

### 2.5.2. Statistical Item Review

After completion of the 2009 field-test item scoring, Riverside Publishing test development specialists and psychometricians reviewed the statistical characteristics of the items. Riverside Publishing used classical item statistics, including  $n$ -counts,  $p$ -values, percentage choosing each response option, point-biserial correlations, and differential item functioning (DIF) analysis for the SR items.

During the data review, Riverside Publishing Research and Test Development staff and DESE staff reviewed student performance on the Spring 2009 field-test items for Government and American History. Items were reviewed regarding their statistical characteristics. Item reviewers from DESE and Riverside Publishing were provided with the following information:

- Form
- Position
- Item as it appeared in the printed books
- Item alignment to the Missouri Show-Me Standards
- The  $p$ -value of the correct answer and percentage of students who selected each distractor (for SR items only)
- Point-biserial correlation of correct response and point-biserial for each distractor (for SR items only)
- Total number of students who attempted to answer each question
- DIF using the Mantel-Haenszel (MH) (1959) procedure and the Educational Testing Service (ETS) classification (for SR items only)

Riverside Publishing and DESE staff reviewed items that were flagged because of statistics that fell outside the parameters determined by the Riverside Publishing Research staff. Table 2.4 contains the guidelines that were used for data review.

**Table 2.4. Criteria for Flagged Items**

Item Flagging Criteria	Indicates
If $p$ -value of keyed response < 0.35	Difficult item
If $p$ -value of keyed response > 0.95	Easy item
If $p$ -value of keyed response < $p$ -value of distractor	Possible miskey
If $p$ -value of distractor > 0.35	Possible second correct option
If point-biserial of keyed response < 0.20	Poorly discriminating item
If point-biserial of a distractor is > 0.00	Possible second correct option
If ETS classification is B or C (from DIF analysis)	Possible bias in item

Each flagged item was reviewed, and then Riverside Publishing and DESE decided whether the item should be accepted or rejected. The review included items flagged with moderate to severe DIF (an ETS classification of B or C). A flagged item was accepted if the review team determined that the item was strong and tested students on content they were expected to know. Accepted items were then made available in the pool of items that could be used to create the operational forms. Items the review team felt were biased or inappropriate for the MO EOC assessments in Government and American History were rejected. Rejected items were removed from the item pool, making them invalid for the MO EOC assessments in government and American History. Of the 986 total items reviewed for Government and American History, 96% were accepted.

### *2.5.3. Operational Test Selection and Administration*

Riverside Publishing test development specialists selected operational items for test forms for use in each administration cycle. Using IRT item difficulty values, six equivalent operational forms and one released form were selected for each content area. The operational forms are administered in the summer, fall, and spring of each administration cycle according to a prescribed form rotation schedule.

The operational forms construction process was based on content requirements and statistical criteria. The steps associated with assembling the test forms included the following:

1. Determine form design. Each form includes item positions for operational items, field-test items, and/or linking items. Embedded field testing was discontinued in 2010–2011 due to budget constraints, and from 2010–2011 forward, field-test positions were occupied by field-test items that had been previously administered and scored.
2. Select items that meet content specifications. Each form was constructed based on the test specifications for that content area. The test specifications delineate the item distribution across assessment strands. They also outline the test length, type of items, and number of points to be assessed at each CLE.
3. Evaluate statistical specifications and select items to meet these specifications. Spreadsheets (form matrices) are used to ensure that the test forms meet statistical specifications. These matrices contain the following statistics: average  $p$ -values, point-biserial correlations, and DIF statistics. Riverside Publishing psychometricians conducted a review of the test forms to ensure equivalence of test difficulty across forms.
4. Review and approve test forms. Once the content and statistical specifications were met for each content area, the forms were reviewed and approved by DESE. The forms were then released for production and additional content and editorial reviews.

## **2.6. Braille and Large Print Versions**

Beyond employing the principles of universal design, all operational assessments were offered in Paper/Pencil (for students requiring a paper form of the assessment), Braille, and Large Print versions for visually impaired students taking the MO EOC assessments. To accommodate these students, a Braille and a Large Print paper version of the test were available. Once the Braille

and Large Print forms were created for each assessment, reviews were held with DESE educators who had specialized training in working with visually impaired students.

The teachers consulted the Large Print and Braille Style Guide, which was also used during form composition, and relied on their own expertise to determine whether changes to directions, passages, or items were needed, or whether items should be omitted. Questar’s Braille vendor (APH) also reviewed the forms and made recommendations based on how items, passages, and directions would be transcribed to Braille.

Questar and DESE reviewed the recommendations from all of these sources to determine if any required items needed to be omitted to accommodate the three versions. Table 2.5 below shows the breakdown. Items omitted from the operational assessment were items that would not Braille appropriately. The items may be TE items or items with art. Students taking the Braille form were given credit for these items. The EFT items were eliminated from both the Braille and Large Print versions of these forms due to the irregular testing conditions and the small sample sizes for these groups. For 2017–2018, a single Braille and Large Print test version was used for all MO EOC assessments.

**Table 2.5. Accommodated Forms**

<b>Form</b>	<b>American History</b>	<b>Government</b>
Accommodated Form 1 PP	40 OP 10 FT Slots	40 OP 10 FT Slots
Accommodated Form 1 LP	40 OP 10 Omits	40 OP 10 Omits
Accommodated Form 1 BR	40 OP 10 Omits	40 OP 10 Omits

## **2.7. Online Form Construction**

In 2010–2011, Missouri began moving toward online administration of all MO EOC assessments. To assist in a smooth transition to online administration of all MO EOC assessments without interruption of data trends, Questar completed an online comparability study (see the *2013–2014 MO EOC Technical Report*, Appendix C for the full report). Based on the results of the study, the MO TAC reached a consensus that the move from Paper/Pencil to online administration would not affect student performance. As such, all 2017–2018 EOC assessments are available online.

Beginning in 2011–2012, Questar was tasked with moving all MO EOC assessments to an online delivery platform (with the exception of the Paper/Pencil, Braille, and Large Print test forms for students needing such accommodations). By 2017–2018, all assessments are available on Questar’s Nextera delivery platform. More information on the current online test administration can be found in Chapter 5.

## **2.8. Quality Control for Form Construction**

Checklists and quality control procedures accompanied each stage of form construction. Following is a list of some quality control procedures used during the assembly of the MO EOC assessment forms:

- Construct forms based on all content requirements noted in the test blueprint and test specifications.
- Verify correct number of items per standard or reporting category based on test blueprint.
- Review items to ensure a wide sampling of the knowledge and skills being measured.

- Ensure that all items have been through the appropriate review procedures and are approved for use by DESE.
- Check for a variety of item topics, equal distribution of males and females, ethnicities, etc.
- Verify appropriate portions of items with and without artwork.
- Check for clueing across all items on each form.
- Verify equal or nearly equal distribution of answer choices for SR items.
- Ensure that the test meets the required statistical specifications (i.e., that as many items as possible have  $p$ -values between 0.35 and 0.90 and as many items as possible have point-biserial correlations above 0.20).
- Consider any statistical flags or problems.
- Check statistics to ensure that the collection of items on a given form yields an overall difficulty that falls within the specified range.
- Verify that items have not been released to the public.
- Verify correct answer key for each item.
- Perform content review of form (senior staff).
- Perform statistical review of form (psychometrician/statistician).
- Send form to DESE for review and approval.

## **2.9. Summary**

The MO EOC assessments provide an indication of student progress toward achieving the knowledge and skills identified in the Missouri Learning Standards. Just as the content standards guided the item development and selection process, the consideration of content played an equally important role in form development. Form development required a balance of both content coverage and item difficulty. As items were selected for inclusion on particular forms, every effort was made to balance the content coverage to ensure the items aligned to the content standards being assessed while simultaneously considering the overall difficulty of the forms.

## Chapter 3: Standard Setting

### 3.1. Introduction

One purpose of assessment is to establish clear guidelines for educational decision-making. Standard setting workshops are held to aid in the determination of one or more cut scores (i.e., a minimum score used to classify students into levels of proficiency) of an assessment. By assigning meaning to test scores, standard setting allows policymakers, administrators, teachers, parents, and students to make statements about the level of proficiency of individual students and groups of students.

### 3.2. 2010 Standard Setting Workshop

Standard setting workshops for the MO EOC assessments in American History and Government, which used previously intact forms, were conducted in 2010. The previously approved cut scores were used for the Summer 2017, Fall 2017, and Spring 2018 administration windows. Detailed information on the standard setting meeting are provided in the *2009–2010 MO EOC Phase I Technical Report* and the *2009–2010 MO EOC Phase II Technical Report* located on the DESE website at <http://dese.mo.gov/college-career-readiness/assessment/assessment-technical-support-materials>.

## Chapter 4: Item Analysis

### 4.1. Introduction

This chapter presents the item analysis summary information, which includes mean item scores and discrimination indices, at the item level for the MO EOC assessments in Government and American History. These item summary statistics (i.e.,  $p$ -values, point-biserial correlations, and omit rates) are based on the operational administrations that included responses from 876 students for Summer 2017, 13,665 students for Fall 2017, and 50,530 students for Spring 2018 in American History and Government content areas, as shown in Table 4.1. The differential item functioning (DIF) analyses are included in this chapter.

**Table 4.1. Number of Students Included in the Analyses**

Test Period	Content Area	$n$ -Count
Summer 2017	Am. History	54
	Government	822
	<b>Total</b>	876
Fall 2017	Am. History	415
	Government	13,250
	<b>Total</b>	13,665
Spring 2018	Am. History	4,302
	Government	46,228
	<b>Total</b>	50,530

### 4.2. Item-Level Statistics

Appendix B presents the item difficulty, discrimination, and omit rates for all items on each assessment for the Summer 2017, Fall 2017, and Spring 2018 operational administrations. Field test items are not included in the tables. The results indicate that the items measure achievement across a range of difficulty and that most items are correlated with the total test score, thereby discriminating between low- and high-performing students.

For dichotomous items, item difficulty is the proportion of students who gave correct responses to the item (also referred to as  $p$ -value). The discrimination index is the point-biserial correlation between the item score and the total score based on the remaining items (also referred to as corrected point-biserial correlation). Both item difficulty and item discrimination are expressed in the raw score metric. The student counts given are the total test population for that content area.

When building a test form for the MO EOC assessments in Government and American History, care is taken to refrain from choosing items with  $p$ -values less than 0.30, greater than 0.95, or with negative point biserials. When  $p$ -values and point biserials are out of range, the answer keys are checked to verify that they are correct.

### 4.3. Speededness

The consequence of time limits on students' scores is called *speededness*. A test is speeded if examinees do not have time to respond to all items on the test. Examinees may receive a lower score than they would have had the test not been timed. Most *speededness* statistics are based on the number of items that were not attempted by students. The MO EOC assessments in Government and American History were not designed to be speeded tests. Rather, they were intended to be *power tests*; that is, students are expected to have ample time to finish all items. For the purpose of this analysis, if a student did not attempt the last item on any of the separately timed subsections of the test, it was assumed that the student might not have reached the item because he or she ran out of time.

Item omit rates, especially for items appearing later in a test, are a gauge of potential test *speededness*. The "Omit Rate" column in Appendix B shows the percentage of students who omitted each SR item for each MO EOC assessment in Government and American History. As shown in the tables, the omit rates are zero or negligible for most items, thereby supporting the interpretation that the MO EOC assessments in Government and American History are power tests.

### 4.4. Differential Item Functioning (DIF)

Differential item functioning (DIF) occurs when an item has difficulty measures that vary substantially across subgroups of examinees with comparable ability. DIF will be examined using the Mantel-Haenszel (MH) (1959) procedure for dichotomous items. DIF analyses for the MO EOC assessments in Government and American History are presented in Tables 4.3–4.5.

The Mantel-Haenszel method is a nonparametric approach to DIF. In the MH procedure, total raw scores are held constant while an odds ratio is estimated. In practice, the odds ratio is generally converted to the delta metric; the Educational Testing Service (ETS) categorization is applied to flag the significance of DIF effects (Dorans & Holland, 1992).

With the groups matched on raw score, comparable examinees can be placed in  $j \times 2$  tables of group by item response, where  $j$  equals the number of levels of the matching variable. For these analyses, if  $j$  equals each observed score category of the  $k$ -item tests, with  $j = 0, 1, 2, \dots, k$ , then one  $2 \times 2$  table for a given item with score category  $j$  can be represented as the following:

**Table 4.2. General Notation for the 2 x 2 Data Matrix**

	Correct	Incorrect	Total
Reference	$y_j$	$x_j$	$m_j$
Focal	$y'_j$	$x'_j$	$m'_j$
Total	$n_j$	$n'_j$	$N_j$

The Delta MH test statistic and variance have the following form:

$$DeltaMH = 2.35 \ln \frac{\left[ \sum_{j=0}^K \frac{(y_j x'_j - y'_j x_j)}{N_j} \right]}{\sum_{j=0}^K \frac{y'_j x_j}{N_j}}$$

where  $y_j$ ,  $x_j$ ,  $y'_j$ , and  $x'_j$  are the frequency counts of cells of the  $2 \times 2$  tables;  $N_j$  is the total  $n$  for the cells.

The critical values of the ETS categorizations are 1.00 and 1.50 on the delta scale for categories A (negligible DIF), B (slight to moderate DIF), and C (moderate to severe DIF). Specifically, if the absolute value of delta is smaller than 1.00, the item is categorized as A. If the absolute value of delta is larger than or equal to 1.50, the item is classified as C. Otherwise items are categorized as B. In both the A and C categories, statistical significance is set at the 5% level for a single item. Negative DIF contrast values favor the reference group whereas positive DIF contrast values favor the focal group.

Tables 4.3, 4.4, and 4.5 present the results of the DIF analyses for the items included on the Summer 2017, Fall 2017, and Spring 2018 operational forms, respectively. In these analyses, male students and White students were considered the reference groups for gender and ethnicity, respectively. The female students were the focal group for gender and the Black and Hispanic students were the focal groups for ethnicity. DIF analyses are performed when there is a minimum of 200 students in the focal group. Within each administration, most of the items (>80%) on the MO Assessments in Government and American History were classified in the A category. The results suggest that the vast majority of items administered are functioning similarly across demographic groups.

**Table 4.3. DIF Results—Summer 2017**

Content Area	Group	n-Count	Dichotomous Items				
			A	B	B-	C	C-
<b>Summer 2017</b>							
Government	M/F	382/441	37	1	1	0	1
	W/B	545/135	0	0	0	0	0
	W/H	545/75	0	0	0	0	0
Am. History	M/F	25/29	0	0	0	0	0
	W/B	42/4	0	0	0	0	0
	W/H	42/4	0	0	0	0	0

*Note.* Classifications with a negative sign (“-”) favor the reference group, while classifications with no sign favor the focal group.

DIF contrast groups: M/F = male versus female; W/B = White versus Black; and W/H = White versus Hispanic.

**Table 4.4. DIF Results—Fall 2017**

Content Area	Group	n-Count	Dichotomous Items				
			A	B	B–	C	C–
<b>Fall 2017</b>							
Government	M/F	6,515/6,445	40	0	0	0	0
	W/B	8,938/2,414	39	0	1	0	0
	W/H	8,938/711	40	0	0	0	0
Am. History	M/F	200/204	37	1	0	0	2
	W/B	309/52	0	0	0	0	0
	W/H	309/24	0	0	0	0	0

*Note.* Classifications with a negative sign (“–”) favor the reference group, while classifications with no sign favor the focal group.

DIF contrast groups: M/F = male versus female; W/B = White versus Black; and W/H = White versus Hispanic.

**Table 4.5. DIF Results—Spring 2018**

Content Area	Group	n-Count	Dichotomous Items				
			A	B	B–	C	C–
<b>Spring 2018</b>							
Government	M/F	21,314/21,442	40	0	0	0	0
	W/B	32,843/5,384	39	1	0	0	0
	W/H	32,843/2,259	39	0	1	0	0
Am. History	M/F	2,087/1,977	35	0	4	1	0
	W/B	3,544/213	33	1	5	0	1
	W/H	3,544/148	0	0	0	0	0

*Note.* Classifications with a negative sign (“–”) favor the reference group, while classifications with no sign favor the focal group.

DIF contrast groups: M/F = male versus female; W/B = White versus Black; and W/H = White versus Hispanic.

#### 4.5. Summary

The item analyses provided in this chapter show that the MO EOC assessments in Government and American History have sound psychometric properties. For example, *p*-values show that Government and American History MO EOC items measure achievement across a broad range of difficulty. In addition, item discrimination values show that most items are appropriately correlated with the total test score and thus contribute to distinguishing between lower-performing and higher-performing students. Also, very few students omitted items during testing. The low percentage of students omitting items provides evidence that the test is a power test of the students’ skills and not a speeded test. Lastly, the vast majority of items did not exhibit DIF suggesting that the item scores are not measuring construct irrelevant factors.

## Chapter 5: Test Administration

### 5.1. Introduction

This chapter contains information about DESE and Questar’s processes that ensure the standardized administration of the MO EOC assessments. The *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014) state, “For tests designed to assess the test taker’s knowledge, skills, abilities, or other personal characteristics, standardization helps to ensure that all test takers have the same opportunity to demonstrate their competencies” (p. 111). In other words, attention to the details of information dissemination, Test Examiner training, accommodations and modifications, and test security help ensure that students taking the MO EOC assessments in different locations and under different circumstances have comparable opportunities for success.

The *EOC Test Coordinator’s Manual* contains detailed information about the testing guidelines, materials handling, and standardized administration instructions for the MO EOC assessments. While this manual is not included here, much of the information contained in this chapter can be found in it.

Questar uses its online assessment platform, Nextera, to manage and deliver the MO EOC Online Assessments. This platform has two components:

- Student Test Delivery – The online testing student client is a small-footprint, secure browser application that is downloaded to the students’ workstations to allow uninterrupted testing and failsafe protection of student responses in the event of a connection loss.
- Administration and Reporting System – The online testing system administration system is a web application that allows districts, schools, and teachers/proctors to manage their students and assessments.

For the MO EOC assessments, 2011–2012 was the first year in which districts were required to use an online delivery format unless a Paper/Pencil, Braille, or Large Print edition was required for a student (as indicated in a student’s Individualized Education Program [IEP]) A student’s need for a paper form was marked as an accommodation on the online test administration site. The *Test Coordinator’s Manual* contains information specific to the registration for and administration of the MO EOC assessments. This process was continued for 2017–2018.

### 5.2. Students for Whom the MO EOC Assessments are Appropriate

The responsibility and authority for testing students in the MO EOC assessments at the appropriate time in the course of instruction belongs to the local district. The MO EOC assessments are based on Missouri Learning Standards rather than on GLEs. Therefore, when the content of the Missouri Learning Standards is covered in the local school district’s curriculum, the test may be administered regardless of student grade level or course name.

#### 5.2.1. Students with Individualized Education Programs (IEPs)

A student with disabilities, as classified under the Individuals with Disabilities Education Act (IDEA), has an IEP that, in part, governs whether a particular assessment is appropriate for the

student. In the case of the MO EOC assessments, decisions about whether a student with a disability will participate in the assessments are made by the student's IEP team and are documented in the IEP. All students must take required MO EOC assessments. If, however, a student's disability qualifies him or her to take the MAP-Alternate Assessment (MAP-A) for students with severe cognitive disabilities, that student will not participate in the MO EOC assessments.

#### *5.2.2. Students with Individual Accommodation Programs*

Students with Individual Accommodation Programs (IAPs) are considered disabled under Section 504 of the 1973 Rehabilitation Act. These students are not served under IDEA and are not documented with a particular designation for the MO EOC assessments. However, professionals who are knowledgeable about a student's disability and educational needs should make accommodation decisions for the student as they would for a student with an IEP.

#### *5.2.3. English Language Learner (ELL) Students*

Students who have been in the United States for 12 cumulative months or less since school age at the time of test administration may be exempted from taking the English I and English II assessments by the local school district. The students must, however, participate in other required MO EOC assessments, although their scores do not count toward school accountability purposes. All students, including ELL students, are required to take the Algebra I, Biology, and Government MO EOC assessments.

### **5.3. Students for Whom a School or District is Accountable**

For accountability purposes, Missouri must include the results for any student who is eligible to take the MO EOC assessments and has been enrolled for at least one full academic year in a school (for school accountability) or district (for district accountability) without transferring out of the building or district for a significant period of time and re-enrolling. A full academic year is defined as the last Wednesday in September through the MO EOC assessment administration. A significant period of time is considered "one more than half of the eligible days between the last Wednesday in September and the test administration." DESE obtains enrollment information from the Missouri Student Information System (MOSIS) data that are reported by school districts. This rule applies to the building and district summary levels independently. For example, a student who is coded as "In building less than a year" but was in the district a full academic year is excluded from the building totals but is included in the district totals.

### **5.4. Dissemination of Testing Materials and Information**

All test administration information, including the *Test Coordinator's Manual* and training webinars, were posted to the online test administration site for District Test Coordinators, School Test Coordinators, Examiners, and Information Technology Coordinators. One week prior to the start of the testing window, Questar distributed all password information for the online system by e-mail to district and school level users participating in the current EOC administration. Districts had the opportunity to order the Braille and Large Print editions of the assessment from Questar. The District Test Coordinator downloaded and printed the accommodated Paper/Pencil test edition through the online administration site, as needed for students in the district. The District Test Coordinator was responsible for inventorying all Paper/Pencil materials, as well as disseminating the online test information to the test administrators. The District Test Coordinator

was also responsible for answering all district questions about test procedures and the online assessment platform. If the District Test Coordinator needed assistance with a question, he/she could contact Questar’s Missouri Customer Service through the designated phone number and/or e-mail address.

### **5.5. District and Test Examiner Training**

Both Questar and DESE were responsible for training the district staff on EOC test administration. Questar and DESE provided training webinars, scripts, and PowerPoint presentations on the *Test Coordinator’s Manual*, state procedures, and general testing issues. These training resources were available both on the DESE website and on the online test administration site. Appendix F contains the 2017–2018 training PowerPoint presentations for the MO EOC assessments.

Questar provided both onsite and recorded trainings on the online assessment platform. Questar training contained proprietary information and was only available on the test administration site. All Test Coordinators and Test Examiners were to view these standardized trainings prior to test administration. The District Test Coordinator was allowed to provide supplemental training on local issues (e.g., schedules). Both DESE and Questar were available to answer any questions the districts may have had about the MO EOC assessment administration.

### **5.6. Test Security**

#### *5.6.1. Summary*

The MO EOC assessment test books (Paper/Pencil, Large Print, and Braille) and online assessments were secure. Test Coordinators were instructed to keep the materials in a locked room or cabinet at all times when not in use. No testing materials could be photocopied, duplicated, scanned, or made accessible to personnel who were not responsible for testing. Additionally, written or oral discussion of specific MO EOC assessment items breaches the security and integrity of the test. In accordance with the Standards, the *Test Coordinator’s Manual* contained explicit instructions about test security for Test Coordinators and Test Examiners.<sup>5</sup>

Standardized training was required for all District and School Test Coordinators, Examiners, translators, proctors, and any district staff who had responsibilities in testing. Each test book that was shipped to the district or downloaded and printed by the district contained secure barcode information for tracking purposes. Questar used this information to ensure that districts used the materials assigned to them for testing and returned all of their secure materials after the completion of testing. The Paper/Pencil forms included a barcode on each page of the document. Upon return to Questar, the barcode information on each test was verified. Questar then followed up with the appropriate district(s) regarding any missing materials to ensure return or destruction (if materials were contaminated).

When the tests were delivered online, Test Examiners only had access to the test administrator features and did not have access to the students’ screens for the online assessment. Students had

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<sup>5</sup> **Standard 6.7:** Test users have the responsibility of protecting the security of test materials at all times (AERA, APA, NCME, 2014, p. 117).

unique, secure logins to access the assessments they were registered for; these logins were disabled after the student had tested. For tests with multiple sessions (those including a PE/WP), the students also had a Session Access code given to them by the teacher at the start of the session to ensure that students accessed the correct session of the test. Test items, as well as student responses, were encrypted during transmission to and from student computers.

