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Findings from the Quality of Test Administration Investigations:

PARCC Field Test

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Executive Summary

The overall purpose of the research studies described in this report was to investigate the quality of the administration of the Partnership for Assessment of Readiness for College and Careers (PARCC) field test during the spring of 2014. These research studies were conducted for the purpose of formative evaluation. Findings from these studies are being used to identify threats to the validity of PARCC test administration so that those threats can be addressed and reconciled prior to operational test administration. Throughout this report threats are identified, suggestions for ameliorating those threats are provided, and actions that have been implemented, or are being implemented, by PARCC to address those threats are provided. The actions that PARCC is taking to address the threats come from the *PARCC Field Test: Lessons Learned* report (PARCC, 2014).[1]

The usefulness and interpretability of test scores require that tests be administered according to established procedures; without such standardization of test administration, the accuracy and comparability of score interpretation is impaired, threatening the validity of interpretations of these scores for