### *5.6.2. Detection and Prevention of Testing Irregularities*

To protect the validity and fairness of scores on the MO EOC assessments, DESE has implemented measures to prevent and detect cheating. Possible cheating violations include the following:

- Copying and reviewing MO EOC assessment items with students
- Cueing students during testing either verbally or with written materials on the classroom walls
- Cueing students nonverbally, such as tapping or nodding the head
- Using a calculator on an EOC assessment that does not allow calculator use, unless specified by the student's IEP
- Using a calculator that contains stored equations or connects to the Internet
- Splitting sessions into two parts
- Ignoring the standardized directions in the test books
- Paraphrasing parts of the assessment to students
- Changing or completing (or allowing other school personnel to change or complete) student answers
- Allowing accommodations that are not written in the IEP
- Allowing accommodations for students who do not have an IEP
- Allowing students to use dictionaries on parts of the MO EOC assessment other than the WP
- Defining terms on the test
- Allowing students to access cell phones or other electronic devices during testing

To detect cheating, DESE has implemented the following steps for the MO EOC assessments:

1. School officials, parents, and other interested parties call or e-mail DESE to report a testing concern or allegation.
2. A narrative of the conversation, if reported orally, is written and read back to the individual reporting the concern.
3. The superintendent of the district in which the allegation is made is then contacted and read the narrative or e-mail.
4. A letter is sent to confirm the conversation and to ask the superintendent to investigate the claim.
5. An MO EOC Assessment Quality Assurance Concern District Response Report is sent for the superintendent to use for replying to the allegation.

DESE also implemented a self-monitoring process whereby District Test Coordinators completed a Quality Assurance (QA) self-monitoring form.<sup>6</sup> This QA process was issued to District Test Coordinators in an administrative memo.<sup>7</sup> The form was designed to be used by

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<sup>6</sup> View the QA form online at <http://tiny.cc/deseqaself2017>.

<sup>7</sup> View the memo online at <https://dese.mo.gov/sites/default/files/am/documents/CCR-17-001.pdf>.

District Test Coordinators as part of their regular supervision process throughout the testing window. The QA self-monitoring form allowed districts to monitor and strengthen their administration of the MO EOC assessments. The questions on the form were designed to focus attention and help districts examine important areas of assessment training, administration, and test security.

District Test Coordinators were asked to complete one MO EOC Quality Assurance form for one EOC classroom. Regarding cheating prevention, the form asked District Test Coordinators to “Explain the district’s test security plan” and answer the question, “What preventative measures are taken to curb cheating within the computer lab?” District Test Coordinators were urged to report testing irregularities or concerns immediately to the Assessment Section at [assessment@dese.mo.gov](mailto:assessment@dese.mo.gov) or (573) 751-3545. DESE also performed onsite spot checks of quality assurance procedures during the Spring testing window.

When testing irregularities were reported, DESE was able to request that Questar perform statistical analyses to detect and flag unusual response patterns. DESE then worked with districts to establish procedures for follow-up decisions appropriate to the situation.

## **5.7. Test Administration**

### *5.7.1. Test Organization*

Students took the MO EOC assessments in one or two sessions depending on the content area. All assessments were administered online unless the student’s IEP specified a Braille/Large Print or Paper/Pencil administration. Each SR item consisted of a stem followed by four response options. Students answered by clicking their choice response option. The tests were not timed. Students were encouraged to complete an online tutorial of the online assessment platform prior to testing. This tutorial included instructions on how to use the tools in the system and practice questions for the students.

### *5.7.2. Test and Ancillary Materials*

District Test Coordinators or School Test Coordinators were responsible for providing all MO EOC assessment materials to Test Examiners. The materials provided by Questar and/or DESE included the following:

- *Test Coordinator’s Manual* (electronic copy)
- Large Print and/or Braille test materials
- Return kit materials for accommodated test materials
- Accommodated Paper/Pencil test booklets (printed from the online assessment platform by the school district)

Students taking an accommodated version of the MO EOC assessments needed the following additional materials, which were not provided by Questar or DESE:

- No. 2 pencils
- Scratch paper

For the online assessment, each student needed a computer with a monitor, mouse, and keyboard or a tablet device. Adequate space should have been left between workstations. Students could use scratch, grid, or draft paper and a writing utensil while taking the online assessment. The Test Examiner needed the following:

- A computer for logging on to the test administrator interface
- A writing board and utensil

### 5.7.3. *Preparing the Test Administration Site and the Students*

Before students began the assessment using the online system, a representative of the district or school was responsible for the following tasks:

- Read the entire *Test Coordinator's Manual*.
- Review the DESE and Questar trainings regarding the EOC assessments.
- Run a workstation readiness test on each workstation used for testing.
- Ensure that the online test delivery system is downloaded to each workstation for test delivery.
- Provide an upload to DESE (precode file) of all students that will be testing for the current administration of the EOC assessments. (The precode file is a data file containing one record per student; each student is assigned a unique MOSIS ID. The purpose of the data file is to identify students, Examiners, and content areas for testing.)
- Input identification information for students who were not included in the precode file.
- Specify district testing windows within the Missouri statewide test administration window.

Additionally, the Test Examiner was responsible for setting and verifying class information and setting students' testing status codes and/or accommodations information in the online test administration system.

Students were NOT allowed to use electronic devices such as cellular phones, digital cameras, gaming devices, or scanners during the testing session.

### 5.7.4. *Directions for Administration*

In accordance with Standard 6.1,<sup>8</sup> specific standardized directions for administration were printed in the *Directions for Administration 2017-2018* (DFA) manual. Directions to be read aloud to the students were printed in bold type and had a callout arrow in the margin for clarity. Information for the teacher that should not be read aloud was in italic type.

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<sup>8</sup> **Standard 6.1:** Test administrators should follow carefully the standardized procedures for administration and scoring specified by the test developer and any instructions from the test user (AERA, APA, NCME, 2014; p. 114).

## Figure 5.1. Directions for Administering from the DFA—American History

### American History Directions

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The Test Administrator should use his/her computer or tablet to create a testing session, as outlined in the *Test Coordinator's Manual*. On each student's device, open the secure browser to the student login page.

These directions pick up from where the “Preparing Students for Testing” section ended (page 13).

**SAY** For the questions in this test, you will select an answer from the provided choices or type your answers in the space provided. Remember to check that you have correctly identified the answer choice after you select it. Your score on these questions will depend on how well you follow directions and show your understanding of American History. Select the HELP button for instructions on how to use the system tools.

There are several important things to remember:

1. Read each question carefully and think about the answer. Then choose the answer that you think is best.
2. If you do not know the answer to a question, mark it for review, skip it, and go on. You may return to it later.
3. When you finish the test, you may check your work.

Do you have any questions?

*Answer any questions the students may have.*

**SAY** You should now see a screen asking for the Access Code. In the space provided, type in [insert your Access Code]. Then select “Continue” to begin the test.

*If a student does not understand a word, you may pronounce the word for the student but do not define, explain, or paraphrase it. You may pronounce only one word per sentence. Pronouncing several words or phrases is an oral reading accommodation. If a student has not finished in the allotted time and is making adequate progress, the student should be allowed to finish. It is highly encouraged that all students complete the test during one testing session. However, should a student be unable to finish, testing may resume the following day. Test Examiners must address the concern with their STC immediately for assistance.*

*There is a separate Access Code for each session. Ensure the Access Code is used for the session being administered.*

## 5.8. Accommodations and Modifications

A student's IEP team had the responsibility and authority to determine individual accommodations to support and ensure his or her participation in the MO EOC assessments. Students who were English language learners (ELLs) were also able to receive accommodations to support and ensure participation in the MO EOC assessments. The accommodations are intended to assist the student to demonstrate his or her knowledge, skills, and abilities. The accommodations for the MO EOC assessments include, but were not limited to, the following:

- A student may receive a modified version of the testing materials, such as the Braille, Large Print, or Paper/Pencil edition.
- A teacher may present the test content to a student in a nonstandard way, such as by reading it aloud in English or in the student's native language, paraphrasing it, or using sign language. For the English I and English II assessments, this will result in the lowest obtainable scale score (LOSS) being assigned.
- A student may be allowed additional time to complete one or more sessions of the assessment.
- A student may use an assistive communicative device.
- A student may be tested individually or in a small group.
- A student may be allowed to use a computer, another word-processing device, or a teacher scribe to record his or her responses.
- A student may use other assistive materials, such as a bilingual dictionary.

Modifications are alterations in the test that change construct-related requirements. The resulting information may not be equal to the information that might be obtained without modifications. The following modifications for the MO EOC assessments were able to be provided:

- Oral reading of the assessment, including paraphrasing questions
- Oral reading in native language

In accordance with Standard 6.3,<sup>9</sup> Test Examiners indicated an accommodation by checking the appropriate box(es) for the student in the online test administration site.

Tables 5.1, 5.2, and 5.3 contain information about the percentage of students who received each type of accommodation for Government and American History for Summer 2017, Fall 2017, and Spring 2018, respectively. The most prevalent type of accommodation for the Summer 2017, Fall 2017, and Spring 2018 administrations across all MO EOC assessments was testing in "Other Setting." See Appendix G for a list of accommodation codes from the *2017–2018 Test Coordinator's Manual*.

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<sup>9</sup> **Standard 6.3:** Changes or disruptions to standardized test administration procedures or scoring should be documented and reported to the test user (AERA, APA, NCME, 2014, p. 115).

**Table 5.1. Accommodation Distributions—Summer 2017**

Accommodation	Government		American History	
	Freq.	%	Freq.	%
Braille	0	0	0	0
Large Print	0	0	1	0.31
Oral Reading	0	0	0	0
Oral Reading— Blind/Partial Sight	0	0	0	0
Oral Reading—Paper/Pencil Only	0	0	0	0
Signing of Assessment	0	0	0	0
Paper Based Assessment—Paper/Pencil Only	0	0	0	0
Oral Reading in Native Language ELA	0	0	0	0
Use of Scribe	0	0	0	0
Speech to Text Online not Embedded	0	0	0	0
Abacus	0	0	0	0
Multiplication Table	0	0	0	0
Specialized Calculator	0	0	0	0
Alternate Response	0	0	0	0
Oral Reading Assistive Technology-Non ELA	0	0	2	0.63
Oral Reading Assistive Technology-ELA only	0	0	0	0
Oral Reading Any—not Embedded	3	5.56	6	1.88
Color Contrast—Paper/Pencil	0	0	0	0
Color Overlay—Paper/Pencil	0	0	0	0
Magnification	0	0	0	0
Masking	0	0	0	0
Translation	0	0	0	0
Oral Reading in Native Language Non ELA	0	0	0	0
Use of Scribe Non ELA Writing without IEP or 504	0	0	0	0
Bilingual Dictionary on Writing Performance Task for ELL	0	0	0	0
Other Setting	4	7.41	13	4.06

**Table 5.2. Accommodation Distributions—Fall 2017**

Accommodation	Government		American History	
	Freq.	%	Freq.	%
Braille	0	0	0	0
Large Print	1	0.01	1	0.24
Oral Reading	0	0	0	0
Oral Reading— Blind/Partial Sight	35	0.26	1	0.24
Oral Reading—Paper/Pencil Only	0	0	0	0
Signing of Assessment	0	0	0	0
Paper Based Assessment—Paper/Pencil Only	10	0.08	0	0
Oral Reading in Native Language ELA	0	0	0	0
Use of Scribe	0	0	0	0
Speech to Text Online not Embedded	3	0.02	0	0
Abacus	0	0	0	0
Multiplication Table	0	0	0	0
Specialized Calculator	0	0	0	0
Alternate Response	0	0	0	0
Oral Reading Assistive Technology-Non ELA	278	2.1	11	2.64
Oral Reading Assistive Technology-ELA only	2	0.02	0	0
Oral Reading Any—not Embedded	154	1.16	0	0
Color Contrast—Paper/Pencil	3	0.02	0	0
Color Overlay—Paper/Pencil	2	0.02	0	0
Magnification	0	0	0	0
Masking	0	0	0	0
Translation	0	0	0	0
Oral Reading in Native Language Non ELA	9	0.07	0	0
Use of Scribe Non ELA Writing without IEP or 504	5	0.04	0	0
Bilingual Dictionary on Writing Performance Task for ELL	2	0.02	0	0
Other Setting	500	3.78	15	3.61

**Table 5.3. Accommodation Distributions—Spring 2018**

Accommodation	Government		American History	
	Freq.	%	Freq.	%
Braille	9	0.02	0	0
Large Print	19	0.04	1	0.02
Oral Reading	14	0.03	0	0
Oral Reading— Blind/Partial Sight	232	0.5	50	1.16
Oral Reading—Paper/Pencil Only	1	0	0	0
Signing of Assessment	0	0	0	0
Paper Based Assessment—Paper/Pencil Only	105	0.23	1	0.02
Oral Reading in Native Language ELA	3	0.01	0	0
Use of Scribe	0	0	0	0
Speech to Text Online not Embedded	14	0.03	4	0.09
Abacus	0	0	0	0
Multiplication Table	6	0.01	1	0.02
Specialized Calculator	14	0.03	4	0.09
Alternate Response	1	0	0	0
Oral Reading Assistive Technology-Non ELA	3,369	7.28	237	5.51
Oral Reading Assistive Technology-ELA only	41	0.09	2	0.05
Oral Reading Any—not Embedded	899	1.94	50	1.16
Color Contrast—Paper/Pencil	212	0.46	91	2.11
Color Overlay—Paper/Pencil	7	0.02	0	0
Magnification	5	0.01	0	0
Masking	0	0	0	0
Translation	37	0.08	0	0
Oral Reading in Native Language Non ELA	57	0.12	0	0
Use of Scribe Non ELA Writing without IEP or 504	53	0.11	5	0.12
Bilingual Dictionary on Writing Performance Task for ELL	18	0.04	1	0.02
Other Setting	2,791	6.03	233	5.41

## 5.9. Materials Handling and Return

### 5.9.1. Materials Handling during Administration

The *Test Coordinator's Manual* contained detailed instructions for how schools and districts should collect and package the Paper/Pencil, Braille, and/or Large Print testing materials at the end of the test administration. For Test Examiners, these activities included, but were not limited to, the following:

- Collecting test books from the students using the accommodated editions
- Returning all used and unused test books to the School Test Coordinator
- Collecting all scratch paper used during testing

- Properly handling all contaminated test books (i.e., books having contact with bodily fluids such as blood or with any potentially hazardous material)

For School Test Coordinators, these activities included, but were not limited to, the following:

- Collecting testing materials from the Test Examiners
- Returning all test books (used and unused) to the District Test Coordinator
- Destroying all nonsecure testing materials

After receiving the used and unused test books from the School Test Coordinators, District Test Coordinators completed the following steps:

- Verifying 100% return of test books
- Completing the Test Book Accountability Form and faxing it to Questar

For the online system, the student needed to click the submit button once he or she had finished testing to submit the test for scoring. No additional information was needed from the Test Examiner after the student had completed the online test. All demographic information was edited or added by the test administrator before the student started the assessment.

#### *5.9.2. Questar's Secure Material Check-In Procedures*

Questar adhered to strict quality assurance procedures in order to ensure that all accommodated test booklets were returned and accounted for. The check-in procedures included multiple steps to ensure that no test booklets were overlooked. All staff members received thorough and specific training before they participated in the check-in of test booklets.

Upon receipt of accommodated test booklets from the school districts, boxes were kept in a secure location and remained sealed until check-in. If a box had to be opened for any reason, it was immediately resealed.

Two teams checked in the secure materials. The first team prepared the test booklets for scanning. One district box was opened at a time, and secure test booklets were separated from ancillary materials and stacked on carts to be checked in. This process was repeated for all boxes for a district to ensure that all materials returned to Questar at the same time were checked in at the same time. Once the first team filled the cart(s) with all the secure materials from a district, the cart(s) was passed to a second team.

The second team checked in each test booklet by scanning the secure barcode into Questar's database. Operators worked in teams of two at computers equipped with barcode scanners. Operator 1 counted and scanned enough secure documents to fill a storage box. The operator verified that the database collected the same number of barcodes. If there was a discrepancy, an immediate reconciliation took place. Each ID number (barcode number) had a check digit that ensured that all numbers were correctly read by the scanner and that no ID number was miskeyed when manually entered. If a barcode was damaged or not readable, the operator manually entered the barcode number into the system. After this process was complete, the box of secure materials was handed to Operator 2 and scanned a second time. The database verified that the same

barcode numbers were read during the scanning of the box or an immediate reconciliation took place. After verification, the secure materials were placed in a Questar box for storage. The scanning system provided audible and onscreen cues to alert operators of scanning discrepancies.

Further validity checks were done before each box was sealed to ensure that there were no ID barcode scanning discrepancies and that all ID numbers were correct. The validity checks also ensured that the ID numbers and the quantity in each box matched what was entered into the database. Finally, each box was placed on a pallet and stored.

Post-check-in procedures were also performed prior to notifying the districts of missing secure materials. For any district that was missing a secure material, an individual box-by-box hand search was conducted in an attempt to locate the secure material(s). If an unaccounted secure material was found, the material was then coded into the database by a Questar supervisor, and Questar's Program Management team was notified. If unaccounted-for material(s) were not found during the box-by-box hand search, the material(s) was considered missing and the district was notified via the Secure Missing Material Report process. This was also communicated to DESE, who would then follow up with discretion.

### **5.10. Summary**

The distribution, administration, and collection of the MO assessments in Government and American History were carefully communicated and executed in accordance with the detailed *Test Coordinator's Manual*. All standards related to test security, administration, and accommodations were adhered to throughout the process. The most important steps and procedures have been covered in this chapter. Readers interested in further detail should consult the *Test Coordinator's Manual*.

## Chapter 6: Scoring

### 6.1. Introduction

This chapter describes the processes used to score and ensure quality control for the MO EOC assessments in Government and American History. The forms for Government and American History contained only SR items and were processed and machine scored by Questar. Section 6.2 details the scoring rules and quality control procedures.

### 6.2. Machine Scoring

#### 6.2.1. Scoring Rules

Machine scoring rules allow student responses to be programmatically compared against an answer key to determine if the student responses are correct or incorrect. Selected-response items are automatically scored against a fixed key immediately after a test is submitted by the student. Each test form is tested by entering 100% correct responses and 100% incorrect responses through both desktop and tablet clients; each test score is validated as part of a comprehensive end-to-end process culminating in final reports.

#### 6.2.2. Quality Control

As part of Questar's standard quality control approach, four sets of student data were loaded to the Nextera administration website for data validation.

- Set 1: A pre-ID file was loaded with students containing each option for the demographic file. After the file was loaded, the students were reviewed in the website to verify that the appropriate options were selected through the pre-ID import. These students were also reviewed using structured query language (SQL) code to verify that all of the demographic fields were stored in the database as expected.
- Set 2: Test students were manually entered to verify that the demographic information was stored in the database as planned.
- Set 3: A set of students was used for functional testing of the web client. These students were used to verify the test display and the functionality of the test on each supported operating system and device.
- Set 4: Test students were used to complete each form with all correct and all incorrect answers. This was done to validate the accuracy of the answer key.

## Chapter 7: Scaling and Equating

### 7.1. Introduction

The purposes of scaling and equating are to maintain the consistency of the MO EOC assessments score scales over time and ensure that the achievement levels are applied consistently from year to year. Scaling and equating procedures for Government and American History, which used previously intact forms, are provided in the *2009–2010 MO EOC Phase I Technical Report* and the *2009–2010 MO EOC Phase II Technical Report* located on the DESE website at <http://dese.mo.gov/college-career-readiness/assessment/assessment-technical-support-materials>.

### 7.2. RSS Conversions

Appendix C provides the RSS conversions for Summer 2017, Fall 2017, and Spring 2018.

## Chapter 8: Reporting

### 8.1. Introduction

The purpose of reporting assessment data is to communicate test results to students, parents, teachers, administrators, and other stakeholders. The MO EOC assessment reports provide useful information for determining the performance of students in a particular district, school, or classroom. These reports help describe students' knowledge and skills regarding a set of expectations, allowing educators to determine specific instructional needs, measure student mastery toward post-secondary readiness, provide evidence of accountability for Missouri and national programs, and evaluate educational programs. Districts may also use locally designed assessments aligned to the Missouri Learning Standards to provide more detailed information for each student in specific content areas.

Questar delivers a General Research File (GRF) to DESE at the end of each test administration that contains all of the raw data collected for each administration. Questar also provides a *Guide to Interpreting Results* for DESE to post on their website that provides explanations of the CLEs and ALDs for each content area, as well as samples of the Individual Student Report (ISR) and the Student Score Label with descriptions of the information they contain. ISRs are provided in the online assessment platform for all assessment windows. Student Score Labels are provided in hard copy to districts following each administration.

### 8.2. Test Scores

The MO EOC assessment score indicates that an individual student performs at the Below Basic, Basic, Proficient, or Advanced level in a given content area. ALDs provide details about the content expectations that students at each level meet or exceed. The scores are scaled in several ways: raw scores, scale scores (derived from the Rasch model), and achievement level (based on scale score cuts) that describe what students can do in terms of the content and skills assessed. These scores provide a way to compare test results with standards of academic performance. Subscale scores are not reported for the MO EOC assessments.

Missouri promotes the use of achievement level results, reporting them annually on each assessment at the student, school, district, and state levels. Individual student and average scale scores are also used, but they play a secondary role and are generally interpreted with reference to their distance from achievement level cut points.

To determine the achievement level scores, Questar converted each student's raw score points earned into a scale score. The scale score determined the student's achievement level. Each achievement level represented standards of performance for each content area. Test results are reported for students as a whole, as well as by student group, including gender, ethnicity, migrant status, free and reduced lunch (FRL) status, English language proficiency, Title I, IEP status, and accommodations used during testing. Scores are reported to schools and districts in annually published reports.

No stakes for teachers are attached to student-level scores by the state. Teachers are encouraged to consider student performance on the MO EOC assessments in determining course grades. DESE recommends that MO EOC scores account for at least 10 percent but not more than 25

percent of a student's grade in a course with a corresponding MO EOC assessment. Districts receive students' scores on the MO EOC assessments within five business days after test administration, and DESE provides districts with "curved percentages" to assist teachers in appropriately considering EOC scores in determining course grades (<http://dese.mo.gov/sites/default/files/asmt-eoc-curved-percentages.pdf>). Teachers are counseled to interpret individual student scores only in the context of other assessment results and their own experience.

### **8.3. Individual Student Report (ISR)**

The 2017–2018 Individual Student Report (ISR) provides information about performance on the MO EOC assessment, describing the results in terms of four levels of achievement in a content area. It is used for measuring an individual student's mastery toward postsecondary readiness for the content area. It is also used in instructional planning as a point of reference during parent-teacher conferences and for permanent record keeping. Teachers are informed that other sources of information should be used along with this report when determining the student's areas of strength or need.

On the report, achievement-level scores describe what students can do in terms of the CLEs for the content and skills assessed by the MO EOC assessment. A student at the Proficient or Advanced level has met the standard.

A sample of the ISR appears in Figure 8.1. A brief description of selected parts of the report is as follows:

- A. The heading of the ISR includes the content area for the results being presented. A separate report is produced for each content area tested.
- B. The student information section contains the biographic data for the individual student taking the assessment. Identifying information including the MOSIS ID, date-of birth, grade, test date, building, and district is listed, followed by the test period.
- C. The individual student's results are presented numerically as a three-digit scale score with the SE. An accompanying bar graph to the right of the scale score illustrates the achievement level obtained by the student. Achievement levels (whether Below Basic, Basic, Proficient, or Advanced) are based on the scale score ranges listed beneath the Achievement Level heading in the table.
- D. The mean scale scores for the student's building and district are displayed in the two rows below the student's individual results. The mean scale score, with an associated SE, and the bar graph provide a way to view the individual's results in contrast to the group's results for the content area during the same test period.
- E. The narrative describes the student performance characteristics corresponding to the obtained achievement level. The text is specific to the content area tested. At the bottom of the narrative is a URL for a website that provides additional information for all of the achievement levels for the content area.

**Figure 8.1. Individual Student Report (ISR)**



MISSOURI END-OF-COURSE  
BIOLOGY  
SARAH JOHNSON

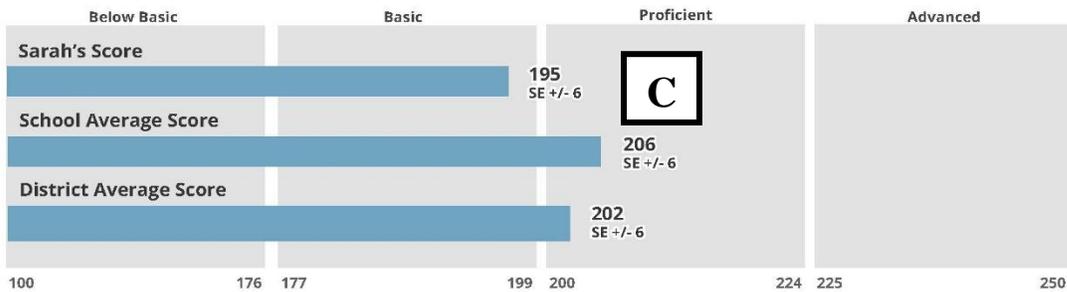
**Sarah's Overall Results**

**BASIC**

Sarah's  
Achievement Level:  
Basic

Students performing at the Basic level on the Missouri End-of-Course Assessment demonstrate a partial understanding of the course-level expectations for Biology. They demonstrate these skills in addition to understanding and applying the skills at the Below Basic level, students scoring at the Basic level use some strategies.

Name: Sarah Johnson  
MOSIS: 999999999  
Birth Date: mm-dd-yyyy  
Grade: 11  
Test Date: Fall 2017  
District: Missouri School District  
School: Missouri School



<b>D</b>	<b>Below Basic</b> 100-176	<b>Basic</b> 177-199	<b>Proficient</b> 200-224	<b>Advanced</b> 225-250
	Students demonstrate little understanding of the skills and processes identified in the Course Level Expectations for Biology.	Students demonstrate an incomplete understanding of the skills and processes identified in the Course Level Expectations for Biology.	Students demonstrate an understanding of the skills and processes identified in the Course Level Expectations for Biology.	Students demonstrate a thorough understanding of the skills and processes identified in the Course Level Expectations for Biology.



For more information about achievement levels, please visit the following web site:  
<http://dese.mo.gov/college-career-readiness/assessment/end-course>



## 8.4. Student Score Label

The 2017–2018 Student Score Label provides a summary of a student’s results on the MO EOC assessment. A separate label is produced for each content area tested. The individual label provides the student’s biographic data, scale score, and achievement level. The labels have adhesive backing so they can be easily transferred onto the student record folders.

A sample label is shown in Figure 8.2. A brief description of selected parts of the label is as follows:

- A. The left side of the label shows the student’s name and identifying information.
- B. The upper right side shows the content area tested. If a student has results for more than one content area, the next label is printed below the first one.
- C. The lower right side shows the student’s scale score and achievement level.

**Figure 8.2. Student Score Label**

<b>LNAME8, FNAME8</b>		<b>A</b>	<i>Missouri-End-of-Course</i>	<b>B</b>
MOSIS-ID:	11	890	<i>English-II</i>	
Building:	Missouri-School			
District:	Missouri-District		Scale-Score: 233	<b>C</b>
Test-Period:	Fall-2017		Achievement-Level: Advanced	

## 8.5. Missouri Comprehensive Data System (MCDS) Portal

### 8.5.1. Purpose and Use

For the first two years of the MO EOC assessment administration, summary-level EOC results were available to school district personnel in a set of standard reporting configurations through DESE’s Crystal Reporting system. Reporting options included administrative reports, adequate yearly progress (AYP) reports, achievement level reports, content standard reports, and item analysis reports.

Beginning with the 2011–2012 school year, DESE transitioned all assessment reporting to the state’s data portal, the Missouri Comprehensive Data System (MCDS). MCDS provides the general public with access to high-level EOC summary reports and allows school district personnel with appropriate permissions to access EOC data at a variety of levels. Through MCDS, designated district personnel are able to request on-demand, customized reports that are configured and disaggregated in ways that best meet their needs for such activities as evaluating programs, revising curriculum, and improving teaching and learning.

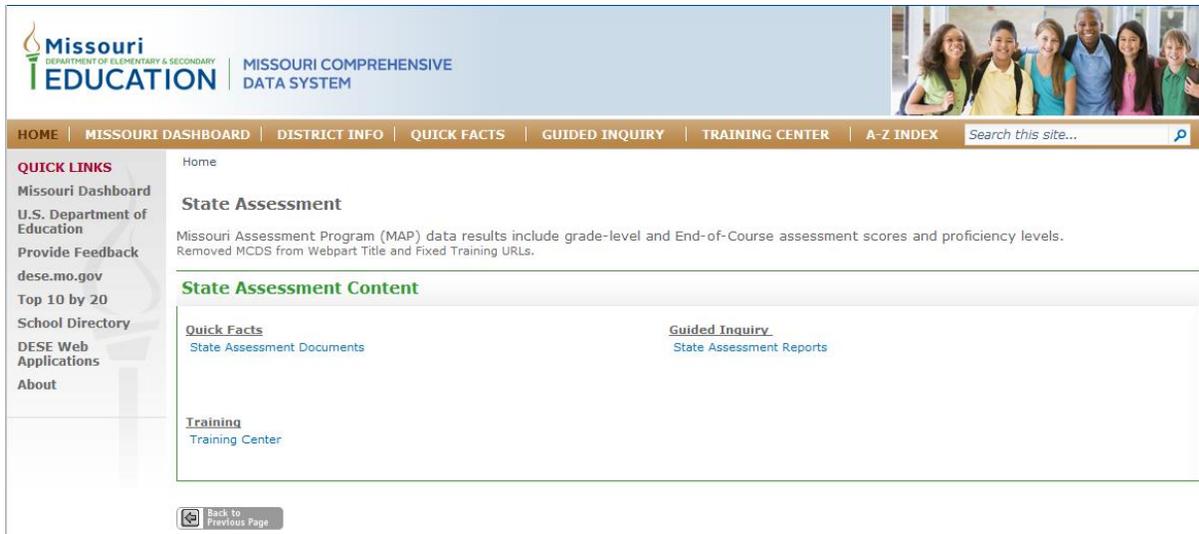
Users access MCDS from a link to the portal on the Department’s homepage (<http://dese.mo.gov/>). From there, they access the data portal directly through the MCDS link, as shown in the following image.

The screenshot shows the top navigation bar with links for Administrative Memos, Educator Certification, Web Applications, and Report Card. Below this is a secondary navigation bar with Topics, Services, Data, and Department. The main content area is divided into two columns. The left column contains links for Data Acquisition Calendar, Data Requests, MCDS Portal, MCDS Reference Guide, MOSIS, and School Statistics. The right column features a News section with several articles and a video player for the 2018 Missouri Teacher of the Year award ceremony featuring Beth Davey.

Secure content is available through a link at the top of the MCDS portal’s homepage. District users with appropriate permissions can log in to access data. Once users have logged in, they are returned to the MCDS portal page where they can locate EOC data through the State Assessment link.

The screenshot displays the MCDS homepage. At the top is the Missouri Department of Elementary and Secondary Education logo and the text 'MISSOURI COMPREHENSIVE DATA SYSTEM'. A navigation bar includes links for Home, Missouri Dashboard, District Info, Quick Facts, Guided Inquiry, Training Center, and A-Z Index, along with a search bar. A 'QUICK LINKS' sidebar on the left lists various resources. The main content area features a grid of icons for Accountability, College & Career, District & School Info, Early Childhood Education, Education Staff, Special Education, State Assessment, and Student Characteristics. A yellow box titled 'Education Staff' provides information about the data available. A green banner reads 'Welcome to the new Missouri Comprehensive Data System', followed by a paragraph explaining the system's purpose and a note about data masking for small groups. At the bottom, it states 'Two tools are available to assist you:'.

On the State Assessment page, a Guided Inquiry link allows users to create summary administrative reports, achievement level reports, and historical AYP reports. Authenticated users can also download student-level data from the Guided Inquiry link.



An unlimited number of reports with any configuration may be created through MCDS. In addition to administrative reports, the MCDS portal also provides an unlimited configuration of summary reports, as shown in Table 8.1, that are beyond the scope of this technical report. Additional information and training pertaining to MCDS capabilities are available on DESE’s website at <http://mcds.dese.mo.gov/trainingcenter/Pages/default.aspx>.

**Table 8.1. Reports Available on the MCDS Portal**

Report Type	Report
<b>Administrative Reports</b>	Guided Inquiry - State Assessment Administrative: MAP Scale Score Summary
	Guided Inquiry - State Assessment Administrative: MAP Student Demographics
	Guided Inquiry - State Assessment Administrative: MAP Participation Invalidation
	Guided Inquiry - State Assessment Administrative: MAP Student Achievement Level
	Guided Inquiry - State Assessment Administrative: EOC History Report
<b>Achievement Level Reports</b>	Guided Inquiry - State Assessment Achievement Level - 4 Levels: Achievement Level 4 Report
	Guided Inquiry - State Assessment Achievement Level - 4 Levels: Achievement Level 4 Charts
<b>Content Standards Report</b>	Guided Inquiry - State Assessment Content Standard - Item Analysis: Content Standard Summary
<b>Item Analysis Expanded Reports</b>	Guided Inquiry - State Assessment Content Standard - Item Analysis: Content Standard IBD
	Guided Inquiry - State Assessment Content Standard - Item Analysis: Goal Process IBD

### 8.5.2. Administrative Reports

These reports provide student-level test data. Based on only the MO EOC assessment results, four reports are generated: MO EOC Scale Score Summary, MO EOC Student Demographic, Student Achievement Level, and Student Report. Additionally, a historical report of the student's EOC participation is located within the administrative reports. The following list describes the contents of each administrative report:

- **MO EOC Scale Score Summary:** This report lists each student in the school or district along with his or her MOSIS ID, testing year, content area, grade level, MO EOC scale score, and achievement level.
- **MO EOC Student Demographic:** This report lists all students in the school or district along with their date of birth (DOB), content area, MOSIS ID, district ID, and relevant demographic information, including whether the student has been in the district for less than a year, whether the student has been in the building for less than a year, whether the student is limited English proficient (LEP), the student's race, whether the student qualifies for free and reduced lunch (FRL), whether the student has an individualized education program (IEP), whether the student is an English-language learner (ELL)/LEP who has been in the school for less than one year and in the country for less than three years, whether the student is an LEP/ELL Title III, the number of months the LEP/ELL student has been in the United States, the student's disability diagnosis, and whether the student is Title I.
- **Student Achievement Level:** This report lists all students in a school or district along with the year of testing, content area, grade-level, achievement level, and MOSIS ID.
- **Student Report:** For each school or district, this report contains the following information: student name, DOB, MOSIS ID, content area tested, grade level, achievement level, and scale score for each content area tested.
- **EOC History Report:** This report lists the history of MO EOC completion for all students in the school or district.

## Chapter 9: Summary Statistics

### 9.1. Introduction

This chapter provides descriptive statistics for the number correct raw score and scale scores for the MO EOC assessments in Government and American History from the Summer 2017, Fall 2017, and Spring 2018 administrations. Statistics include *n*-counts, means, standard deviations (SD), minimum and maximum values, and a variety of data disaggregation.

### 9.2. Descriptive Statistics

#### 9.2.1. Total Raw Score

Table 9.1 summarizes the descriptive statistics for total raw score (RS) by test administration (test period) and content area. The information includes the total number of students who took the particular MO EOC assessment (*n*-count), the number of items and possible points, the observed minimum and maximum scores, and mean and standard deviation of raw scores.

**Table 9.1. Descriptive Statistics for Total Raw Score**

Test Period	Content Area	<i>n</i> -Count	#Items	#Pts. Possible	Min.	Max.	Mean	SD
Summer 2017	Government	817	40	40	5	39	25.66	7.54
	American History	50	40	40	10	36	24.42	6.80
Fall 2017	Government	12,960	40	40	0	40	25.78	7.31
	American History	404	40	40	4	38	22.13	7.01
Spring 2018	Government	42,755	40	40	0	40	27.70	7.71
	American History	4,064	40	40	3	40	23.46	7.32

#### 9.2.2. Total Raw Score by Cluster

Tables 9.2, 9.3, and 9.4 summarize the number correct RS—including the average raw score, the SD, and the standard error of measurement (SEM)—by test administration (test period), content area, and cluster. More information on SEM is provided in Chapter 10.

**Table 9.2. Descriptive Statistics for Total Raw Score by Cluster—Summer 2017**

Test Period	Content Area	Cluster	#Pts. Possible	#Items	Mean	SD	SEM
Summer 2017	Government	Principles and Processes of Governance Systems	20	20	12.35	4.24	1.86
		Principles of Constitutional Democracy	20	20	13.31	3.74	1.83
	American History	Missouri, United States, and World History	40	40	24.42	6.80	2.59

**Table 9.3. Descriptive Statistics for Total Raw Score by Cluster—Fall 2017**

Test Period	Content Area	Cluster	#Pts. Possible	#Items	Mean	SD	SEM
Fall 2017	Government	Principles and Processes of Governance Systems	20	20	12.34	4.16	1.87
		Principles of Constitutional Democracy	20	20	13.43	3.62	1.83
	Am. History	Missouri, United States, and World History	40	40	22.13	7.01	2.83

**Table 9.4. Descriptive Statistics for Total Raw Score by Cluster—Spring 2018**

Test Period	Content Area	Cluster	#Pts. Possible	#Items	Mean	SD	SEM
Spring 2018	Government	Principles and Processes of Governance Systems	20	20	13.76	3.95	1.85
		Principles of Constitutional Democracy	20	20	13.94	4.17	1.81
	American History	Missouri, United States, and World History	40	40	23.46	7.32	2.76

### 9.2.3. Scale Scores

Table 9.5 summarizes the descriptive statistics of scale scores for the Government and American History assessments by administration. The scale score range is 100 to 250. Table 9.6 summarizes the minimum scale score needed to obtain each level of achievement (i.e., cut score) for the Summer 2017, Fall 2017, and Spring 2018 administrations. The mean scale score data in Table 9.5 may be reviewed in light of the Proficient cut score. The number and percentage of students in each achievement level by content area from 2009–2010 to 2017–2018 are provided in Tables E.2 and E.3 as part of the executive summary.

**Table 9.5. Descriptive Statistics of the Scale Scores**

Test Period	Content Area	n-Count	Min.	Max.	Mean	SD
Summer 2017	Government	823	147	250	204.70	20.96
	American History	54	138	250	200.93	24.50
Fall 2017	Government	13,264	100	250	204.53	20.28
	American History	416	125	250	194.38	23.50
Spring 2018	Government	46,255	100	250	207.39	21.94
	American History	4,303	114	250	199.13	25.17

**Table 9.6. Scale Score Cuts**

Content Area	Basic	Proficient	Advanced
Government	179	200	225
American History	182	200	225

#### *9.2.4. By Demographic Group*

Descriptive statistics of scale scores and percentage distributions of students' achievement levels by demographic groups are summarized in Appendix E. The results are only reported for groups with 10 or more students. The demographic variables included are gender, ethnicity, migrant status, free and reduced lunch (FRL), limited English proficient (LEP), Title I, individualized education program (IEP), and accommodations.

### **9.3. Performance Level Results**

The performance level results for the Fall 2017 and Spring 2018 administrations of Government and American History were examined. Government and American History have multiple forms that rotate across administrations. The preliminary and final data results were reported to DESE. The results presented here are the final results for each administration.

#### *9.3.1. Fall 2017*

##### *9.3.1.1. American History*

The achievement level results for American History are shown in Table 9.7. Form 3 was used in 2014, 2016, and 2017; Form 1 was used in 2015. Looking at the Form 3 results across years, an increase in students achieving the Proficient and Advanced standing was observed from 2014 to 2016, but dropped in 2017. The Form 1 results in 2015 are higher and inconsistent with the Form 3 results. Since there is little reason to suspect that the student group changed, the finding for Form 1 may be evidence of a form effect.

##### *9.3.1.2. Government*

The achievement level results for Government are presented in Table 9.8. The results show that the number of students taking the Fall administration has steadily declined across the years, from a high of 17,589 in 2010 to a low of 13,250 in 2017. All six forms were used across this time period. Overall, there was a trend of higher or relatively stable student achievement across the years.

There are two instances of forms being repeated in the Fall. Form 2 was administered in 2011 and 2015 and Form 6 was administered in 2012 and 2014. A pattern of higher student achievement across time was evident. There was a 10-percent increase of students achieving the Proficient and Advanced standard for Form 2 and a 7.6-percent increase for Form 6. Although Forms 3, 1, and 5 were used only once from 2010 to 2017, the results for 2013, 2016, and 2017 show a pattern of higher or stable achievement to adjacent years. The outlier was Form 4 in 2010, which showed higher achievement compared to 2011 and 2012. It is possible that Form 4 shows evidence of a form effect.

#### *9.3.2. Spring 2018*

##### *9.3.2.1. American History*

The achievement level results for American History are presented in Table 9.9. The results show that Form 1 was used in 2014, 2016, and 2018 and Form 3 was used in 2015 and 2017. It is important to note that the number of American History test-takers significantly dropped after Spring 2014, when American History was no longer a required assessment; the number of students tested continues to decline.

The results indicate evidence of slight variations across forms with slightly higher percentages of students achieving the Proficient and Advanced standing on Form 3 compared to Form 1. However, given the fluctuations in the numbers of students tested, the results look relatively stable.

#### *9.3.2.2. Government*

The achievement level results for Government are presented in Table 9.10. The results show that Form 1 was used in 2014, 2016, and 2018; Form 5 was used in 2015 and 2017. The population of test-takers has remained consistent over time because Government is a required assessment. The results indicate a pattern of higher or stable student achievement across the years. There is no evidence of a form effect.

**Table 9.7. Achievement Level Results for American History – Fall 2014–2017**

Year	Form	Total N	Percent					Change in Proficient + Advanced
			Below Basic	Basic	Proficient	Advanced	Proficient + Advanced	
Fall 2017	3	415	27.7	27.2	32.3	12.8	45.1	-7.0
Fall 2016	3	580	23.6	24.3	31.2	20.9	52.1	-5.5
Fall 2015	1	465	18.7	23.7	34.2	23.4	57.6	9.1
Fall 2014	3	660	30.2	21.4	28.9	19.6	48.5	--

**Table 9.8. Achievement Level Results for Government – Fall 2010–2017**

Year	Form	Total N	Percent					Change in Proficient + Advanced
			Below Basic	Basic	Proficient	Advanced	Proficient + Advanced	
Fall 2017	5	13,250	9.0	27.7	43.4	19.8	63.2	-1.1
Fall 2016	1	13,304	10.4	25.4	39.1	25.1	64.3	6.8
Fall 2015	2	13,844	12.1	30.4	36.0	21.4	57.5	-0.8
Fall 2014	6	13,816	7.8	34.0	40.5	17.8	58.3	1.8
Fall 2013	3	15,264	13.0	30.5	37.5	19.0	56.5	5.8
Fall 2012	6	16,805	9.2	40.0	36.4	14.3	50.7	3.2
Fall 2011	2	17,228	15.6	36.8	33.5	14.0	47.5	-6.2
Fall 2010	4	17,589	9.0	37.2	42.1	11.6	53.7	--

**Table 9.9. Achievement Level Results for American History – Spring 2014–2018**

Year	Form	Total N	Percent					Change in Proficient + Advanced
			Below Basic	Basic	Proficient	Advanced	Proficient + Advanced	
Spring 2018	1	4,150	25.0	26.3	29.8	18.9	48.7	-1.3
Spring 2017	3	6,498	25.5	24.5	29.9	20.1	50.0	1.0
Spring 2016	1	9,155	24.0	27.0	32.4	16.6	49.0	-0.8
Spring 2015	3	11,309	25.0	25.2	30.1	19.7	49.8	1.6
Spring 2014	1	50,090	24.9	26.9	31.5	16.7	48.2	--

**Table 9.10. Achievement Level Results for Government – Spring 2014–2018**

Year	Form	Total N	Percent					Change in Proficient + Advanced
			Below Basic	Basic	Proficient	Advanced	Proficient + Advanced	
Spring 2018	1	44,834	9.1	24.8	39.8	26.3	66.1	1.1
Spring 2017	5	46,661	7.5	27.5	44.3	20.7	65.0	0.0
Spring 2016	1	44,480	9.1	25.9	41.2	23.8	65.0	0.1
Spring 2015	5	45,701	7.0	28.2	45.9	19.0	64.9	1.0
Spring 2014	1	44,887	9.3	26.8	41.6	22.3	63.9	--

## Chapter 10: Reliability

### 10.1. Introduction

DESE is required to ensure that the instruments used to measure student achievement for school accountability provide reliable results. As Standard 2.0 of the *Standards for Educational and Psychological Testing* states “Appropriate evidence of reliability/precision should be provided for the interpretation for each intended score use” (p. 42). This chapter provides evidence that scores from the MO EOC assessments in Government and American History measure student achievement in a reliable manner<sup>10</sup> and that the size of the measurement error associated with reported test scores is reasonable<sup>11</sup>, especially at the Proficient cut score.

### 10.2. Reliability

#### 10.2.1. Defining Reliability

According to the *Standards for Educational and Psychological Testing* and consistent with the measurement literature, reliability is defined two different ways:

First, the term has been used to refer to the reliability coefficients of classical test theory, defined as the correlation between scores on two equivalent forms of the test, presuming that taking one form has no effect on performance on the second form. Second, the term has been used in a more general sense, to refer to the consistency of scores across replications of a testing procedure, regardless of how this consistency is estimated or reported. (p. 33)

In general, reliability refers to the consistency of student test scores, or the extent to which an assessment yields the same results repeatedly. Reliability considers random error, which results from outside influences that can affect a student’s score. An assessment that produces highly consistent, stable results (i.e., mostly free from random error) is considered highly reliable. The less random error, the more reliable the test scores are. The more reliable the assessment scores are, the more consistent a student’s test scores will be if the student takes a replicated version of the test (i.e., a test that has different items but that covers the same topics using the same number of items per topic). Reliability can be estimated via the correlation of scores on forms assumed to be parallel (equivalence reliability), from test-retest data (stability reliability), or from a single test administration (internal consistency reliability).

#### 10.2.2. Reliability Coefficient

Classical test theory (CTT) provides a means for quantifying reliability. In CTT, an observed measurement, such as test score ( $X$ ) is defined as a composite of true score ( $T$ ) and an associated random error component ( $E$ ):

$$X = T + E.$$

---

<sup>10</sup> **Standard 2.3:** For each total score, subscore, or combination of scores that is to be interpreted, estimates of relevant indices of reliability/precision should be reported (AERA, APA, NCME, 2014, p. 43).

<sup>11</sup> **Standard 2.13:** The standard error of measurement, both overall and conditional (if reported), should be provided in units of each reported score (AERA, APA, NCME, 2014, p. 45).

The definitions and assumptions in CTT lead to several important properties. For example, it can be demonstrated that observed score variance equals the sum of (a) the variance in true scores—true individual differences in the attribute being measured, and (b) the variance from random fluctuations due to the imperfections in the measurement process (error variance).

$$\sigma_x^2 = \sigma_t^2 + \sigma_e^2$$

Normally, a covariance term is required when adding variances, but it is not in this case as true scores and errors are assumed to be uncorrelated in CTT. The reliability coefficient expresses the consistency of test scores as the ratio of true-score variance to total observed-score variance.

$$\rho_{x_1x_2} = \frac{\sigma_t^2}{\sigma_x^2}$$

Reliability coefficients theoretically range from 0.0 to 1.0, although the extremes are never achieved in applied testing programs. Larger coefficients are more desirable because they indicate that test scores are less influenced by random error. If all test score variance were true, the scores would be perfectly consistent and the index would equal 1.0. The index would be 0.0 if none of the test score variance were true. Such scores would only be random noise (i.e., all measurement error).

### 10.2.3. Estimating Reliability

The reliability of a specific test cannot be directly estimated from the equation above. Although several different reliability indices exist, an industry-standard index for describing internal consistency reliability based on a single test administration is coefficient alpha (Cronbach, 1951), which provides an estimate of reliability that is mathematically equivalent to the average of all possible split-half reliability estimates computed by the Rulon method. For a test consisting of  $p$  items, in which the item scores  $Y_j$  are summed to get a total score  $X$ , coefficient alpha is computed as follows:

$$\alpha = \left( \frac{p}{1-p} \right) \left( 1 - \frac{\sum_{j=1}^p \sigma_{Y_j}^2}{\sigma_X^2} \right)$$

### 10.2.4. Interpretation Considerations

Coefficient alpha indicates the internal consistency of the responses over a set of items measuring an underlying trait, in this case, academic achievement in the MO EOC content tests. As an internal consistency index, it can be conceptualized as indicating the extent to which an exchangeable set of items from the same domain would result in a similar rank ordering of students.

Relative error is reflected by coefficient alpha. Further, coefficient alpha is only sensitive to random errors due to the sampling of items. It does not take into account other random sources of error (e.g., variations associated with the linking process; daily fluctuation in student health and behavior, the testing environment; rater inconsistency).

### 10.3. Reliability Evidence

Reliability evidence for the 2017–2018 MO EOC assessments in Government and American History includes the following:

- Internal consistency
- Standard error of measurement (SEM) for raw scores
- Conditional standard error of measurement (CSEM) for Scale Scores
- Classification accuracy and consistency

#### *10.3.1. Standard Error of Measurement (SEM) for Raw Scores*

No test provides a perfect measure of a student’s ability because all tests have a known standard error of measurement (SEM). The SEM represents the amount of variability that can be expected in a student’s test score because of the inherent imprecision of the test. For example, if the student were tested again with a new test of comparable difficulty, he or she would likely obtain a slightly different score. The expected range for this new score is provided as a standard error (SE) and gives an indication of the margin of error for the reported scale score.

##### *10.3.1.1. Traditional SEMs and Traditional Confidence Intervals (CIs)*

The SEM is defined as the standard deviation of the distribution of observed scores for students with identical true scores. The standard deviation is a measure of the dispersion of the observed scores; for the normal distribution, about 32 percent of observations are more than one standard deviation above or below the mean.

The SEM formula:

$$SEM = \sigma_x \sqrt{1 - \alpha}$$

indicates that the value of the SEM depends on both the reliability coefficient and the standard deviation of test scores.

SEMs allow statements regarding the overall precision of test scores. SEMs help place “reasonable limits” (Gulliksen, 1950) around observed scores through construction of an approximate score band or confidence intervals (CIs). These bands are constructed by taking the observed scores,  $X$ , and adding and subtracting a multiplicative factor of the SEM. As an example, students with a given true score will have observed scores that fall between  $\pm 1$  SEM about two-thirds of the time.

##### *10.3.1.2. Reliabilities and SEMs by Student Subgroup*

Separate analyses were performed for each EOC content area. The tables in Appendix H provide the reliabilities and SEMs for the total population and for select student subgroups. The effect size, reliability, and SEM are reported for each subgroup, provided there were at least 50 students in the group.

Provided the minimal sample size requirements are met, an effect size is reported within each group. The effect size is a measure of how much the scores of two groups of students differ from each other. It is based on score standard deviations and calculated using Cohen’s  $d$  equation:

$$d = \frac{\bar{X}_F - \bar{X}_R}{\hat{\sigma}_X},$$

where the numerator is the difference in average scores between a focal and a reference group; the denominator is an estimate of total score standard deviation. In this case, the standard deviations across groups were pooled to generate the standard deviation estimate.

An effect size of 1.0 is equivalent to a difference of one standard deviation. An effect size of 0.8 is considered “large;” an effect size of 0.5 is considered “medium;” and an effect size of 0.2 is considered “small.” Effect sizes are also reported whenever the reference and focal groups each have a minimum of 50 students.

Following EOC program convention, the reference groups are gender = Male, ethnicity = White, LEP status = no, IEP status = no, Migrant status = no, FRL status = no, Title 1 status = no, and Accommodations status = no.

### *10.3.1.3. Interpretation Considerations*

The SEM approach only provides a single numerical estimate for constructing confidence intervals for examinees regardless of their score level. In reality, such confidence intervals vary according to a student’s score. Consequently, care should be taken using the SEM for students with extreme scores. Because test reliabilities and standard deviations are group specific, the same is true for SEMs and CIs. For the MO EOC, the SEM approach is calculated using raw scores, and as such, the resulting confidence interval bands are in the raw-score metric.

### *10.3.2. Conditional Standard Error of Measurement (CSEM) for Scale Scores*

#### *10.3.2.1. CSEMs and Conditional CIs*

According to the *Standards for Educational and Psychological Testing*, Standard 2.14 states:

When possible and appropriate, conditional standard errors of measurement should be reported at several score levels unless there is evidence that the standard error is constant across score levels. Where cut scores are specified for selection or classification, the standard errors of measurement should be reported in the vicinity of each cut score. (p. 46)

This section describes the calculation of the CSEMs. As noted below, the CSEMs for each scale score are presented in Appendix C and the CSEMs at the Proficient cut are presented in Table 10.1.

Rasch-based CSEMs are also used for the MO EOC assessments in Government and American History. CSEMs also allow statements regarding the precision of individual test scores by helping derive reasonable limits around observed scaled scores through construction of approximate score bands, referred to as conditional confidence intervals (CIs). Any given test will have CSEMs that vary as a function of the scaled scores. This makes the CSEM especially useful in characterizing measurement precision around a score level used for decision making, such as a cut score used for identifying students who meet a given performance standard.

MO EOC CSEMs come from the Winsteps program and are based on the principle of statistical information. The CSEM at any given point on the ability ( $\theta$ , theta) continuum is defined as the reciprocal of the square root of the test information function derived from the Rasch scaling model. In the formula,  $CSEM(\hat{\theta})$  is the conditional standard error of measurement, and  $I(\hat{\theta})$  is the test information function:

$$CSEM(\theta) = \frac{1}{\sqrt{I(\theta)}}.$$

Test information depends on the sum of the corresponding information functions for the test items. Item information depends on each item's unique conditional item score variance as determined from its difficulty parameters and conditional item score variance. The formula provides the CSEMs on the Rasch ability ( $\theta$ ) metric.

#### *10.3.2.2. CSEMs at the Proficient Cut*

CSEMs are useful for characterizing measurement precision in the neighborhood of score levels used for decision making, such as cut scores at various achievement levels. The CSEM values for Government and American History were 7 and 9, respectively, for each administration. CSEMs for the other scale scores are reported in Appendix C. Note that CSEMs are smaller in the middle of the score distribution than at the extremes. This pattern is expected for CSEMs based on item response theory (IRT).

#### *10.3.3. Classification Accuracy and Consistency*

The accuracy and consistency of classifying students into achievement levels are critical components of a standards-based reporting framework (Livingston & Lewis, 1995). For the MO EOC tests, students are classified into one of four achievement levels. Questar conducted classification accuracy and consistency analyses to determine the statistical accuracy and consistency of the classifications. This section explains the methodologies used to assess the reliability of classification decisions and gives the results of these analyses.

##### *10.3.3.1. Classification Accuracy and Consistency as a Measure of Reliability*

Classification accuracy refers to the accuracy of decisions (e.g., the accuracy of students' assignments to achievement levels), or the extent to which decisions would agree with those that would be made if each student could somehow be tested with all possible versions of the assessment, which implies that the scores did not contain any measurement error. Accuracy must be estimated, because errorless test scores do not exist.

Consistency measures the extent to which classifications based on test scores match the classifications based on scores from a second, parallel form of the assessment that is equal in difficulty and covers the same content as the form the students actually took. Consistency can be evaluated directly from actual responses to test items if two complete and parallel forms of the test are administered to the same group of students. In operational testing programs, however, such a design is usually impractical. Instead, techniques have been developed to estimate both the accuracy and consistency of classifications based on a single administration of a test.

The Livingston and Lewis (1995) technique addresses the single administration of a test by

making use of “true scores” in the classical test theory sense. A true score is the score that would be obtained if a test had no measurement error. True scores cannot be observed and so must be estimated. The estimated true scores are used to categorize students into their “true” classifications.

As described in the Livingston and Lewis (1995), using the BB-CLASS for PC software (Brennan, 2004), a four-by-four contingency table of accuracy was calculated for each grade, where cell  $[i, j]$  represented the estimated proportion of students whose true score fell into classification  $i$  (where  $i = 1$  to 4) and observed score fell into classification  $j$  (where  $j = 1$  to 4). The sum of the diagonal entries (i.e., the proportion of students whose true and observed classifications matched) signified overall accuracy.

To calculate consistency, true scores were used to estimate the joint distribution of classifications on two independent, parallel test forms. Following the same statistical procedures, a new four-by-four contingency table was calculated for each grade and populated by the proportion of students who would be categorized into each combination of classifications according to the two (hypothetical) parallel test forms. Cell  $[i, j]$  of this table represented the estimated proportion of students whose observed score on the first form would fall into classification  $i$  (where  $i = 1$  to 4) and whose observed score on the second form would fall into classification  $j$  (where  $j = 1$  to 4). The sum of the diagonal entries (i.e., the proportion of students categorized by the two forms into exactly the same classification) signified overall consistency.

In addition to the overall consistency, Cohen’s (1960) coefficient  $K$  (kappa), which assesses the proportion of consistent classifications after removing the proportion of consistent classifications that would be expected by chance. It is calculated using the following formula:

$$K = \frac{(\text{Observed agreement}) - (\text{Chance agreement})}{1 - (\text{Chance agreement})} = \frac{\sum_i C_{ii} - \sum_i C_i.C_i}{1 - \sum_i C_i.C_i}$$

where

$C_i$  is the proportion of students whose observed achievement level would be level  $i$  (where  $i = 1-4$ ) on the first hypothetical parallel form of the test;

$C_{.i}$  is the proportion of students whose observed achievement level would be level  $i$  (where  $i = 1-4$ ) on the second hypothetical parallel form of the test; and

$C_{ii}$  is the proportion of students whose observed achievement level would be level  $i$  (where  $i = 1-4$ ) on both hypothetical parallel forms of the test.

Because  $K$  is corrected for chance, its values are lower than other consistency estimates. Based on the four-by-four contingency tables used to estimate the overall accuracy and consistency, the classification accuracy and consistency conditional on achievement level are also evaluated.

Consistency conditional on achievement level is conceived as the ratio between the proportion of correct classifications at the selected achievement level and the proportion of all the students classified into that level.

Accuracy conditional on achievement level is conceived in a similar manner, except that in the consistency table where both row and column marginal sums are the same, the accuracy table uses the sum based on estimated status as the total for computing accuracy conditional on achievement level.

For some testing situations where the greatest concern may be decisions around achievement level thresholds, the primary concern is distinguishing between students who are proficient and those who are not yet proficient. In this case, accuracy at the Basic/Proficient threshold is critically important, which summarizes the percentage of students who are correctly classified either above or below the particular cutpoint. To evaluate decisions at specific cut scores, the same four-by-four contingency tables are used.

The accuracy index at the cut score is computed as the sum of the proportions of correct classifications around this selected cut score.

The consistency at a specific cut score is obtained in a similar way but involves computing the sum of the proportions of consistent classifications around this selected cut score.

### 10.3.3.2. *Decision Accuracy and Consistency Results*

Results of the DAC analyses described above are provided in Tables 10.1 through 10.3. The table includes overall accuracy indices with consistency indices displayed in parentheses next to the accuracy values, as well as overall kappa values. Overall ranges for accuracy (0.71–0.77), consistency (0.61–0.68), and kappa (0.45–0.54) indicate that the vast majority of students were classified accurately and consistently with respect to measurement error and chance.

Accuracy and consistency values conditional on achievement level are also given. For these calculations, the denominator is the proportion of students associated with a given achievement level. For example, the conditional accuracy value is 0.82 for Below Basic for Summer 2017 American History. This figure indicates that among the students whose true scores placed them in this classification, 82% would be expected to be in this classification when categorized according to their observed scores. Similarly, a consistency value of 0.72 indicates that 72% of students with observed scores in the Below Basic would be expected to score in this classification again if a second, parallel test form were taken.

**Table 10.1. Summary of Decision Accuracy (and Consistency) Results Summer 2017—Overall and Conditional on Achievement Level**

Content Area	Overall	Kappa	Conditional on Achievement Level			
			Below Basic	Basic	Proficient	Advanced
American History	0.71 (0.62)	0.47	0.82 (0.72)	0.56 (0.46)	0.71 (0.63)	0.81 (0.67)
Government	0.77 (0.68)	0.53	0.81 (0.69)	0.69 (0.59)	0.78 (0.71)	0.82 (0.70)

**Table 10.2. Summary of Decision Accuracy (and Consistency) Results Fall 2017—Overall and Conditional on Achievement Level**

Content Area	Overall	Kappa	Conditional on Achievement Level			
			Below Basic	Basic	Proficient	Advanced
American History	0.71 (0.61)	0.45	0.83 (0.73)	0.57 (0.46)	0.72 (0.62)	0.77 (0.57)
Government	0.76 (0.67)	0.52	0.81 (0.67)	0.69 (0.59)	0.78 (0.71)	0.81 (0.68)

**Table 10.3. Summary of Decision Accuracy (and Consistency) Results Spring 2018—Overall and Conditional on Achievement Level**

Content Area	Overall	Kappa	Conditional on Achievement Level			
			Below Basic	Basic	Proficient	Advanced
American History	0.71 (0.62)	0.48	0.83 (0.73)	0.56 (0.45)	0.71 (0.62)	0.81 (0.67)
Government	0.77 (0.68)	0.54	0.82 (0.69)	0.68 (0.57)	0.77 (0.70)	0.84 (0.74)

Tables 10.4 through 10.6 provide accuracy and consistency estimates for the Summer 2017, Fall 2017 and Spring 2018 MO EOC Government and American History tests at each cutpoint, as well as false positive and false negative decision rates. (A false positive is the proportion of students whose observed scores were above the cut and whose true scores were below the cut. A false negative is the proportion of students whose observed scores were below the cut and whose true scores were above the cut.) The accuracy and consistency indices at the Basic/Proficient threshold range from 0.87–0.90 and 0.82–0.87 respectively. The false positive and false negative decision rates at the Basic/Proficient threshold range from 4–7% and 5–6%, respectively. These results indicate that nearly all students were correctly classified with respect to being above or below the Basic/Proficient cutpoints.

**Table 10.4. Summary of Decision Accuracy (and Consistency) Results Summer 2017—Conditional on Cut Score Point**

	Test	American History	Government
Below Basic/Basic	Accuracy (Consistency)	0.91 (0.88)	0.95 (0.93)
	False Positive	0.04	0.02
	False Negative	0.05	0.03
Basic/Proficient	Accuracy (Consistency)	0.88 (0.83)	0.90 (0.85)
	False Positive	0.06	0.05
	False Negative	0.06	0.05
Proficient/Advanced	Accuracy (Consistency)	0.92 (0.88)	0.92 (0.89)
	False Positive	0.05	0.05
	False Negative	0.03	0.03

**Table 10.5. Summary of Decision Accuracy (and Consistency) Results Fall 2017—Conditional on Cut Score Point**

	Test	American History	Government
<b>Below Basic/Basic</b>	<b>Accuracy (Consistency)</b>	0.89 (0.85)	0.95 (0.93)
	<b>False Positive</b>	0.05	0.02
	<b>False Negative</b>	0.06	0.03
<b>Basic/ Proficient</b>	<b>Accuracy (Consistency)</b>	0.87 (0.82)	0.89 (0.85)
	<b>False Positive</b>	0.07	0.05
	<b>False Negative</b>	0.06	0.06
<b>Proficient/ Advanced</b>	<b>Accuracy (Consistency)</b>	0.94 (0.92)	0.92 (0.89)
	<b>False Positive</b>	0.04	0.05
	<b>False Negative</b>	0.02	0.03

**Table 10.6. Summary of Decision Accuracy (and Consistency) Results Spring 2018—Conditional on Cut Score Point**

	Test	American History	Government
<b>Below Basic/Basic</b>	<b>Accuracy (Consistency)</b>	0.91 (0.87)	0.95 (0.93)
	<b>False Positive</b>	0.04	0.02
	<b>False Negative</b>	0.05	0.03
<b>Basic/ Proficient</b>	<b>Accuracy (Consistency)</b>	0.88 (0.83)	0.90 (0.87)
	<b>False Positive</b>	0.06	0.04
	<b>False Negative</b>	0.06	0.05
<b>Proficient/ Advanced</b>	<b>Accuracy (Consistency)</b>	0.92 (0.89)	0.91 (0.88)
	<b>False Positive</b>	0.05	0.05
	<b>False Negative</b>	0.03	0.04

## Chapter 11: Validity

### 11.1. Introduction

Validity is the most fundamental consideration in educational and psychological testing. It refers to “the degree to which evidence and theory support the interpretations of test scores for proposed uses of tests” (AERA, APA, & NCME, 2014, p. 11). According to the *Standards for Educational and Psychological Testing*,

Ultimately, the validity of an intended interpretation of test scores relies on all the available evidence relevant to the technical quality of a testing system...[this includes] evidence of careful test construction; adequate score reliability; appropriate test administration and scoring; accurate score scaling, equating, and standard setting; and careful attention to fairness for all test takers, as appropriate to the test interpretation in question. (p. 22)

This chapter summarizes the validity evidence as it relates to the purpose and intended use of the MO EOC test results (available in Section 1.3). It begins with validity evidence related to test content in terms of the adequacy and appropriateness of the MO EOC assessments for measuring progress on the Missouri Learning Standards. Validity evidence based on the internal structure of the MO EOC assessments in Government and American History is then provided through a correlational analysis of content clusters. References to specific standards are provided where appropriate.

While this chapter summarizes evidence that supports claims about the validity and uses of the MO EOC Government and American History scores, this entire technical report provides evidence related to the validity argument. Some of this evidence is cross-referenced. The available procedural and empirical evidence, along with the rationale presented in this chapter, provide support for the standards-based interpretations of the MO EOC assessments in Government and American History.

Since the 2017–2018 Government and American History test forms were intact forms that had been previously administered, relevant information documented in previous technical reports is included in this chapter to provide historical information and assist with the construction of the validity argument for the MO EOC assessment scores.

### 11.2. Validity Evidence

#### 11.2.1. Content Validity

Baker and Linn (2002) suggest that “Two questions are central in the evaluation of content aspects of validity. Is the definition of the content domain to be assessed adequate and appropriate? Does the test provide an adequate representation of the content domain the test is intended to measure?” (p. 6). The following sections help answer these two questions and address Standard 4.12<sup>12</sup>, which specifically relates to the definition and development of test content.

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<sup>12</sup> **Standard 4.12:** Test developers should document the extent to which the content domain of a test represents the domain defined in the test specifications (AERA, APA, NCME, 2014, p. 89).

### *11.2.1.1. Appropriateness of Content Definition*

In 1993, the Missouri legislature passed the Outstanding Schools Act (Senate Bill 380) that required the State Board of Education to adopt challenging academic performance standards. These standards define the skills and competencies necessary for students to successfully advance through the public school system, prepare for post-secondary education and the workplace, and participate as citizens in a democratic society. The Missouri State Board of Education formally adopted the academic standards, known as the Show-Me Standards, in January 1996.

In addition to mandating the development of rigorous academic standards, the Outstanding Schools Act of 1993 required the development and implementation of a comprehensive, primarily performance-based assessment program to measure student proficiency in the knowledge, skills, and competencies identified in the standards. Upon adoption of the Show-Me standards in 1996, Missouri began developing the MAP.

In January 2007, the Missouri State Board of Education approved a plan to replace the MAP with end-of-course assessments for high school students. This transition occurred at the beginning of August 2008. The MO EOC assessments tested English II, Algebra I, and Biology. The remaining MO EOC assessments (English I, Algebra II, Geometry, Government, and American History) were added the following year. The intent was to provide MO EOC assessments that are an integral part of the statewide assessment system and, as such, are a logical extension of MAP Grade-Level Assessments.

The Missouri State Board of Education approved new Missouri Learning Standards on April 19, 2016. These standards were implemented in 2016–2017. The MAP began assessing these standards in 2017–2018 for English and Mathematics. The new Science standards will be assessed beginning in 2018–2019; the new Social Studies standards will be assessed beginning in 2019–2020.

### *11.2.1.2. Adequacy of Content Representation*

The adequacy of the content representation of the MO EOC assessments is important because the tests must provide an indication of student progress toward achieving the knowledge and skills identified in the Missouri Learning Standards. The assessments must also fulfill the requirements of the Every Student Succeeds Act (ESSA).

The MO EOC assessments measure students' progress toward the Missouri Learning Standards, which are Missouri's content standards. Adequate representation of the content domains defined in the content standards is assured through the use of a test blueprint and a documented test construction process. The content standards were taken into consideration in the writing of SR items. Evidence to support the content validity of the MO EOC assessments in Government and American History was provided in Chapter 2 through the documentation of the test specifications and blueprints, item-writing processes, and item-review processes. Specific efforts to ensure content validity are summarized below.

- Items were developed to include a wide array of contexts and cultures.

- Detailed test and item/passage development specifications were established; tests included sufficient numbers of items; and items were adequately distributed across content, levels of cognitive complexity, and difficulty.
- Qualified item writers were provided training.
- Each newly developed item was first reviewed by content specialists and editors to ensure all items were aligned with the content standards. Appropriateness for the intended grade, depth of knowledge, graphics, grammar/punctuation, language demand, and distractor reasonableness were also considered.
- Missouri teachers from diverse ethnic and geographical backgrounds reviewed the items to ensure all items were accessible to as many students as possible.
- Missouri teachers were trained to create clear and simple instructions.
- Content and bias review committees reviewed the items following specific criteria.

Additional evidence to support the content validity of the MO EOC assessments in Government and American History was provided in Chapter 2, which outlines the target strand and content standard point distributions on the operational forms.

### *11.2.2. Internal Structure*

The item analyses shown in Appendix B reveals that the MO EOC assessments in Government and American History have sound psychometric properties. The *p*-value ranges were sufficiently broad, indicating that the items measure achievement across a broad range of difficulty. Item-test correlations, indicators of item discrimination, are also provided. Most of the items had acceptable discrimination values (i.e., discrimination values > 0.15). Some extremely difficult items had low discrimination values that were likely attenuated by their difficulty.

For students in particular groups, empirical investigation of DIF strengthens the validity evidence related to score interpretations by evaluating potential sources of construct-irrelevant variance. DIF results might be better considered as internal—structure validity evidence. Statistical analyses results are provided in Chapter 4. The results indicated that either no or very few SR items were flagged for DIF across subjects and administrations.

Standard 1.13<sup>13</sup> pertains to the relationships between the parts of the test. Because the MO EOC assessments measure student performance in several content areas, it is important to study the pattern of relationships among the content domains and clusters.

Table 11.1 summarizes the correlation coefficients among test domains and clusters for Government. Correlation coefficients for American History were not calculated because there is only one content cluster. Because the correlation coefficients will be affected by the limited number of items measuring each domain, the correlation coefficient between two content standard clusters may be artificially low because of measurement error. Therefore, the correlations are corrected for attenuation. The formula for the correlation coefficient statistically corrected for attenuation ( $r_{ca}$ ) is Spearman’s formula

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<sup>13</sup> **Standard 1.13:** If the rationale for a test score interpretation for a given use depends on premises about the relationships among test items or among parts of the test, evidence concerning the internal structure of the test should be provided (AERA, APA, NCME, 2014, p. 26–27).

$$r_{ca} = \frac{r_{xy}}{\sqrt{r_{xx}r_{yy}}}$$

where  $r_{xy}$  is the correlation between content clusters,  $r_{xx}$  is the reliability of one content cluster, and  $r_{yy}$  is the reliability of the other content cluster.

**Table 11.1. Correlation Coefficients between Domains and Clusters—Government**

		#Points	Principles and Processes of Governance Systems	Principles in Constitutional Democracy
Summer 2017	Principles and Processes of Governance Systems	20	0.81	1.00
	Principles in Constitutional Democracy	20	0.79	0.76
Fall 2017	Principles and Processes of Governance Systems	20	0.80	0.99
	Principles in Constitutional Democracy	20	0.77	0.74
Spring 2018	Principles and Processes of Governance Systems	20	0.78	1.00
	Principles in Constitutional Democracy	20	0.80	0.81

*Note.* Student counts are 817, 12,960, and 42,755 for the 3 admins, respectively.

Government is comprised of two content clusters that measure a single construct or dimension. These results suggest that the cluster scores are appropriately related to each other. Therefore, the results provide evidence that a unidimensional construct is measured on the MO EOC assessment in Government supporting the validity of the test construct.

### 11.2.3. Convergent and Divergent Validity

Convergent validity examines the extent to which theoretically related constructs are empirically related, whereas divergent validity examines the extent to which theoretically unrelated constructs are empirically unrelated. The *Standards* state the following regarding convergent and divergent validity: “Relationships between test scores and other measures intended to assess the same or similar constructs provide convergent evidence, whereas relationships between test scores and measures purportedly of different constructs provide discriminant evidence” (AERA, APA, & NCME, 2014, p. 16–17). As shown by both the standards they assess and the content coverage detailed in the test blueprints, the Government and American History assessments were designed to measure different constructs.

#### 11.2.3.1. Pearson Correlations Among Assessments

Table 11.2 shows evidence of convergent and divergent validity. The data sets used for the analysis were drawn from the Spring 2018 operational test administration. The students in the data sets were merged using Missouri’s unique student identification number. Any student who took Government or American History and at least one other operational test was included in the correlations. Table 11.2 shows the Pearson correlation coefficients between scale scores for Spring 2018.

Evidence of convergent validity is supported by the higher correlations between content areas that measure similar concepts. For example, the correlations between Government and the two English assessments are greater than 0.70. The challenging language and reading on both tests could account for the higher correlations.

Evidence of divergent validity is supported by the lower correlations between content areas that measure dissimilar constructs. For example, the correlations between American History and Algebra I (0.47) and between Government and Geometry (0.50) are in a range typical of achievement constructs that are positively related primarily by virtue of their relation to general school achievement.

**Table 11.2. Pearson Correlation among Assessments**

Assessment	Algebra I	Algebra II	American History	English I	English II	Geometry	Government
American History	0.47	0.48	1.00	0.58	0.66	0.51	0.87
Government	0.65	0.55	0.87	0.71	0.77	0.50	1.00

#### 11.2.4. Additional Validity Evidence

Validity evidence related to other standards is described below.

- Standard 1.8<sup>14</sup> relates to the characteristics of the sample of test takers from which validity evidence is inferred. The sample of examinees from which the validity evidence for the MO EOC assessments in Government and American History was referred to in Chapter 9 of this report. Appendix D provides the raw score mean and standard deviation by demographic group; this appendix also summarizes the descriptive statistics of scale scores. Appendix E summarizes the percentage distributions of students' achievement levels by demographic group.
- Standard 1.9<sup>15</sup> relates to human judgment at various points in the test development and reporting process. For the MO EOC assessments, human judgment was especially prevalent during the standard setting and cutpoint validation processes. When cut scores are critical to the interpretation of test results, the procedural validity of the processes used to establish those scores also should be addressed. Detailed information on the standard setting meeting are provided in the *2009–2010 MO EOC Phase I Technical Report* and the *2009–2010 MO EOC Phase II Technical Report* located on the DESE

<sup>14</sup> **Standard 1.8:** The composition of any sample of test takers from which validity evidence is obtained should be described in as much detail as is practical and permissible, including major relevant sociodemographic and developmental characteristics (AERA, APA, NCME, 2014, p. 25).

<sup>15</sup> **Standard 1.9:** When a validation rests in part on the opinions or decisions of expert judges, observers, or raters, procedures for selecting such experts and for eliciting judgments or ratings should be fully described. The qualifications and experience of the judges should be presented. The description of procedures should include any training and instructions provided, should indicate whether participants reached their decisions independently, and should report the level of agreement reached. If participants interacted with one another or exchanged information, the procedures through which they may have influenced one another should be set forth (AERA, APA, NCME, 2014, p. 25).

website at <http://dese.mo.gov/college-career-readiness/assessment/assessment-technical-support-materials>.

- Standard 1.10<sup>16</sup> relates to the conditions under which the data used to support validity claims were collected. Chapter 5 contains information about how data were gathered in both the online and accommodated administrations; this chapter includes information about the testing environment, materials distribution and security, Test Examiner training, student preparation, and allowable accommodations.

### 11.3. Summary

The validation process involves the ongoing collection of a variety of evidence to support the proposed test-score interpretations and uses. It is not an all-or-nothing property of a test; rather, evidence must be documented for a specific purpose and in the context of how the test scores will be interpreted and used. Much of the information contained in this technical report is validity evidence for the MO EOC assessments in Government and American History stated purposes. This chapter provided a summary of the evidence presented elsewhere in the technical report and provided some additional types of validity evidence relevant to the content and internal structure of the assessments.

Post-administration test analyses supported the technical quality of the MO EOC assessments in Government and American History. Validity of score inferences is bolstered when test scores are consistent. Here, the reliabilities of the total test scores are very good, ranging from 0.84 to 0.89 across the content areas and administrations for the 2017–2018 test forms. The CSEMs for the MO EOC assessments in Government and American History were seven and nine scale score points at the Proficient cut scores, respectively. Additionally, DIF analyses conducted on gender and ethnicity help address construct-irrelevant variance, which presents a serious threat to the validity of inferences made from achievement test scores. In total, the information provided throughout the technical report supports the validity of the scores on the MO EOC assessments in Government and American History.

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<sup>16</sup> **Standard 1.10:** When validity evidence includes statistical analyses of test results, either alone or together with data on other variables, the conditions under which the data were collected should be described in enough detail that users can judge the relevance of the statistical findings to local conditions. Attention should be drawn to any features of validation data collection that are likely to differ from typical operational testing conditions and that could plausibly influence test performance (AERA, APA, NCME, 2014, p. 26).

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## Appendix A: Actual Point Distributions

### American History

**Table A.1. Actual Point Distributions—American History, Summer 2017**

Reporting Category	Target	Actual
	#Points	
Missouri, United States, and World History	40	40
<b>Total</b>	<b>40</b>	<b>40</b>

**Table A.2. Actual Point Distributions—American History, Fall 2017**

Reporting Category	Target	Actual
	#Points	
Missouri, United States, and World History	40	40
<b>Total</b>	<b>40</b>	<b>40</b>

**Table A.3. Actual Point Distributions—American History, Spring 2018**

Reporting Category	Target	Actual
	#Points	
Missouri, United States, and World History	40	40
<b>Total</b>	<b>40</b>	<b>40</b>

## Government

**Table A.4. Actual Point Distributions—Government, Summer 2017**

Reporting Category	Target	Actual
	#Points	
Principles of Constitutional Democracy	18–22	20
Principles and Processes of Governance Systems	18–22	20
<b>Total</b>	<b>40</b>	<b>40</b>

**Table A.5. Actual Point Distributions—Government, Fall 2017**

Reporting Category	Target	Actual
	#Points	
Principles of Constitutional Democracy	18–22	20
Principles and Processes of Governance Systems	18–22	20
<b>Total</b>	<b>40</b>	<b>40</b>

**Table A.6. Actual Point Distributions—Government, Spring 2018**

Reporting Category	Target	Actual
	#Points	
Principles of Constitutional Democracy	18–22	20
Principles and Processes of Governance Systems	18–22	20
<b>Total</b>	<b>40</b>	<b>40</b>

## Appendix B: Item Statistics

Table B.1. Item Statistics—Government, Summer 2017

*n*-Count: 822

UIN	<i>P</i> -Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
100080904	0.89	0.36	0
100081113	0.86	0.45	0
100081294	0.66	0.42	0
100081363	0.78	0.33	0
100081682	0.64	0.29	0
100081683	0.80	0.36	0
100081824	0.75	0.49	0
100081963	0.54	0.38	0
100081987	0.48	0.33	0
100082221	0.61	0.23	0
100102320	0.81	0.49	0
100102323	0.42	0.30	0
100102857	0.64	0.25	0
100103217	0.62	0.41	0
100103218	0.69	0.50	0
100103264	0.35	0.36	0
100103269	0.79	0.49	0
100103304	0.80	0.42	0
100103319	0.65	0.16	0
100103353	0.55	0.20	0
100103354	0.30	0.24	0
100103357	0.38	0.31	0
100103393	0.76	0.48	0
100103398	0.39	0.24	0
100103406	0.60	0.56	0
100103408	0.86	0.30	0
100103424	0.79	0.46	0
100103433	0.57	0.21	0
100103464	0.69	0.40	0
100103467	0.82	0.36	0
100103512	0.44	0.40	0
100103529	0.29	0.21	0
100103536	0.44	0.27	0
100103546	0.82	0.39	0
100103557	0.86	0.31	0
100103558	0.59	0.56	0
100103596	0.64	0.50	0
100103605	0.65	0.48	0
100103616	0.64	0.48	0
100103753	0.75	0.58	0

**Table B.2. Item Statistics—American History, Summer 2017***n*-Count: 54

UIN	<i>P</i> -Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
100080500	0.46	0.41	0
100080516	0.67	0.34	0
100080533	0.65	0.46	0
100080561	0.81	0.36	0
100080634	0.41	0.19	0
100080662	0.54	-0.07	0
100080681	0.67	0.35	0
100080723	0.44	0.26	0
100080743	0.61	0.39	0
100080794	0.87	0.30	0
100080806	0.78	0.31	0
100080824	0.74	0.09	0
100080889	0.91	0.25	0
100080966	0.57	0.56	0
100081008	0.54	0.66	0
100081029	0.52	0.51	0
100081055	0.76	0.50	0
100081092	0.65	0.44	0
100081100	0.57	0.45	0
100081118	0.61	0.52	0
100081125	0.20	0.41	0
100081206	0.50	0.28	0
100081228	0.78	0.45	0
100081233	0.35	0.41	0
100081241	0.68	0.42	0
100081273	0.43	0.23	0
100081437	0.54	0.48	0
100081505	0.67	0.31	0
100081517	0.65	0.31	0
100081519	0.41	0.49	0
100081554	0.59	0.46	0
100081577	0.57	0.51	0
100081642	0.85	0.13	0
100081851	0.72	0.04	0
100081854	0.54	0.25	0
100081862	0.81	0.39	0
100081877	0.31	-0.15	0
100081883	0.78	0.07	0
100081894	0.44	0.53	0
100081925	0.37	-0.09	0

**Table B.3. Item Statistics—Government, Fall 2017***n*-Count: 13,250

UIN	<i>P</i> -Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MO0006296	0.90	0.31	0
MO0006369	0.86	0.44	0
MO0006408	0.70	0.38	0
MO0006418	0.77	0.36	0
MO0006508	0.69	0.31	0
MO0006514	0.78	0.34	0
MO0006580	0.75	0.49	0
MO0006633	0.47	0.35	0
MO0006644	0.46	0.33	0
MO0006786	0.61	0.17	0
MO0006819	0.81	0.45	0
MO0006828	0.39	0.23	0
MO0006845	0.62	0.25	0
MO0006847	0.62	0.40	0
MO0006849	0.74	0.44	0
MO0006866	0.40	0.38	0
MO0006868	0.79	0.46	0
MO0006876	0.79	0.39	0
MO0006882	0.68	0.19	0
MO0006890	0.54	0.23	0
MO0006892	0.30	0.25	0
MO0006897	0.40	0.34	0
MO0006899	0.77	0.44	0
MO0006906	0.36	0.22	0
MO0006911	0.60	0.51	0
MO0006914	0.86	0.30	0
MO0006929	0.79	0.45	0
MO0006951	0.52	0.19	0
MO0006962	0.68	0.36	0
MO0006967	0.80	0.31	0
MO0006972	0.45	0.41	0
MO0006980	0.27	0.18	0
MO0006982	0.46	0.32	0
MO0006984	0.84	0.41	0
MO0006988	0.86	0.31	0
MO0006990	0.62	0.54	0
MO0006999	0.66	0.52	0
MO0007000	0.65	0.46	0
MO0007002	0.62	0.49	0
MO0007005	0.73	0.53	0

**Table B.4. Item Statistics—American History, Fall 2017***n*-Count: 415

UIN	<i>P</i> -Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MO0006161	0.37	0.33	0
MO0006162	0.42	0.45	0
MO0006179	0.58	0.42	0
MO0006194	0.74	0.29	0
MO0006239	0.48	0.15	0
MO0006255	0.60	0.17	0
MO0006272	0.60	0.30	0
MO0006299	0.42	0.25	0
MO0006305	0.51	0.19	0
MO0006326	0.77	0.42	0
MO0006333	0.73	0.44	0
MO0006353	0.47	0.36	0
MO0006395	0.84	0.31	0
MO0006406	0.50	0.43	0
MO0006419	0.42	0.43	0
MO0006422	0.46	0.38	0
MO0006436	0.69	0.39	0
MO0006468	0.68	0.36	0
MO0006472	0.68	0.39	0
MO0006480	0.52	0.35	0
MO0006493	0.19	0.24	0
MO0006509	0.49	0.22	0
MO0006521	0.66	0.31	0
MO0006526	0.38	0.41	0
MO0006530	0.38	0.23	0
MO0006536	0.52	0.21	0
MO0006584	0.44	0.18	0
MO0006600	0.74	0.29	0
MO0006604	0.53	0.28	0
MO0006606	0.43	0.43	0
MO0006619	0.63	0.29	0
MO0006628	0.61	0.35	0
MO0006770	0.66	0.32	0
MO0006804	0.69	0.36	0
MO0006810	0.62	0.24	0
MO0006816	0.54	0.25	0
MO0006818	0.27	0.12	0
MO0006820	0.77	0.39	0
MO0006826	0.56	0.36	0
MO0006848	0.46	0.23	0

**Table B.5. Item Statistics—Government, Spring 2018***n*-Count: 46,228

UIN	<i>P</i> -Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MO0006287	0.75	0.50	0
MO0006293	0.62	0.31	0
MO0006301	0.88	0.37	0
MO0006307	0.42	0.27	0
MO0006332	0.71	0.47	0
MO0006338	0.55	0.35	0
MO0006352	0.53	0.39	0
MO0006355	0.79	0.52	0
MO0006364	0.64	0.10	0
MO0006377	0.77	0.46	0
MO0006394	0.80	0.47	0
MO0006403	0.70	0.44	0
MO0006410	0.66	0.41	0
MO0006424	0.88	0.46	0
MO0006425	0.78	0.49	0
MO0006447	0.79	0.27	0
MO0006465	0.71	0.49	0
MO0006467	0.52	0.39	0
MO0006469	0.71	0.39	0
MO0006478	0.59	0.47	0
MO0006483	0.76	0.51	0
MO0006486	0.72	0.34	0
MO0006488	0.78	0.28	0
MO0006527	0.71	0.47	0
MO0006565	0.61	0.52	0
MO0006572	0.83	0.47	0
MO0006585	0.65	0.46	0
MO0006589	0.82	0.34	0
MO0006618	0.59	0.35	0
MO0006623	0.67	0.47	0
MO0006638	0.68	0.43	0
MO0006739	0.65	0.42	0
MO0006752	0.71	0.25	0
MO0006758	0.56	0.36	0
MO0006764	0.47	0.26	0
MO0006767	0.57	0.19	0
MO0006783	0.81	0.34	0
MO0006792	0.74	0.41	0
MO0006803	0.47	0.29	0
MO0006811	0.71	0.46	0

**Table B.6. Item Statistics—American History, Spring 2018***n*-Count: 4,302

UIN	<i>P</i> -Value/Mean	Corrected Point-Biserial Correlation	Omit Rate (%)
MO0006172	0.42	0.21	0
MO0006182	0.44	0.47	0
MO0006191	0.66	0.39	0
MO0006236	0.78	0.39	0
MO0006249	0.51	0.42	0
MO0006251	0.34	0.31	0
MO0006283	0.42	0.35	0
MO0006306	0.33	0.27	0
MO0006321	0.45	0.23	0
MO0006330	0.45	0.31	0
MO0006347	0.72	0.47	0
MO0006351	0.72	0.36	0
MO0006368	0.86	0.24	0
MO0006387	0.51	0.35	0
MO0006434	0.62	0.43	0
MO0006449	0.63	0.45	0
MO0006457	0.59	0.36	0
MO0006476	0.78	0.39	0
MO0006495	0.66	0.44	0
MO0006497	0.70	0.34	0
MO0006498	0.38	0.35	0
MO0006515	0.73	0.36	0
MO0006523	0.68	0.37	0
MO0006543	0.34	0.27	0
MO0006553	0.48	0.29	0
MO0006558	0.52	0.30	0
MO0006573	0.56	0.24	0
MO0006587	0.47	0.30	0
MO0006592	0.60	0.26	0
MO0006593	0.83	0.33	0
MO0006602	0.70	0.43	0
MO0006614	0.42	0.15	0
MO0006738	0.65	0.31	0
MO0006740	0.80	0.39	0
MO0006753	0.66	0.48	0
MO0006772	0.65	0.36	0
MO0006799	0.78	0.44	0
MO0006802	0.58	0.25	0
MO0006807	0.50	0.23	0
MO0006844	0.31	0.23	0

**Appendix C: Raw-to-Scale Score (RSS) Conversions**

**Table C.1. RSS Conversions—Government, Summer 2017**

Raw Score	Scale Score	CSEM
0	100	35
1	113	20
2	127	14
3	136	12
4	142	10
5	147	9
6	151	9
7	155	8
8	159	8
9	162	8
10	165	7
11	168	7
12	170	7
13	173	7
14	175	7
15	179	7
16	180	7
17	182	7
18	185	7
19	187	7
20	189	7
21	191	7
22	194	7
23	196	7
24	200	7
25	201	7
26	203	7
27	206	7
28	208	7
29	211	7
30	214	7
31	217	8
32	220	8
33	225	8
34	228	9
35	232	10
36	237	10
37	244	12
38	250	14
39	250	20
40	250	35

**Table C.2. RSS Conversions—American History, Summer 2017**

Raw Score	Scale Score	CSEM
0	100	49
1	100	27
2	105	19
3	117	16
4	125	14
5	132	13
6	138	12
7	143	11
8	148	11
9	152	10
10	156	10
11	160	10
12	163	10
13	166	9
14	170	9
15	173	9
16	176	9
17	179	9
18	182	9
19	185	9
20	187	9
21	190	9
22	193	9
23	196	9
24	200	9
25	202	9
26	205	9
27	209	9
28	212	10
29	216	10
30	219	10
31	225	10
32	227	11
33	232	11
34	237	12
35	243	13
36	250	14
37	250	16
38	250	20
39	250	27
40	250	49

**Table C.3. RSS Conversions—Government, Fall 2017**

Raw Score	Scale Score	CSEM
0	100	35
1	113	20
2	127	14
3	136	12
4	142	10
5	147	9
6	151	9
7	155	8
8	159	8
9	162	8
10	165	7
11	168	7
12	170	7
13	173	7
14	175	7
15	179	7
16	180	7
17	182	7
18	185	7
19	187	7
20	189	7
21	191	7
22	194	7
23	196	7
24	200	7
25	201	7
26	203	7
27	206	7
28	208	7
29	211	7
30	214	7
31	217	8
32	220	8
33	225	8
34	228	9
35	232	10
36	237	10
37	244	12
38	250	14
39	250	20
40	250	35

**Table C.4. RSS Conversions—American History, Fall 2017**

Raw Score	Scale Score	CSEM
0	100	49
1	100	27
2	105	19
3	117	16
4	125	14
5	132	13
6	138	12
7	143	11
8	148	11
9	152	10
10	156	10
11	160	10
12	163	10
13	166	9
14	170	9
15	173	9
16	176	9
17	179	9
18	182	9
19	185	9
20	187	9
21	190	9
22	193	9
23	196	9
24	200	9
25	202	9
26	205	9
27	209	9
28	212	10
29	216	10
30	219	10
31	225	10
32	227	11
33	232	11
34	237	12
35	243	13
36	250	14
37	250	16
38	250	20
39	250	27
40	250	49

**Table C.5. RSS Conversions—Government, Spring 2018**

Raw Score	Scale Score	CSEM
0	100	35
1	114	19
2	128	14
3	137	12
4	143	10
5	148	9
6	152	9
7	156	8
8	159	8
9	162	7
10	165	7
11	168	7
12	170	7
13	173	7
14	175	7
15	177	6
16	179	6
17	181	6
18	184	6
19	186	6
20	188	6
21	190	6
22	192	6
23	194	6
24	196	6
25	200	7
26	201	7
27	203	7
28	205	7
29	208	7
30	210	7
31	213	7
32	216	8
33	220	8
34	225	9
35	228	9
36	233	10
37	239	12
38	247	14
39	250	19
40	250	35

**Table C.6. RSS Conversions—American History, Spring 2018**

Raw Score	Scale Score	CSEM
0	100	49
1	100	27
2	102	20
3	114	16
4	123	14
5	130	13
6	136	12
7	142	12
8	146	11
9	151	11
10	155	10
11	159	10
12	162	10
13	166	10
14	169	9
15	173	9
16	176	9
17	179	9
18	182	9
19	185	9
20	188	9
21	191	9
22	194	9
23	197	9
24	200	9
25	203	9
26	206	9
27	210	9
28	213	10
29	217	10
30	221	10
31	225	11
32	229	11
33	234	11
34	239	12
35	245	13
36	250	14
37	250	16
38	250	20
39	250	27
40	250	49

**Appendix D: Descriptive Statistics by Demographic Group**

**Table D.1. Scale Score Descriptive Statistics by Demographic Group—Gender, Summer 2017**

Test Period	Content Area	Gender	n-Count	Min.	Max.	Mean	SD
Summer 2017	Government	Female	440	147	250	204.28	20.13
		Male	382	159	250	205.14	21.90
	Am. History	Female	29	156	250	198.41	24.65
		Male	25	138	250	203.84	24.51

**Table D.2. Scale Score Descriptive Statistics by Demographic Group—Gender, Fall 2017**

Test Period	Content Area	Gender	n-Count	Min.	Max.	Mean	SD
Fall 2017	Government	Female	6,552	113	250	204.31	19.40
		Male	6,645	100	250	204.94	21.02
	Am. History	Female	210	125	250	190.91	23.68
		Male	206	125	250	197.92	22.83

**Table D.3. Scale Score Descriptive Statistics by Demographic Group—Gender, Spring 2018**

Test Period	Content Area	Gender	n-Count	Min.	Max.	Mean	SD
Spring 2018	Government	Female	22,988	100	250	206.14	21.03
		Male	23,211	100	250	208.67	22.69
	Am. History	Female	2,073	130	250	195.75	24.18
		Male	2,225	114	250	202.30	25.67

**Table D.4. Scale Score Descriptive Statistics by Demographic Group—Ethnicity, Summer 2017**

Test Period	Content Area	Ethnicity	n-Count	Min.	Max.	Mean	SD
Summer 2017	Government	American Indian/ Alaskan Native	8	--	--	--	--
		Asian	33	162	250	216.09	20.70
		Black (not Hispanic)	122	147	237	190.34	20.07
		Hispanic	78	162	250	202.03	18.10
		Multi-racial	29	168	250	204.10	18.97
		Pacific Islander	2	--	--	--	--
		White (not Hispanic)	527	159	250	208.42	19.85
	Am. History	American Indian/ Alaskan Native	--	--	--	--	--
		Asian	1	--	--	--	--
		Black (not Hispanic)	3	--	--	--	--
		Hispanic	4	--	--	--	--
		Multi-racial	4	--	--	--	--
		Pacific Islander	--	--	--	--	--
		White (not Hispanic)	42	138	250	203.60	25.84

Appendix D: Descriptive Statistics by Demographic Group

**Table D.5. Scale Score Descriptive Statistics by Demographic Group—Ethnicity, Fall 2017**

Test Period	Content Area	Ethnicity	<i>n</i> -Count	Min.	Max.	Mean	SD
Fall 2017	Government	American Indian/ Alaskan Native	54	162	250	202.76	19.56
		Asian	406	147	250	215.56	21.44
		Black (not Hispanic)	2,498	100	250	194.51	18.66
		Hispanic	762	155	250	200.95	19.38
		Multi-racial	412	159	250	203.91	20.23
		Pacific Islander	31	159	228	195.26	18.33
		White (not Hispanic)	9,031	142	250	207.33	19.62
	Am. History	American Indian/ Alaskan Native	3	--	--	--	--
		Asian	1	--	--	--	--
		Black (not Hispanic)	57	125	250	186.88	23.00
		Hispanic	25	152	216	189.84	19.09
		Multi-racial	15	148	232	183.60	26.13
		Pacific Islander	--	--	--	--	--
		White (not Hispanic)	315	125	250	196.45	23.33

**Table D.6. Scale Score Descriptive Statistics by Demographic Group—Ethnicity, Spring 2018**

Test Period	Content Area	Ethnicity	<i>n</i> -Count	Min.	Max.	Mean	SD
Spring 2018	Government	American Indian/ Alaskan Native	199	159	250	204.58	20.74
		Asian	878	152	250	214.65	22.61
		Black (not Hispanic)	6,186	100	250	195.89	20.58
		Hispanic	2,639	100	250	201.92	20.96
		Multi-racial	1,300	137	250	206.85	21.46
		Pacific Islander	95	156	250	202.35	19.75
		White (not Hispanic)	34,862	100	250	209.73	21.48
	Am. History	American Indian/ Alaskan Native	35	151	239	201.31	21.71
		Asian	34	166	250	213.56	22.73
		Black (not Hispanic)	222	123	250	192.16	26.42
		Hispanic	159	130	250	193.16	25.42
		Multi-racial	103	146	250	198.22	25.20
		Pacific Islander	4	--	--	--	--
		White (not Hispanic)	3,708	114	250	199.50	24.93

**Table D.7. Scale Score Descriptive Statistics by Demographic Group—Migrant Status, Summer 2017**

Test Period	Content Area	Migrant	<i>n</i> -Count	Min.	Max.	Mean	SD
Summer 2017	Government	No	822	147	250	204.68	20.96
		Yes	--	--	--	--	--
	Am. History	No	54	138	250	200.93	24.50
		Yes	--	--	--	--	--

**Table D.8. Scale Score Descriptive Statistics by Demographic Group—Migrant Status, Fall 2017**

Test Period	Content Area	Migrant	<i>n</i> -Count	Min.	Max.	Mean	SD
Fall 2017	Government	No	13,196	100	250	204.63	20.23
		Yes	1	--	--	--	--
	Am. History	No	416	125	250	194.38	23.50
		Yes	--	--	--	--	--

**Table D.9. Scale Score Descriptive Statistics by Demographic Group—Migrant Status, Spring 2018**

Test Period	Content Area	Migrant	<i>n</i> -Count	Min.	Max.	Mean	SD
Spring 2018	Government	No	46,186	100	250	207.42	21.92
		Yes	13	173	216	193.00	14.53
	Am. History	No	4,298	114	250	199.14	25.17
		Yes	--	--	--	--	--

**Table D.10. Scale Score Descriptive Statistics by Demographic Group—Free and Reduced Lunch, Summer 2017**

Test Period	Content Area	FRL	<i>n</i> -Count	Min.	Max.	Mean	SD
Summer 2017	Government	No	480	159	250	210.48	19.93
		Yes	342	147	250	196.54	19.66
	Am. History	No	36	138	250	207.50	24.29
		Yes	18	156	219	187.78	19.55

**Table D.11. Scale Score Descriptive Statistics by Demographic Group—Free and Reduced Lunch, Fall 2017**

Test Period	Content Area	FRL	<i>n</i> -Count	Min.	Max.	Mean	SD
Fall 2017	Government	No	7,732	100	250	210.22	19.29
		Yes	5,465	113	250	196.71	18.85
	Am. History	No	210	125	250	199.73	23.74
		Yes	206	125	250	188.93	22.00

**Table D.12. Scale Score Descriptive Statistics by Demographic Group—Free and Reduced Lunch, Spring 2018**

Test Period	Content Area	FRL	<i>n</i> -Count	Min.	Max.	Mean	SD
Spring 2018	Government	No	26,928	114	250	213.27	20.92
		Yes	19,271	100	250	199.23	20.63
	Am. History	No	2,392	130	250	205.02	24.52
		Yes	1,906	114	250	191.75	24.02

**Table D.13. Scale Score Descriptive Statistics by Demographic Group—Limited English Proficient, Summer 2017**

Test Period	Content Area	LEP	<i>n</i> -Count	Min.	Max.	Mean	SD
Summer 2017	Government	No	783	147	250	205.31	20.93
		Yes	39	162	244	191.95	17.59
	Am. History	No	53	138	250	201.13	24.69
		Yes	1	--	--	--	--

**Table D.14. Scale Score Descriptive Statistics by Demographic Group—Limited English Proficient, Fall 2017**

Test Period	Content Area	LEP	<i>n</i> -Count	Min.	Max.	Mean	SD
Fall 2017	Government	No	12,906	100	250	204.95	20.18
		Yes	291	155	250	190.39	17.35
	Am. History	No	413	125	250	194.47	23.53
		Yes	3	--	--	--	--

**Table D.15. Scale Score Descriptive Statistics by Demographic Group—Limited English Proficient, Spring 2018**

Test Period	Content Area	LEP	<i>n</i> -Count	Min.	Max.	Mean	SD
Spring 2018	Government	No	44,928	100	250	207.87	21.86
		Yes	1,271	114	250	191.30	17.29
	Am. History	No	4,250	114	250	199.27	25.19
		Yes	48	151	234	187.19	21.01

**Table D.16. Scale Score Descriptive Statistics by Demographic Group—Title I, Summer 2017**

Test Period	Content Area	Title I	<i>n</i> -Count	Min.	Max.	Mean	SD
Summer 2017	Government	No	680	147	250	207.09	21.04
		Yes	142	162	244	193.12	16.26
	Am. History	No	54	138	250	200.93	24.50
		Yes	--	--	--	--	--

Appendix D: Descriptive Statistics by Demographic Group

**Table D.17. Scale Score Descriptive Statistics by Demographic Group—Title I, Fall 2017**

Test Period	Content Area	Title I	<i>n</i> -Count	Min.	Max.	Mean	SD
Fall 2017	Government	No	12,099	100	250	205.63	20.18
		Yes	1,098	127	250	193.62	17.36
	Am. History	No	416	125	250	194.38	23.50
		Yes	--	--	--	--	--

**Table D.18. Scale Score Descriptive Statistics by Demographic Group—Title I, Spring 2018**

Test Period	Content Area	Title I	<i>n</i> -Count	Min.	Max.	Mean	SD
Spring 2018	Government	No	42,287	100	250	208.54	21.84
		Yes	3,912	137	250	195.26	18.85
	Am. History	No	4,157	123	250	199.17	25.14
		Yes	141	114	250	198.37	26.11

**Table D.19. Scale Score Descriptive Statistics by Demographic Group—Students with IEPs, Summer 2017**

Test Period	Content Area	IEP	<i>n</i> -Count	Min.	Max.	Mean	SD
Summer 2017	Government	No	778	147	250	205.79	20.66
		Yes	44	159	232	185.09	16.28
	Am. History	No	46	156	250	204.48	22.18
		Yes	8	--	--	--	--

**Table D.20. Scale Score Descriptive Statistics by Demographic Group—Students with IEPs, Fall 2017**

Test Period	Content Area	IEP	<i>n</i> -Count	Min.	Max.	Mean	SD
Fall 2017	Government	No	11,929	100	250	206.29	19.71
		Yes	1,268	113	250	189.01	18.37
	Am. History	No	388	125	250	195.11	23.10
		Yes	28	143	250	184.25	26.91

**Table D.21. Scale Score Descriptive Statistics by Demographic Group—Students with IEPs, Spring 2018**

Test Period	Content Area	IEP	<i>n</i> -Count	Min.	Max.	Mean	SD
Spring 2018	Government	No	41,675	100	250	209.54	21.17
		Yes	4,524	128	250	187.82	18.75
	Am. History	No	3,964	114	250	200.76	24.63
		Yes	334	123	250	179.96	23.61

**Table D.22. Scale Score Descriptive Statistics by Demographic Group—Students with Accommodations, Summer 2017**

Test Period	Content Area	Accom.	<i>n</i> -Count	Min.	Max.	Mean	SD
Summer 2017	Government	No	810	147	250	205.04	20.92
		Yes	13	170	194	183.23	8.48
	Am. History	No	51	156	250	202.80	23.18
		Yes	3	--	--	--	--

**Table D.23. Scale Score Descriptive Statistics by Demographic Group—Students with Accommodations, Fall 2017**

Test Period	Content Area	Accom.	<i>n</i> -Count	Min.	Max.	Mean	SD
Fall 2017	Government	No	12,579	100	250	205.38	20.10
		Yes	685	147	237	188.88	17.09
	Am. History	No	400	125	250	194.59	23.07
		Yes	16	142	250	189.31	33.07

**Table D.24. Scale Score Descriptive Statistics by Demographic Group—Students with Accommodations, Spring 2018**

Test Period	Content Area	Accom.	<i>n</i> -Count	Min.	Max.	Mean	SD
Spring 2018	Government	No	40,804	100	250	209.26	21.50
		Yes	5,451	137	250	193.38	20.05
	Am. History	No	3,904	114	250	200.73	24.71
		Yes	399	123	250	183.46	24.36

**Appendix E: Achievement-Level Distributions by Demographic Group**

**Table E.1. Achievement-Level Distributions—Gender, Summer 2017**

Test Period	Content Area	Gender	Achievement Level	Freq.	%
Summer 2017	Government	Female	Below Basic	45	10.23
			Basic	113	25.68
			Proficient	199	45.23
			Advanced	83	18.86
			Proficient + Advanced	282	64.09
			Total	440	100.00
	Government	Male	Below Basic	41	10.73
			Basic	101	26.44
			Proficient	148	38.74
			Advanced	92	24.08
			Proficient + Advanced	240	62.83
			Total	382	100.00
	Am. History	Female	Below Basic	--	--
			Basic	--	--
Proficient			10	34.48	
Advanced			--	--	
Proficient + Advanced			14	48.28	
Total			29	100.00	
Am. History	Male	Below Basic	--	--	
		Basic	--	--	
		Proficient	11	44.00	
		Advanced	--	--	
		Proficient + Advanced	16	64.00	
		Total	25	100.00	

Appendix E: Achievement-Level Distributions by Demographic Group

**Table E.2. Achievement-Level Distributions—Gender, Fall 2017**

Test Period	Content Area	Gender	Achievement Level	Freq.	%
Fall 2017	Government	Female	Below Basic	506	7.72
			Basic	1,880	28.69
			Proficient	2,976	45.42
			Advanced	1,190	18.16
			Proficient + Advanced	4,166	63.58
			Total	6,552	100.00
	Government	Male	Below Basic	660	9.93
			Basic	1,785	26.86
			Proficient	2,767	41.64
			Advanced	1,433	21.57
			Proficient + Advanced	4,200	63.21
			Total	6,645	100.00
	Am. History	Female	Below Basic	70	33.33
			Basic	63	30.00
Proficient			54	25.71	
Advanced			23	10.95	
Proficient + Advanced			77	36.67	
Total			210	100.00	
Am. History	Male	Below Basic	46	22.33	
		Basic	50	24.27	
		Proficient	80	38.83	
		Advanced	30	14.56	
		Proficient + Advanced	110	53.40	
		Total	206	100.00	

**Table E.3. Achievement-Level Distributions—Gender, Spring 2018**

Test Period	Content Area	Gender	Achievement Level	Freq.	%
Spring 2018	Government	Female	Below Basic	2,041	8.88
			Basic	6,242	27.15
			Proficient	9,360	40.72
			Advanced	5,345	23.25
			Proficient + Advanced	14,705	63.97
			Total	22,988	100.00
	Government	Male	Below Basic	2,271	9.78
			Basic	5,207	22.43
			Proficient	8,949	38.55
			Advanced	6,784	29.23
			Proficient + Advanced	15,733	67.78
			Total	23,211	100.00
	Am. History	Female	Below Basic	586	28.27
			Basic	587	28.32
Proficient			592	28.56	
Advanced			308	14.86	
Proficient + Advanced			900	43.42	
Total			2,073	100.00	
Am. History	Male	Below Basic	475	21.35	
		Basic	535	24.04	
		Proficient	704	31.64	
		Advanced	511	22.97	
		Proficient + Advanced	1,215	54.61	
		Total	2,225	100.00	

Appendix E: Achievement-Level Distributions by Demographic Group

**Table E.4. Achievement-Level Distribution—Ethnicity, Summer 2017**

Test Period	Content Area	Ethnicity	Achievement Level	Freq.	%
Summer 2017	Government	American Indian/ Alaskan Native	Below Basic	--	--
			Basic	--	--
			Proficient	--	--
			Advanced	--	--
			Proficient + Advanced	--	--
			Total	8	100.00
		Asian	Below Basic	--	--
			Basic	--	--
			Proficient	11	33.33
			Advanced	15	45.45
			Proficient + Advanced	26	78.79
			Total	33	100.00
		Black (not Hispanic)	Below Basic	34	27.87
			Basic	46	37.70
	Proficient		33	27.05	
	Advanced		--	--	
	Proficient + Advanced		42	34.43	
	Total		122	100.00	
	Hispanic	Below Basic	--	--	
		Basic	19	24.36	
		Proficient	39	50.00	
Advanced		11	14.10		
Proficient + Advanced		50	64.10		
Total		78	100.00		
Multi-racial	Below Basic	--	--		
	Basic	--	--		
	Proficient	16	55.17		
	Advanced	--	--		
	Proficient + Advanced	19	65.52		
	Total	29	100.00		
Pacific Islander	Below Basic	--	--		
	Basic	--	--		
	Proficient	--	--		
	Advanced	--	--		
	Proficient + Advanced	--	--		
	Total	2	100.00		
White (not Hispanic)	Below Basic	30	5.69		
	Basic	125	23.72		
	Proficient	239	45.35		
	Advanced	133	25.24		
	Proficient + Advanced	372	70.59		
	Total	527	100.00		
Am. History	Asian	Below Basic	--	--	
		Basic	--	--	
		Proficient	--	--	
		Advanced	--	--	
		Proficient + Advanced	--	--	
		Total	1	100.00	
	Black (not Hispanic)	Below Basic	--	--	
		Basic	--	--	
	Proficient	--	--		

Appendix E: Achievement-Level Distributions by Demographic Group

Test Period	Content Area	Ethnicity	Achievement Level	Freq.	%
Summer 2017	Am. History	Black (not Hispanic)	Advanced	--	--
			Proficient + Advanced	--	--
			Total	3	100.00
		Hispanic	Below Basic	--	--
			Basic	--	--
			Proficient	--	--
			Advanced	--	--
			Proficient + Advanced	--	--
		Total	4	100.00	
		Multi-racial	Below Basic	--	--
			Basic	--	--
			Proficient	--	--
			Advanced	--	--
			Proficient + Advanced	--	--
		Total	4	100.00	
		White (not Hispanic)	Below Basic	--	--
Basic	--		--		
Proficient	17		40.48		
Advanced	--		--		
Proficient + Advanced	26		61.90		
Total	42	100.00			

**Table E.5. Achievement-Level Distributions—Ethnicity, Fall 2017**

Test Period	Content Area	Ethnicity	Achievement Level	Freq.	%
Fall 2017	Government	American Indian/ Alaskan Native	Below Basic	--	--
			Basic	21	38.89
			Proficient	22	40.74
			Advanced	--	--
			Proficient + Advanced	29	53.70
		Total	54	100.00	
		Asian	Below Basic	23	5.67
			Basic	52	12.81
			Proficient	167	41.13
			Advanced	164	40.39
			Proficient + Advanced	331	81.53
		Total	406	100.00	
		Black (not Hispanic)	Below Basic	433	17.33
			Basic	1,012	40.51
			Proficient	855	34.23
			Advanced	198	7.93
			Proficient + Advanced	1,053	42.15
		Total	2,498	100.00	
		Hispanic	Below Basic	76	9.97
			Basic	264	34.65
			Proficient	312	40.94
			Advanced	110	14.44
			Proficient + Advanced	422	55.38
		Total	762	100.00	
		Multi-racial	Below Basic	40	9.71
			Basic	119	28.88
			Proficient	175	42.48
			Advanced	78	18.93

Appendix E: Achievement-Level Distributions by Demographic Group

Test Period	Content Area	Ethnicity	Achievement Level	Freq.	%
Fall 2017	Government	Multi-racial	Proficient + Advanced	253	61.41
			Total	412	100.00
		Pacific Islander	Below Basic	--	--
			Basic	12	38.71
			Proficient	12	38.71
			Advanced	--	--
			Proficient + Advanced	14	45.16
		Total	31	100.00	
		White (not Hispanic)	Below Basic	583	6.46
	Basic		2,184	24.18	
	Proficient		4,200	46.51	
	Advanced		2,064	22.85	
	Proficient + Advanced		6,264	69.36	
	Total	9,031	100.00		
	Am. History	American Indian/ Alaskan Native	Below Basic	--	--
			Basic	--	--
			Proficient	--	--
			Advanced	--	--
			Proficient + Advanced	--	--
		Total	3	100.00	
		Asian	Below Basic	--	--
Basic			--	--	
Proficient			--	--	
Advanced			--	--	
Proficient + Advanced			--	--	
Total		1	100.00		
Black (not Hispanic)	Below Basic	23	40.35		
	Basic	15	26.32		
	Proficient	15	26.32		
	Advanced	--	--		
	Proficient + Advanced	19	33.33		
Total	57	100.00			
Hispanic	Below Basic	--	--		
	Basic	--	--		
	Proficient	11	44.00		
	Advanced	--	--		
	Proficient + Advanced	11	44.00		
Total	25	100.00			
Multi-racial	Below Basic	--	--		
	Basic	--	--		
	Proficient	--	--		
	Advanced	--	--		
	Proficient + Advanced	--	--		
Total	15	100.00			
White (not Hispanic)	Below Basic	79	25.08		
	Basic	86	27.30		
	Proficient	104	33.02		
	Advanced	46	14.60		
	Proficient + Advanced	150	47.62		
Total	315	100.00			

Appendix E: Achievement-Level Distributions by Demographic Group

**Table E.6. Achievement-Level Distributions—Ethnicity, Spring 2018**

Test Period	Content Area	Ethnicity	Achievement Level	Freq.	%
Spring 2018	Government	American Indian/ Alaskan Native	Below Basic	23	11.56
			Basic	48	24.12
			Proficient	86	43.22
			Advanced	42	21.11
			Proficient + Advanced	128	64.32
			Total	199	100.00
		Asian	Below Basic	49	5.58
			Basic	164	18.68
			Proficient	314	35.76
			Advanced	351	39.98
			Proficient + Advanced	665	75.74
			Total	878	100.00
		Black (not Hispanic)	Below Basic	1,282	20.72
			Basic	2,144	34.66
			Proficient	2,065	33.38
			Advanced	695	11.24
			Proficient + Advanced	2,760	44.62
			Total	6,186	100.00
		Hispanic	Below Basic	339	12.85
			Basic	826	31.30
			Proficient	1,022	38.73
			Advanced	452	17.13
			Proficient + Advanced	1,474	55.85
			Total	2,639	100.00
		Multi-racial	Below Basic	116	8.92
			Basic	331	25.46
			Proficient	533	41.00
			Advanced	320	24.62
Proficient + Advanced	853		65.62		
Total	1,300		100.00		
Pacific Islander	Below Basic	--	--		
	Basic	33	34.74		
	Proficient	38	40.00		
	Advanced	16	16.84		
	Proficient + Advanced	54	56.84		
	Total	95	100.00		
White (not Hispanic)	Below Basic	2,492	7.15		
	Basic	7,896	22.65		
	Proficient	14,239	40.84		
	Advanced	10,235	29.36		
	Proficient + Advanced	24,474	70.20		
	Total	34,862	100.00		
Am. History	American Indian/ Alaskan Native	Below Basic	--	--	
		Basic	--	--	
		Proficient	14	40.00	
		Advanced	--	--	
		Proficient + Advanced	20	57.14	
		Total	35	100.00	
	Asian	Below Basic	--	--	
		Basic	--	--	
		Proficient	12	35.29	
		Advanced	--	--	

Appendix E: Achievement-Level Distributions by Demographic Group

Test Period	Content Area	Ethnicity	Achievement Level	Freq.	%
Spring 2018	Am. History	Asian	Advanced	14	41.18
			Proficient + Advanced	26	76.47
			Total	34	100.00
		Black (not Hispanic)	Below Basic	80	36.04
			Basic	50	22.52
			Proficient	58	26.13
			Advanced	34	15.32
			Proficient + Advanced	92	41.44
			Total	222	100.00
		Hispanic	Below Basic	52	32.70
			Basic	45	28.30
			Proficient	40	25.16
			Advanced	22	13.84
			Proficient + Advanced	62	38.99
			Total	159	100.00
		Multi-racial	Below Basic	30	29.13
			Basic	25	24.27
			Proficient	29	28.16
			Advanced	19	18.45
			Proficient + Advanced	48	46.60
			Total	103	100.00
		Pacific Islander	Below Basic	--	--
			Basic	--	--
			Proficient	--	--
Advanced	--		--		
Proficient + Advanced	--		--		
Total	4		100.00		
White (not Hispanic)	Below Basic	886	23.89		
	Basic	984	26.54		
	Proficient	1,134	30.58		
	Advanced	704	18.99		
	Proficient + Advanced	1,838	49.57		
	Total	3,708	100.00		

Appendix E: Achievement-Level Distributions by Demographic Group

**Table E.7. Achievement-Level Distributions—Migrant, Summer 2017**

Test Period	Content Area	Migrant	Achievement Level	Freq.	%
Summer 2017	Government	No	Below Basic	86	10.46
			Basic	214	26.03
			Proficient	347	42.21
			Advanced	175	21.29
			Proficient + Advanced	522	63.50
			Total	822	100.00
	Government	Yes	Below Basic	--	--
			Basic	--	--
			Proficient	--	--
			Advanced	--	--
			Proficient + Advanced	--	--
			Total	--	--
	Am. History	No	Below Basic	11	20.37
			Basic	13	24.07
Proficient			21	38.89	
Advanced			--	--	
Proficient + Advanced			30	55.56	
Total			54	100.00	
Am. History	Yes	Below Basic	--	--	
		Basic	--	--	
		Proficient	--	--	
		Advanced	--	--	
		Proficient + Advanced	--	--	
		Total	--	--	

**Table E.8. Achievement-Level Distributions—Migrant, Fall 2017**

Test Period	Content Area	Migrant	Achievement Level	Freq.	%
Fall 2017	Government	No	Below Basic	1,166	8.84
			Basic	3,665	27.77
			Proficient	5,742	43.51
			Advanced	2,623	19.88
			Proficient + Advanced	8,365	63.39
			Total	13,196	100.00
	Government	Yes	Below Basic	--	--
			Basic	--	--
			Proficient	--	--
			Advanced	--	--
			Proficient + Advanced	--	--
			Total	1	100.00
	Am. History	No	Below Basic	116	27.88
			Basic	113	27.16
Proficient			134	32.21	
Advanced			53	12.74	
Proficient + Advanced			187	44.95	
Total			416	100.00	
Am. History	Yes	Below Basic	--	--	
		Basic	--	--	
		Proficient	--	--	
		Advanced	--	--	
		Proficient + Advanced	--	--	
		Total	--	--	

Appendix E: Achievement-Level Distributions by Demographic Group

**Table E.9. Achievement-Level Distributions—Migrant, Spring 2018**

Test Period	Content Area	Migrant	Achievement Level	Freq.	%	
Spring 2018	Government	No	Below Basic	4,310	9.33	
			Basic	11,442	24.77	
			Proficient	18,305	39.63	
			Advanced	12,129	26.26	
			Proficient + Advanced	30,434	65.89	
			Total	46,186	100.00	
	Government	Yes	Below Basic	--	--	
			Basic	--	--	
			Proficient	--	--	
			Advanced	--	--	
			Proficient + Advanced	--	--	
			Total	13	100.00	
	Am. History	No	No	Below Basic	1,061	24.69
				Basic	1,122	26.11
Proficient				1,296	30.15	
Advanced				819	19.06	
Proficient + Advanced				2,115	49.21	
Total				4,298	100.00	
Am. History		Yes	Yes	Below Basic	--	--
				Basic	--	--
				Proficient	--	--
				Advanced	--	--
			Proficient + Advanced	--	--	
			Total	--	--	

**Table E.10. Achievement-Level Distributions—Free and Reduced Lunch, Summer 2017**

Test Period	Content Area	FRL	Achievement Level	Freq.	%		
Summer 2017	Government	No	Below Basic	22	4.58		
			Basic	105	21.88		
			Proficient	211	43.96		
			Advanced	142	29.58		
			Proficient + Advanced	353	73.54		
			Total	480	100.00		
		Government	Yes	Yes	Below Basic	64	18.71
					Basic	109	31.87
					Proficient	136	39.77
					Advanced	33	9.65
				Proficient + Advanced	169	49.42	
				Total	342	100.00	
	Am. History	No	No	Below Basic	--	--	
				Basic	--	--	
				Proficient	16	44.44	
				Advanced	--	--	
				Proficient + Advanced	25	69.44	
				Total	36	100.00	
Am. History		Yes	Yes	Below Basic	--	--	
				Basic	--	--	
				Proficient	--	--	
				Advanced	--	--	
			Proficient + Advanced	--	--		
			Total	18	100.00		

Appendix E: Achievement-Level Distributions by Demographic Group

**Table E.11. Achievement-Level Distributions—Free and Reduced Lunch, Fall 2017**

Test Period	Content Area	FRL	Achievement Level	Freq.	%
Fall 2017	Government	No	Below Basic	350	4.53
			Basic	1,585	20.50
			Proficient	3,704	47.90
			Advanced	2,093	27.07
			Proficient + Advanced	5,797	74.97
			Total	7,732	100.00
	Yes	Below Basic	816	14.93	
		Basic	2,080	38.06	
		Proficient	2,039	37.31	
		Advanced	530	9.70	
		Proficient + Advanced	2,569	47.01	
		Total	5,465	100.00	
Am. History	No	Below Basic	45	21.43	
		Basic	48	22.86	
		Proficient	81	38.57	
		Advanced	36	17.14	
		Proficient + Advanced	117	55.71	
		Total	210	100.00	
Yes	Below Basic	71	34.47		
	Basic	65	31.55		
	Proficient	53	25.73		
	Advanced	17	8.25		
	Proficient + Advanced	70	33.98		
	Total	206	100.00		

**Table E.12. Achievement-Level Distributions—Free and Reduced Lunch, Spring 2018**

Test Period	Content Area	FRL	Achievement Level	Freq.	%
Spring 2018	Government	No	Below Basic	1,253	4.65
			Basic	5,102	18.95
			Proficient	11,204	41.61
			Advanced	9,369	34.79
			Proficient + Advanced	20,573	76.40
			Total	26,928	100.00
	Yes	Below Basic	3,059	15.87	
		Basic	6,347	32.94	
		Proficient	7,105	36.87	
		Advanced	2,760	14.32	
		Proficient + Advanced	9,865	51.19	
		Total	19,271	100.00	
Am. History	No	Below Basic	397	16.60	
		Basic	606	25.33	
		Proficient	780	32.61	
		Advanced	609	25.46	
		Proficient + Advanced	1,389	58.07	
		Total	2,392	100.00	
Yes	Below Basic	664	34.84		
	Basic	516	27.07		
	Proficient	516	27.07		
	Advanced	210	11.02		
	Proficient + Advanced	726	38.09		
	Total	1,906	100.00		

Appendix E: Achievement-Level Distributions by Demographic Group

**Table E.13. Achievement-Level Distributions—Limited English Proficient, Summer 2017**

Test Period	Content Area	LEP	Achievement Level	Freq.	%
Summer 2017	Government	No	Below Basic	77	9.83
			Basic	198	25.29
			Proficient	334	42.66
			Advanced	174	22.22
			Proficient + Advanced	508	64.88
			Total	783	100.00
	Yes	Below Basic	--	--	
		Basic	16	41.03	
		Proficient	13	33.33	
		Advanced	--	--	
		Proficient + Advanced	14	35.90	
		Total	39	100.00	
Am. History	No	Below Basic	11	20.75	
		Basic	12	22.64	
		Proficient	21	39.62	
		Advanced	--	--	
		Proficient + Advanced	30	56.60	
		Total	53	100.00	
Yes	Below Basic	--	--		
	Basic	--	--		
	Proficient	--	--		
	Advanced	--	--		
	Proficient + Advanced	--	--		
	Total	1	100.00		

**Table E.14. Achievement-Level Distributions—Limited English Proficient, Fall 2017**

Test Period	Content Area	LEP	Achievement Level	Freq.	%
Fall 2017	Government	No	Below Basic	1,100	8.52
			Basic	3,527	27.33
			Proficient	5,668	43.92
			Advanced	2,611	20.23
			Proficient + Advanced	8,279	64.15
			Total	12,906	100.00
	Yes	Below Basic	66	22.68	
		Basic	138	47.42	
		Proficient	75	25.77	
		Advanced	12	4.12	
		Proficient + Advanced	87	29.90	
		Total	291	100.00	
Am. History	No	Below Basic	114	27.60	
		Basic	113	27.36	
		Proficient	133	32.20	
		Advanced	53	12.83	
		Proficient + Advanced	186	45.04	
		Total	413	100.00	
Yes	Below Basic	--	--		
	Basic	--	--		
	Proficient	--	--		
	Advanced	--	--		
	Proficient + Advanced	--	--		
	Total	3	100.00		

Appendix E: Achievement-Level Distributions by Demographic Group

**Table E.15. Achievement-Level Distributions—Limited English Proficient, Spring 2018**

Test Period	Content Area	LEP	Achievement Level	Freq.	%
Spring 2018	Government	No	Below Basic	4,009	8.92
			Basic	10,904	24.27
			Proficient	17,952	39.96
			Advanced	12,063	26.85
			Proficient + Advanced	30,015	66.81
			Total	44,928	100.00
	Government	Yes	Below Basic	303	23.84
			Basic	545	42.88
			Proficient	357	28.09
			Advanced	66	5.19
			Proficient + Advanced	423	33.28
			Total	1,271	100.00
Am. History	No	Below Basic	1,042	24.52	
		Basic	1,107	26.05	
		Proficient	1,285	30.24	
		Advanced	816	19.20	
		Proficient + Advanced	2,101	49.44	
		Total	4,250	100.00	
Am. History	Yes	Below Basic	19	39.58	
		Basic	15	31.25	
		Proficient	11	22.92	
		Advanced	--	--	
		Proficient + Advanced	14	29.17	
		Total	48	100.00	

**Table E.16. Achievement-Level Distributions—Title I, Summer 2017**

Test Period	Content Area	Title I	Achievement Level	Freq.	%
Summer 2017	Government	No	Below Basic	62	9.12
			Basic	147	21.62
			Proficient	305	44.85
			Advanced	166	24.41
			Proficient + Advanced	471	69.26
			Total	680	100.00
	Government	Yes	Below Basic	24	16.90
			Basic	67	47.18
			Proficient	42	29.58
			Advanced	--	--
			Proficient + Advanced	51	35.92
			Total	142	100.00
Am. History	No	Below Basic	11	20.37	
		Basic	13	24.07	
		Proficient	21	38.89	
		Advanced	--	--	
		Proficient + Advanced	30	55.56	
		Total	54	100.00	
Am. History	Yes	Below Basic	--	--	
		Basic	--	--	
		Proficient	--	--	
		Advanced	--	--	
		Proficient + Advanced	--	--	
		Total	--	--	

Appendix E: Achievement-Level Distributions by Demographic Group

**Table E.17. Achievement-Level Distributions—Title I, Fall 2017**

Test Period	Content Area	Title I	Achievement Level	Freq.	%
Fall 2017	Government	No	Below Basic	979	8.09
			Basic	3,204	26.48
			Proficient	5,352	44.24
			Advanced	2,564	21.19
			Proficient + Advanced	7,916	65.43
			Total	12,099	100.00
	Government	Yes	Below Basic	187	17.03
			Basic	461	41.99
			Proficient	391	35.61
			Advanced	59	5.37
			Proficient + Advanced	450	40.98
			Total	1,098	100.00
Am. History	No	Below Basic	116	27.88	
		Basic	113	27.16	
		Proficient	134	32.21	
		Advanced	53	12.74	
		Proficient + Advanced	187	44.95	
		Total	416	100.00	
Am. History	Yes	Below Basic	--	--	
		Basic	--	--	
		Proficient	--	--	
		Advanced	--	--	
		Proficient + Advanced	--	--	
		Total	--	--	

**Table E.18. Achievement-Level Distributions—Title I, Spring 2018**

Test Period	Content Area	Title I	Achievement Level	Freq.	%
Spring 2018	Government	No	Below Basic	3,552	8.40
			Basic	9,963	23.56
			Proficient	16,992	40.18
			Advanced	11,780	27.86
			Proficient + Advanced	28,772	68.04
			Total	42,287	100.00
	Government	Yes	Below Basic	760	19.43
			Basic	1,486	37.99
			Proficient	1,317	33.67
			Advanced	349	8.92
			Proficient + Advanced	1,666	42.59
			Total	3,912	100.00
Am. History	No	Below Basic	1,023	24.61	
		Basic	1,092	26.27	
		Proficient	1,252	30.12	
		Advanced	790	19.00	
		Proficient + Advanced	2,042	49.12	
		Total	4,157	100.00	
Am. History	Yes	Below Basic	38	26.95	
		Basic	30	21.28	
		Proficient	44	31.21	
		Advanced	29	20.57	
		Proficient + Advanced	73	51.77	
		Total	141	100.00	

Appendix E: Achievement-Level Distributions by Demographic Group

**Table E.19. Achievement-Level Distributions—Individualized Education Program, Summer 2017**

Test Period	Content Area	IEP	Achievement Level	Freq.	%
Summer 2017	Government	No	Below Basic	69	8.87
			Basic	196	25.19
			Proficient	339	43.57
			Advanced	174	22.37
			Proficient + Advanced	513	65.94
			Total	778	100
	Yes	Below Basic	17	38.64	
		Basic	18	40.91	
		Proficient	--	--	
		Advanced	--	--	
		Proficient + Advanced	--	--	
		Total	44	100	
Am. History	No	Below Basic	--	--	
		Basic	12	26.09	
		Proficient	19	41.3	
		Advanced	--	--	
		Proficient + Advanced	28	60.87	
		Total	46	100	
Yes	Below Basic	--	--		
	Basic	--	--		
	Proficient	--	--		
	Advanced	--	--		
	Proficient + Advanced	--	--		
	Total	8	100.00		

**Table E.20. Achievement-Level Distributions—Individualized Education Program, Fall 2017**

Test Period	Content Area	IEP	Achievement Level	Freq.	%
Fall 2017	Government	No	Below Basic	818	6.86
			Basic	3,121	26.16
			Proficient	5,432	45.54
			Advanced	2,558	21.44
			Proficient + Advanced	7,990	66.98
			Total	11,929	100.00
	Yes	Below Basic	348	27.44	
		Basic	544	42.90	
		Proficient	311	24.53	
		Advanced	65	5.13	
		Proficient + Advanced	376	29.65	
		Total	1,268	100.00	
Am. History	No	Below Basic	101	26.03	
		Basic	106	27.32	
		Proficient	132	34.02	
		Advanced	49	12.63	
		Proficient + Advanced	181	46.65	
		Total	388	100.00	
Yes	Below Basic	15	53.57		
	Basic	--	--		
	Proficient	--	--		
	Advanced	--	--		
	Proficient + Advanced	--	--		
	Total	28	100.00		

Appendix E: Achievement-Level Distributions by Demographic Group

**Table E.21. Achievement-Level Distributions—Individualized Education Program, Spring 2018**

Test Period	Content Area	IEP	Achievement Level	Freq.	%
Spring 2018	Government	No	Below Basic	2,755	6.61
			Basic	9,699	23.27
			Proficient	17,346	41.62
			Advanced	11,875	28.49
			Proficient + Advanced	29,221	70.12
			Total	41,675	100.00
	Yes	Below Basic	1,557	34.42	
		Basic	1,750	38.68	
		Proficient	963	21.29	
		Advanced	254	5.61	
		Proficient + Advanced	1,217	26.90	
		Total	4,524	100.00	
Am. History	No	Below Basic	874	22.05	
		Basic	1,041	26.26	
		Proficient	1,248	31.48	
		Advanced	801	20.21	
		Proficient + Advanced	2,049	51.69	
		Total	3,964	100.00	
Yes	Below Basic	187	55.99		
	Basic	81	24.25		
	Proficient	48	14.37		
	Advanced	18	5.39		
	Proficient + Advanced	66	19.76		
	Total	334	100.00		

**Table E.22. Achievement-Level Distributions—Accommodations, Summer 2017**

Test Period	Content Area	Accom.	Achievement Level	Freq.	%
Summer 2017	Government	No	Below Basic	81	10.00
			Basic	206	25.43
			Proficient	348	42.96
			Advanced	175	21.60
			Proficient + Advanced	523	64.57
			Total	810	100.00
	Yes	Below Basic	--	--	
		Basic	--	--	
		Proficient	--	--	
		Advanced	--	--	
		Proficient + Advanced	--	--	
		Total	13	100.00	
	Am. History	No	Below Basic	--	--
			Basic	12	23.53
			Proficient	21	41.18
			Advanced	--	--
			Proficient + Advanced	30	58.82
			Total	51	100.00
Yes	Below Basic	--	--		
	Basic	--	--		
	Proficient	--	--		
	Advanced	--	--		
	Proficient + Advanced	--	--		
	Total	3	100.00		

Appendix E: Achievement-Level Distributions by Demographic Group

**Table E.23. Achievement-Level Distributions—Accommodations, Fall 2017**

Test Period	Content Area	Accom.	Achievement Level	Freq.	%
Fall 2017	Government	No	Below Basic	1,027	8.16
			Basic	3,369	26.78
			Proficient	5,578	44.34
			Advanced	2,605	20.71
			Proficient + Advanced	8,183	65.05
			Total	12,579	100.00
	Yes	Below Basic	172	25.11	
		Basic	311	45.40	
		Proficient	179	26.13	
		Advanced	23	3.36	
		Proficient + Advanced	202	29.49	
		Total	685	100.00	
Am. History	No	Below Basic	109	27.25	
		Basic	109	27.25	
		Proficient	133	33.25	
		Advanced	49	12.25	
		Proficient + Advanced	182	45.50	
		Total	400	100.00	
Yes	Below Basic	--	--		
	Basic	--	--		
	Proficient	--	--		
	Advanced	--	--		
	Proficient + Advanced	--	--		
	Total	16	100.00		

**Table E.24. Achievement-Level Distributions—Accommodations, Spring 2018**

Test Period	Content Area	Accom.	Achievement Level	Freq.	%
Spring 2018	Government	No	Below Basic	2,992	7.33
			Basic	9,452	23.16
			Proficient	16,755	41.06
			Advanced	11,605	28.44
			Proficient + Advanced	28,360	69.50
			Total	40,804	100.00
	Yes	Below Basic	1,338	24.55	
		Basic	2,011	36.89	
		Proficient	1,573	28.86	
		Advanced	529	9.70	
		Proficient + Advanced	2,102	38.56	
		Total	5,451	100.00	
Am. History	No	Below Basic	867	22.21	
		Basic	1,020	26.13	
		Proficient	1,226	31.40	
		Advanced	791	20.26	
		Proficient + Advanced	2,017	51.66	
		Total	3,904	100.00	
Yes	Below Basic	196	49.12		
	Basic	104	26.07		
	Proficient	70	17.54		
	Advanced	29	7.27		
	Proficient + Advanced	99	24.81		
	Total	399	100.00		

## Appendix F: Training PowerPoints



**Missouri**  
DEPARTMENT OF ELEMENTARY & SECONDARY  
**EDUCATION**™

**Missouri End-of-Course Assessments**  
District Test Coordinator Training



Questar.



### Agenda

- Welcome and Introductions
- Overview, Key Dates, and What's New
- Nextera® Accounts and Classes
- Nextera Student Demographics and Accommodations
- Nextera Test Administration
- Q&A

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# Missouri End-of-Course Assessments Overview

## General Information

- New EOC assessments aligned to the new standards have been built for all Mathematics and English Language Arts courses.
- Biology EOC testing in 2017-2018 will be a Stand Alone Field Test. Government and American History EOC assessments will remain the same throughout 2017-2018.

### Implementation Schedule

2015-16	2016-17	2017-18	2018-19	2019-20
English Language Arts/Mathematics				
Science	Science	Science Field Test	Science	Science
Social Studies				


 Tests aligned to previous Missouri Learning Standards  
 Field tests aligned to revised Missouri Learning Standards  
 Tests aligned to revised Missouri Learning Standards Grade Level Expectations (Approved April 2016)



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## New for 2017-2018

- **Nextera® Admin**
  - Testing Dashboard
  - Testing metrics
- **Test Delivery System**
  - Scientific Calculator
  - Enhanced tools
- **Customer support Chat feature**
- **Material updates**
  - Test Coordinator Manuals
  - Directions for Administration



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## Important Dates

Test Window	
Fall Administration: American History and Government	October 2nd, 2017–January 19, 2018 (Pre-Test opens 9/25/17)
Fall Administration: Algebra I, Algebra II, Geometry, Biology, English I, and English II	November 6, 2017–January 19, 2018 (Pre-Test opens 10/30/17; no Pre-Test for Biology)
Spring Administration	February 19, 2018–May 25, 2018
Pre ID Dates	
1st Fall Pre-ID Window	File due to DESE: 9/15/17 Student data available: 9/25/17
2nd Fall Pre-ID Window	File due to DESE: 11/3/17 Student data available: 11/13/17
1st Spring Pre-ID Window	File due to DESE: 1/26/18 Student data available: 2/12/18
2nd Spring Pre-ID Window	File due to DESE: 3/2/18 Student data available: 3/19/18
3rd Spring Pre-ID Window	File due to DESE: 3/30/18 Student data available: 4/16/18



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## Tutorials

- **New Tutorials are available!**
  - Generic with all item types
  - Math tutorial with math item types
  - ELA tutorial with ELA item types
  - Science tutorial with science item types
- Offer an opportunity for students to become familiar with the item types, tools and format they will experience during testing.
- Administrators are encouraged to allow students plenty of time to work with the tutorials to become familiar with all the new item types and testing platform.

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## Nextera

## Nextera System Overview

Nextera, is made up of two components that provide a full-service assessment solution.

- Online Test Administration System (Nextera Admin):
  - Student and testing management tools
  - Multi-tiered, role-based system
- Test Delivery System
  - The Secure Browser keeps students focused on their test
  - Test content is downloaded to the student's device to ensure uninterrupted testing for students

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## Nextera Admin

- Secure, web-based administration system provides access to all users with no additional download.
  - Login
  - Home
  - Students
  - Classes
  - Test Administrations
  - Accounts
  - Reports
  - Help

**Missouri Assessment Program**  
Powered by Nextera™

User ID:

Password:

"Forgot your password?"  
"First Time User?" [Create an Account](#)

  
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[Privacy and Terms](#)

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## Nextera Test Delivery System

- Installed on each device
- Allows the test to be presented securely on the device
- Employs an HTML5 framework
  - No Java dependencies
- Provides confidence in saving student responses
  - Test content cached when student logs in
    - Student response/interaction continuously sent to Questar
    - Responses stored/encrypted locally on computer/device in case of network loss

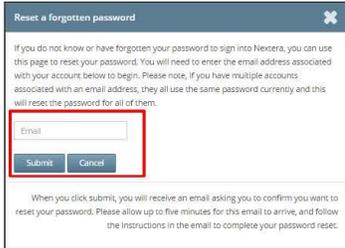
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## Sign in

If you forget or lose your password:

1. Click the **"Forgot your password?"** link.
2. From the Forgotten Password screen, enter email address and click **"Submit"**.



When you click submit, you will receive an email asking you to confirm you want to reset your password. Please allow up to five minutes for this email to arrive, and follow the instructions in the email to complete your password reset.



3. Receive email to confirm you want to reset your password.
4. Please allow up to five minutes for this email to arrive, and follow the instructions in the email to complete your password reset.

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The screenshot shows the Questar Home page. On the left side, there is a sidebar with the following sections:

- Your Profile:** Name: Suzanne Sanders, Email: ssanders@questarai.com, Associated with: QA Test School 1 (QATS1), Mailing Address: QA Test School 1, 123, Tls 52, Shipping Address: QA Test School 1, 456, Tls 123.
- Administration Quick Links:** Please find the help information below.1
- District Test Coordinator Checklist:** DTC Important Information.1
- School Test Coordinator Checklist:** Please find the help information below.1

A callout box points to this sidebar with the text: "This section appears on the left side of the Home page and lists announcements and links to other information you may need as an STC, DTC or Teacher."

At the top right, there is a "Missouri Assessment" window with a "What would you like to work on next?" dropdown menu. Below it is a "Your Profile" window for Adam Johnson with fields for Name, Email, and District.

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The screenshot shows the Questar Home page with a "New Testing Status Dashboard will display real-time metrics" announcement. Below the announcement is the "Testing Status Dashboard" section.

Testing Status Dashboard  
You're Viewing: Statewide | English I | change

A donut chart is shown with a label "Total Students Scheduled:" and a value of "-". A line points to the chart with the text "Data not available".

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# Nextera Admin Accounts and Classes

## Accounts

- DTCs and STCs are responsible for managing profiles in the Nextera Admin site.
  - Select the Accounts menu, then select Accounts.
  - Validate the Teachers listed.
  - To add a new Teacher, click **New Account**.

**Accounts**

Manage Accounts [New Account](#)

All accounts associated with the district and school you've selected appear below. Click on the View button to see more details on an account and make updates. For new accounts, click the "Activate" link to send a welcome email to the user and enable the account. For activated accounts, you can click the "Reset" link to send the user an email containing instructions on how to reset his or her password.

Search

User ID	Last Name	First Name	Email Address	Account Type	Membership	Actions	History
Alg001@questara.com	T	Alg	Alg001@questara.com	Teacher	School A13	View Reset	History

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## Accounts – Add a New Teacher

- Fill out contact information.
- All fields that are in **bold** are required.
- Username must be the Teacher’s email address.
- Select Role and click **Add Role**.

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## Accounts – Add a New Teacher

- Indicate Content Area(s) for the teacher.
- Enter their Questar-supplied ID number for the TeacherID field.
- Click **Save**.

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## Accounts

- To Edit an existing Teacher's account, click **View** then click **Edit** on the View Teacher screen.
- Click **Reset** to send a temporary password to a Teacher.
  - This new password will replace the temporary password and will become the password they should use for future logins.

**Accounts**

Manage Accounts New Account

All accounts associated with the district and school you've selected appear below. Click on the View button to see more details on an account and make updates. For new accounts, click the "Activate" link to send a welcome email to the user and enable the account. For activated accounts, you can click the "Reset" link to send the user an email containing instructions on how to reset his or her password.

Search  
Type part of a name, User ID, or email address

User ID	Last Name	First Name	Email Address	Account Type	Membership	Actions	History
Alg001@questara.com	T	Algi	Alg001@questara.com	Teacher	School A13	View <b>Reset</b>	History

Questar

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## Accounts – District Testing Window

- Located under the Accounts tab, DTCs need to indicate a 7-Day testing window for each content area they plan to test.
- Click "Create Test Window"

**District Test Windows** Create Test Window

Admin Name	District	Subject Name	Start Date	End Date	
Fall 2017 EOC	QA PM District	Government	2017-10-05	2017-10-11	Edit
Fall 2017 EOC	QA PM District	American History	2017-10-09	2017-10-17	Edit
Fall 2017 EOC	QA PM District	Algebra I	2017-11-06	2017-11-14	Edit
Fall 2017 EOC	QA PM District	Algebra II	2017-11-14	2017-11-22	Edit
Fall 2017 EOC	QA PM District	English I	2017-11-13	2017-11-21	Edit
Fall 2017 EOC	QA PM District	Geometry	2017-11-13	2017-11-21	Edit
Fall 2017 EOC	QA PM District	English II	2017-11-13	2017-11-21	Edit
Fall 2017 EOC	QA PM District	Biology	2017-11-13	2017-11-21	Edit

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## Accounts – District Testing Window

- Select the Subject, Start date and End date
- New: The Reporting date will populate the 5<sup>th</sup> business day after the end date.

Edit testing window

Admin \* District \* Subject \*

Fall 2017 EOC QA PM District Government

Start date End date

10/05/2017 10/11/2017

Reporting date

10/17/2017

Not Testing

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## Classes

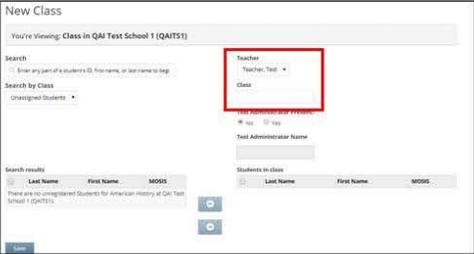
- Students are assigned to classes/teachers from the state Pre-ID load.
- The STC has the ability to move students from one class to another, and create new classes, if needed.
- The STC will assign the teacher to each class.
- Teachers can only view students in their classes.

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## Classes – New Class

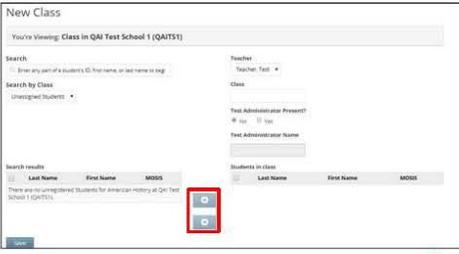
- To add a new class, from the Classes page, click **New Class**.
- Select the Teacher from drop-down.
- Name the Class.



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## Classes – New Class continued

- Select from different grouping of students using the Class drop-down menu.
- Mark the students you want to add to the class using arrows.
- Click **Save**.



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## Classes

- View/sort classes by content area.
- Edit an existing class
- To view a class, click **View**.

Classes

Classes for Fall 2017 EOC, QAI Test School 1 (QAITS1), Government New Class

Search

Class	Teacher	Test Administrator Name	Grades	
1st Hour	Test Teacher	None	—	<a href="#">View</a>

Click View to see the list of students that are associated with a class and make any changes.

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## Classes – View Class

- Sort by student first and last name, MI and student ID.
- Click **Edit** to add or remove students from the class.

Class Details

You're Viewing: **Jefferson, Mary-1** [Edit](#)

Test Administrator/Class: **Mary Jefferson/1**

Algebra I, Fall 2015-16

Students in this Class:

First Name	MI	Last Name	Student ID	
Jonathan	K	Adams	111222333	<a href="#">View</a>
Felicity	M	Lincoln	987654321	<a href="#">View</a>
Maya	J	Mickleson	998877665	<a href="#">View</a>

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## Classes – Download a Class List

- From the **Classes** page, click **View**.
- Download Students in this Class.

### Class Details

You're Viewing: **Jefferson, Mary-1** [Edit](#)

Test Administrator/Class: Mary Jefferson-1

Algebra I, Fall 2016

Students in this Class:

<small>First Name</small>	<small>MI</small>	<small>Last Name</small>	<small>Student ID</small>	
Jonathan	K	Adams	111222333	<a href="#">View</a>
Felicity	M	Lincoln	987654321	<a href="#">View</a>
Maya	J	Mickelson	998877665	<a href="#">View</a>

[Download Students in this Class \(Excel CSV\)](#)

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## Students Page

- Displays list of students in selected district, school and content area.
  - Students will be pre-entered based on file received from the state.
- Add new students or select **View** to edit student profiles.

**Students**

Click on any column header to sort on its contents.

Manage Students
New Student

Show students in any class, including those not assigned to one

There are 4 students in Alpha MS High School (2020-2020) taking Algebra I in Fall 2016. Search:

Student ID	First Name	MI	Last Name	Algebra I Class
111222333	Jonathan	K	Adams	1 (Mary Jefferson)
987654321	Felicity	M	Lincoln	1 (Mary Jefferson)

View
View

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## Students – Add a Student

- Add a student:
  - Select **New Student**.
  - Enter student information – bold fields are required.
  - Select a class.
  - Click **Save**.

**New Student**

**Demographic Information:**

<b>Student ID</b>	<input type="text"/>
<b>First Name</b>	<input type="text"/>
<b>MI</b>	<input type="text"/>
<b>Last Name</b>	<input type="text"/>
<b>Date of Birth</b>	<input type="text" value="mm/dd/yyyy"/>
<b>State Assigned Student ID</b>	<input type="text"/>
<b>Credit</b>	<input type="text"/>
<b>Grade</b>	<input type="text"/>
<b>Gender</b>	<input type="text"/>

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## Students – Edit a Student

- To edit a student:
  - Select **View**, then **Edit**.
  - Edit any fields that are not grayed out.
  - Set Accessibility and Accommodations for a student by clicking **Modify**.
  - Select the approved options.
  - Click **Save**.

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## Accommodations

- Accommodations and accessibility options can be set for each test a student is taking.

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## Accommodations Continued

- Online Accommodations highlights
  - Text-To-Speech
  - Read Aloud
- Offline Accommodations highlights
  - Print variations such as Paper, Large Print and Braille
- Classroom Accommodations highlights
  - Multi select tab to identify any classroom accommodations
  - Read aloud options, scribe. Etc.
- These accommodations must be indicated prior to testing.



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## NEW: Students – Multi Student Edit

- Multi Student Edit:
  - Select **Multi Student Edit** from the Students Tab dropdown.
  - Select the desired tool or accommodation (it will turn blue)
  - Check boxes for students.
  - Click Save.

Multi-Student Edit

Current subject: **No Subject** Search:

Print PDF Excel Download Refresh Help

MOSES	First Name	MI	Last Name	Content Area	Grade	Active Accommodations
000001212	Mbert		KTest	Algebra II	10	
000001212	Mbert		KTest	English I	10	
881100001	MD-PT		01 Prod	Algebra II	09	
881100001	MD-PT		01 Prod	Algebra II	09	
881100001	MD-PT		01 Prod	English I	09	
881100001	MD-PT		01 Prod	English II	09	
881100001	MD-PT		01 Prod	English II	09	
881100001	MD-PT		01 Prod	Geometry	09	



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**Important Dates**

- The first drop-down on the Test Administrations menu references important dates throughout the academic year.

Missouri Assessment Program 

HOME STUDENTS ▾ CLASSES TEST ADMINISTRATIONS ▾ ACCOUNTS ▾ REPORTS HELP ▾

Important Dates

Important Dates

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## Test Administrations

- The second drop-down is to view testing status.
  - View by Teacher and class.
  - View student logins and progress by clicking **View**.

**Test Administrations**

Testing Status for: Algebra I, Fall 2016 EOC

Filter By Testing Status: All Search  
Type all or part of a class or administrator name

Teacher	Class	Content Area	Test Name	Testing Status	
Teacher Teacher	Teacher Teacher Class	Algebra I	Algebra I	Not Started	<span style="border: 2px solid red; padding: 2px 5px;">View</span> <span style="padding: 2px 5px;">Delete</span>

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## Test Administrations - View Test

- **Examiner View** opens a window for the Test Administrator to view testing progress with no access to other parts of the system.
- **Print Labels** to produce student testing credentials, labels or a roster.

**Test is in progress.**  
Students may sign-in and take the test using their User ID's and the PIN shown below.

Examiner View
Print Labels

Session ID PIN: 3436 New PIN

Registered Students:

Sessions: All Sessions

Last Name	First Name	User ID	Password	Status	Total Items Completed	Date/Time Started	Date/Time Completed	Status Codes
Anderson	John	A78901	12345678	Session 1 Not Started	0			See...

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## Student Invalidations

- If a student's test session needs to be invalidated, the test administrator should notify the DTC immediately following the invalid test session.
  1. The DTC will contact DESE and complete an irregularity report.
  2. Enter the invalidation into the Nextera Admin site by clicking set status Codes.

Status	Total Items Completed	Date/Time Started	Date/Time Completed	Status Codes
Session 1: Not Started	0			<div style="border: 1px solid red; display: inline-block; padding: 2px 5px;">Set</div>

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## Test Administrations – Status Codes

- Indicate *Not Testing or Invalidate Test* and then select the reason from the dropdown box.
- If invalidating an Algebra I student, ensure you invalidate both sessions (1&2).

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## NEW: Pre-Test Teacher Scoring

- Pre-Test Teacher Scoring is now done via the Admin site
  - All constructed response item types.
  - View and score Text Entry, Writing Prompts, multi-part item types.
  - Gain reporting information
- Start by locating the “Score” button for a completed session.

Class	Content Area	Test Name	Testing status	View	Delete	Score
Geo 1	Geometry	2017-2018 Pre-Test	In Progress	<a href="#">View</a>		<a href="#">Score</a>

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## NEW: Pre-Test Teacher Scoring

- Select “Score” next to a students session under the Hand Score column.

Testing status	Hand Score
Session 1: Finished	
Session 2: Finished	<a href="#">Score</a>

- The entire class can be scored at one time, or each individual student.
- Student Pre-Test session must be in “Finished” status in order to score items.
  - Note: Not all sessions require Teacher scoring as many item types are machine scored.

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## NEW: Pre-Test Teacher Scoring

- Review the student response and indicate a score by using the menu on the right.
- Select "View Scoring Information" to review the scoring rubric.
  - Rubrics also found in the back of the Pre-Test pdf files posted on HELP tab.



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## NEW: Pre-Test Teacher Scoring

- Once scoring for the students session is complete, select "Submit and Close" or if additional student sessions are to be scored, select "Submit and Next".



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## Reports

- View and download reports by district, school, content area and report type.
- Report options will be based on the user's role (i.e. DTC, STC, or Teacher).



Missouri Assessment Program 

HOME STUDENTS CLASSES TEST ADMINISTRATIONS ACCOUNTS **REPORTS** HELP

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## Help

- Access commonly asked questions
- View/Download Manuals, Quick Reference Guides, Training Modules
- Download and install New Secure Browser
- Contact Customer Support (MOCustomerSupport@QuestarAI.com)



Help

Contact Support

Call 1-800-371-2548

Email [click here](#)

Chat [Click Here](#)

Commonly Asked Support Questions

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## Appendix G: Accommodation Codes

**ACCOMMODATIONS**

Accommodations for use on the End-of-Course Assessment are available only to student with an IEP/504 plan. Please read the full description prior to usage.

All accommodations need to be marked in Nextera prior to the assessment. Some tools are only for use by English Learner (EL) students (EL students are those coded LEP\_RCV or LEP\_NRC in MOSIS).

Accommodation	Description	Code
<b>Abacus</b>	<p><b>Students with this accommodation in their IEP/504 plan</b> may have access to an abacus.</p> <p>This accommodation must be chosen in Nextera under student accommodations prior to testing.</p>	A391
<b>Alternate Response Options</b>	<p><b>Students with this accommodation in their IEP/504 plan</b> may respond to items using an alternate option, including but not limited to: Adapted Keyboards, StickyKeys, MouseKeys, FilterKeys, Adapted Mouse, Touch Screen, Head Wand and Switches.</p> <p><i>Please Note: While the use of alternate response options is not directly supported by Questar, the help desk will work with districts needing to use one. The option must be provided by the district.</i></p> <p>This accommodation must be chosen in Nextera under student accommodations prior to testing.</p>	A441
<b>Braille</b>	<p><b>Students with visual impairments with this accommodation in their IEP/504 plan</b> may access the assessment via a Braille version. Tactile overlays and graphics tools may be used to assist the student in accessing the content.</p> <p><i>Please Note: Answers from students who access the assessment using the Braille format must be entered into the Nextera Test Delivery System prior to shipping the Braille assessment back. Please follow the instructions found in the Braille kit.</i></p> <p>This accommodation must be chosen in Nextera under student accommodations prior to testing.</p>	A012
<b>Large Print</b>	<p><b>Students with visual impairments with this accommodation in their IEP/504 plan</b> may access the assessment via a Large Print version.</p> <p><i>Please Note: Answers from students who access the assessment using the Large Print format must be entered into the Nextera Test Delivery System prior to shipping the Large Print assessment back. Please follow the instructions found in the Large Print kit.</i></p> <p>This accommodation must be chosen in Nextera under student accommodations prior to testing.</p>	A021

## ACCOMMODATIONS

Accommodations for use on the End-of-Course Assessment are available only to student with an IEP/504 plan. Please read the full description prior to usage.

All accommodations need to be marked in Nextera prior to the assessment. Some tools are only for use by English Learner (EL) students (EL students are those coded LEP\_RCV or LEP\_NRC in MOSIS).

Accommodation	Description	Code
<b>Multiplication Table</b>	<p><b>Students with this accommodation in their IEP/504 plan</b> may have access to a single digit multiplication table.</p> <p>This accommodation must be chosen in Nextera under student accommodations prior to testing.</p>	A395
<b>Paper Based Assessment</b>	<p><b>Students with this accommodation in their IEP/504 plan</b> may take the assessment using the Paper/Pencil format.</p> <p><i>Please Note: Answers from students who access the assessment using the Paper/Pencil format must be entered into the Nextera Test Delivery System prior to shipping the Paper assessment back.</i></p> <p>This accommodation must be chosen in Nextera under student accommodations prior to testing.</p>	A102
<b>Read Aloud (ELA Reading Passages)</b>	<p><b><i>Please see the Read Aloud section after the universal tools/accommodations list.</i></b></p>	
<b>Specialized Calculator</b>	<p><b>Students with this accommodation in their IEP/504 plan</b> may have access to a specialized calculator. The specialized calculator can include a talking calculator or Braille calculator among others. The memory of the physical calculator must be cleared before and after testing by the test examiner.</p> <p><i>Please Note: Use of a calculator is only for the Mathematics and Science assessments.</i></p> <p>This accommodation must be chosen in Nextera under student accommodations prior to testing.</p>	A396
<b>Speech-To-Text – Assistive Technology</b>	<p><b>Students with this accommodation in their IEP/504 plan</b> may use that technology in conjunction with the Nextera Test Delivery System. The software must be provided by the district.</p> <p><i>Please Note: The use of assistive technology software should be familiar to the student and should be software the student uses in the everyday classroom. While the use of assistive technology software is not directly supported by Questar, the help desk will work with districts needing to use the software. The software must be provided by the district.</i></p> <p>This accommodation must be chosen in Nextera under student accommodations prior to testing.</p>	A352

Accommodation	Description	Code
<b>Paper Based Assessment</b>	<p>Students with this accommodation in their IEP/504 plan may take the assessment using the paper/pencil format.</p> <p><i>Please Note: Answers from students who access the assessment using the Paper/Pencil format must be entered into iTester prior to shipping the Paper assessment back. Please follow the instructions found in the return kit.</i></p> <p>This accommodation must be chosen in the iTester Admin Students tab under special forms and also via the Test Sessions tab under student accommodations prior to testing. See page 38 for additional instructions.</p>	A102
<b>Read Aloud (ELA Reading Passages) – Human Reader</b>	<p>Students with this accommodation in their IEP/504 plan, taking the online, paper/pencil, Large Print, or Braille assessments may have the ELA Reading Passages read aloud by a human reader.</p> <p><i>Please Note: The Human Reader should be familiar to the student and have read aloud experience with the student in some capacity prior to the state assessment.</i></p> <p>This accommodation must be chosen in the iTester Admin Test Sessions tab under student accommodations prior to testing.</p>	A045
<b>Read Aloud (ELA Reading Passages) – Assistive Technology</b>	<p>Students with this accommodation in their IEP/504 plan, who use specific text-to-speech assistive technology software in the everyday classroom, may use that technology in conjunction with the iTester testing platform to have the ELA Reading Passages read aloud by the software. The software must be provided by the district.</p> <p><i>Please Note: The use of assistive technology software should be familiar to the student and should be software the student uses in the everyday classroom.</i></p> <p><i>Please Note: While the use of assistive technology software is not directly supported by Questar, the help desk will work with districts needing to use the software.</i></p> <p>This accommodation must be chosen in the iTester system under student accommodations prior to testing.</p>	A044
<b>Read Aloud (ELA Reading Passages) – Native Language</b>	<p>ELL students with this accommodation in their IEP/504 plan, taking the online, paper/pencil, Large Print, or Braille assessments may have the ELA Reading Passages read aloud to them in their native language by a human reader.</p> <p>This accommodation must be chosen in the iTester Admin Test Sessions tab under student accommodations prior to testing.</p>	A112
<b>Read-Aloud (ELA Reading Passages) – Blind Students</b>	<p>Blind students who do not yet possess adequate Braille skills with this accommodation in their IEP/504 plan may have the ELA Reading Passages read aloud by a human reader.</p> <p>This accommodation must be chosen in the iTester Admin Test Sessions tab under student accommodations prior to testing.</p>	A046
<b>Specialized Calculator</b>	<p>Students with this accommodation in their IEP/504 plan may have access to a specialized calculator. The specialized calculator can include a talking calculator or Braille calculator among others. The memory of the physical calculator must be cleared before and after testing by the test examiner.</p> <p>This accommodation must be chosen in the iTester Admin Test Sessions tab under student accommodations prior to testing.</p>	A396

Appendix G: Accommodation Codes

Accommodation	Description	Code
<p><b>Speech-To-Text – Assistive Technology</b></p>	<p>Students with this accommodation in their IEP/504 plan, who use specific speech-to-text assistive technology software in the everyday classroom, may use that technology in conjunction with the iTester testing platform. The software must be provided by the district.</p> <p><i>Please Note: The use of assistive technology software should be familiar to the student and should be software the student uses in the everyday classroom.</i></p> <p><i>Please Note: While the use of assistive technology software is not directly supported by Questar, the help desk will work with districts needing to use the software.</i></p> <p>This accommodation must be chosen in the iTester Admin Test Sessions tab under student accommodations prior to testing.</p>	<p>A352</p>

## Appendix H. Alpha Coefficients and SEMs

Table H.1. Alpha Coefficients and SEMs—Government, Summer 2017

Group	<i>n</i> -Count	Mean Raw Score	SD Raw Score	Effect Size	Reliability	SEM
All Students	823	25.61	7.56	--	0.88	2.58
<b>Gender</b>						
Female	441	25.54	7.32	-0.02	0.88	2.57
Male	382	25.69	7.84	--	0.89	2.58
<b>Ethnicity</b>						
American Indian/Alaskan Native	8	--	--	--	--	--
Asian	30	30.03	7.17	--	--	--
Pacific Islander	2	--	--	--	--	--
Black (not Hispanic)	135	19.99	7.69	-0.90	0.87	2.81
Hispanic	75	24.11	7.32	-0.38	0.87	2.68
White (not Hispanic)	545	26.91	6.87	--	0.86	2.53
Multi-racial	0	--	--	--	--	--
<b>LEP</b>						
No	784	25.85	7.52	--	0.88	2.57
Yes	39	20.87	6.92	--	--	--
<b>IEP</b>						
No	779	26.03	7.40	--	0.88	2.56
Yes	44	18.16	6.54	--	--	--
<b>Migrant</b>						
No	823	25.61	7.56	--	0.88	2.58
Yes	0	--	--	--	--	--
<b>FRL</b>						
No	481	27.69	6.85	--	0.87	2.46
Yes	342	22.68	7.56	-0.66	0.87	2.74
<b>Title I</b>						
No	681	26.49	7.49	--	0.89	2.51
Yes	142	21.38	6.40	-0.80	0.80	2.83
<b>Accommodations</b>						
No	810	25.74	7.54	--	0.88	2.58
Yes	13	17.54	3.71	--	--	--

**Table H.2. Alpha Coefficients and SEMs—American History, Summer 2017**

<b>Group</b>	<b><i>n</i>-Count</b>	<b>Mean Raw Score</b>	<b>SD Raw Score</b>	<b>Effect Size</b>	<b>Reliability</b>	<b>SEM</b>
<b>All Students</b>	54	23.98	7.22	--	0.85	2.77
<b>Gender</b>						
Female	29	23.10	7.32	--	--	--
Male	25	25.00	7.11	--	--	--
<b>Ethnicity</b>						
American Indian/Alaskan Native	1	--	--	--	--	--
Asian	1	--	--	--	--	--
Pacific Islander	0	--	--	--	--	--
Black (not Hispanic)	4	--	--	--	--	--
Hispanic	4	--	--	--	--	--
White (not Hispanic)	42	24.76	7.52	--	--	--
Multi-racial	0	--	--	--	--	--
<b>LEP</b>						
No	53	24.04	7.27	--	0.86	2.76
Yes	1	--	--	--	--	--
<b>IEP</b>						
No	46	25.04	6.43	--	--	--
Yes	8	--	--	--	--	--
<b>Migrant</b>						
No	54	23.98	7.22	--	0.85	2.77
Yes	0	--	--	--	--	--
<b>FRL</b>						
No	36	25.97	6.86	--	--	--
Yes	18	20.00	6.36	--	--	--
<b>Title I</b>						
No	54	23.98	7.22	--	0.85	2.77
Yes	0	--	--	--	--	--
<b>Accommodations</b>						
No	51	24.53	6.84	--	0.84	2.78
Yes	3	--	--	--	--	--

**Table H.3. Alpha Coefficients and SEMs—Government, Fall 2017**

<b>Group</b>	<b>n-Count</b>	<b>Mean Raw Score</b>	<b>SD Raw Score</b>	<b>Effect Size</b>	<b>Reliability</b>	<b>SEM</b>
<b>All Students</b>	12,960	25.78	7.31	--	0.87	2.59
<b>Gender</b>						
Female	6,445	25.71	7.06	-0.02	0.87	2.59
Male	6,515	25.84	7.56	--	0.88	2.58
<b>Ethnicity</b>						
American Indian/Alaskan Native	51	25.14	7.66	-0.21	0.88	2.63
Asian	401	29.47	7.02	0.39	0.89	2.30
Pacific Islander	27	23.22	6.60	--	--	--
Black (not Hispanic)	2,414	22.05	7.17	-0.66	0.85	2.77
Hispanic	711	24.53	7.18	-0.31	0.86	2.67
White (not Hispanic)	8,938	26.74	7.00	--	0.87	2.53
Multi-racial	0	--	--	--	--	--
<b>LEP</b>						
No	12,684	25.89	7.28	--	0.87	2.58
Yes	276	20.41	6.79	-0.81	0.82	2.85
<b>IEP</b>						
No	11,866	26.31	7.08	--	0.87	2.56
Yes	1,094	19.99	7.30	-0.87	0.85	2.84
<b>Migrant</b>						
No	12,959	25.77	7.32	--	0.87	2.59
Yes	1	--	--	--	--	--
<b>FRL</b>						
No	7,675	27.75	6.72	--	0.87	2.47
Yes	5,285	22.91	7.19	-0.67	0.85	2.74
<b>Title I</b>						
No	11,909	26.14	7.25	--	0.87	2.57
Yes	1,051	21.69	6.79	-0.65	0.83	2.79
<b>Accommodations</b>						
No	12,566	25.95	7.25	--	0.87	2.58
Yes	394	20.17	7.03	-0.82	0.84	2.85

**Table H.4. Alpha Coefficients and SEMs—American History, Fall 2017**

<b>Group</b>	<b><i>n</i>-Count</b>	<b>Mean Raw Score</b>	<b>SD Raw Score</b>	<b>Effect Size</b>	<b>Reliability</b>	<b>SEM</b>
<b>All Students</b>	404	22.13	7.02	--	0.84	2.83
<b>Gender</b>						
Female	204	20.97	7.07	-0.33	0.84	2.84
Male	200	23.31	6.79	--	0.83	2.80
<b>Ethnicity</b>						
American Indian/Alaskan Native	3	--	--	--	--	--
Asian	1	--	--	--	--	--
Pacific Islander	0	--	--	--	--	--
Black (not Hispanic)	52	19.87	6.45	-0.44	0.80	2.91
Hispanic	24	21.13	6.10	--	--	--
White (not Hispanic)	309	22.71	7.01	--	0.84	2.80
Multi-racial	0	--	--	--	--	--
<b>LEP</b>						
No	403	22.14	7.02	--	0.84	2.83
Yes	1	--	--	--	--	--
<b>IEP</b>						
No	386	22.30	6.97	--	0.84	2.82
Yes	18	18.33	7.16	--	--	--
<b>Migrant</b>						
No	404	22.13	7.02	--	0.84	2.83
Yes	0	--	--	--	--	--
<b>FRL</b>						
No	205	23.66	7.00	--	0.84	2.78
Yes	199	20.55	6.70	-0.46	0.82	2.88
<b>Title I</b>						
No	404	22.13	7.02	--	0.84	2.83
Yes	0	--	--	--	--	--
<b>Accommodations</b>						
No	400	22.10	7.01	--	0.84	2.83
Yes	4	--	--	--	--	--

**Table H.5. Alpha Coefficients and SEMs—Government, Spring 2018**

<b>Group</b>	<b><i>n</i>-Count</b>	<b>Mean Raw Score</b>	<b>SD Raw Score</b>	<b>Effect Size</b>	<b>Reliability</b>	<b>SEM</b>
<b>All Students</b>	42,756	27.70	7.71	--	0.89	2.55
<b>Gender</b>						
Female	21,442	27.24	7.52	-0.12	0.88	2.60
Male	21,314	28.15	7.88	--	0.90	2.50
<b>Ethnicity</b>						
American Indian/Alaskan Native	163	26.08	8.02	-0.30	0.89	2.68
Asian	851	29.94	7.47	0.19	0.90	2.37
Pacific Islander	86	25.84	7.54	-0.35	0.87	2.70
Black (not Hispanic)	5,384	23.39	8.10	-0.63	0.88	2.77
Hispanic	2,259	25.81	7.73	-0.35	0.88	2.68
White (not Hispanic)	32,843	28.49	7.38	--	0.88	2.51
Multi-racial	0	--	--	--	--	--
<b>LEP</b>						
No	41,714	27.85	7.66	--	0.89	2.54
Yes	1,042	21.66	7.21	-0.86	0.84	2.87
<b>IEP</b>						
No	39,551	28.29	7.39	--	0.88	2.52
Yes	3,205	20.35	7.84	-1.01	0.87	2.88
<b>Migrant</b>						
No	42,748	27.70	7.71	--	0.89	2.55
Yes	8	--	--	--	--	--
<b>FRL</b>						
No	25,565	29.69	6.93	--	0.88	2.42
Yes	17,191	24.73	7.86	-0.63	0.88	2.73
<b>Title I</b>						
No	39,508	28.09	7.59	--	0.89	2.53
Yes	3,248	22.87	7.51	-0.70	0.86	2.82
<b>Accommodations</b>						
No	40,805	28.03	7.56	--	0.89	2.53
Yes	1,951	20.69	7.65	-0.96	0.86	2.88

**Table H.6. Alpha Coefficients and SEMs—American History, Spring 2018**

<b>Group</b>	<b><i>n</i>-Count</b>	<b>Mean Raw Score</b>	<b>SD Raw Score</b>	<b>Effect Size</b>	<b>Reliability</b>	<b>SEM</b>
<b>All Students</b>	4,064	23.46	7.32	--	0.86	2.75
<b>Gender</b>						
Female	1,977	22.41	7.15	-0.29	0.85	2.79
Male	2,087	24.45	7.34	--	0.86	2.70
<b>Ethnicity</b>						
American Indian/Alaskan Native	14	21.79	6.68	--	--	--
Asian	40	27.75	6.50	--	--	--
Pacific Islander	3	--	--	--	--	--
Black (not Hispanic)	213	21.58	7.66	-0.26	0.87	2.79
Hispanic	148	21.39	7.50	-0.30	0.86	2.81
White (not Hispanic)	3,544	23.61	7.25	--	0.86	2.74
Multi-racial	0	--	--	--	--	--
<b>LEP</b>						
No	4,019	23.50	7.32	--	0.86	2.75
Yes	45	20.09	6.46	--	--	--
<b>IEP</b>						
No	3,825	23.81	7.17	--	0.85	2.74
Yes	239	17.80	7.31	-0.82	0.85	2.88
<b>Migrant</b>						
No	4,064	23.46	7.32	--	0.86	2.75
Yes	0	--	--	--	--	--
<b>FRL</b>						
No	2,290	25.09	7.06	--	0.86	2.68
Yes	1,774	21.35	7.11	-0.53	0.84	2.83
<b>Title I</b>						
No	3,923	23.47	7.31	--	0.86	2.75
Yes	141	23.06	7.55	-0.06	0.87	2.77
<b>Accommodations</b>						
No	3,904	23.71	7.22	--	0.86	2.74
Yes	160	17.24	7.00	-0.93	0.83	2.87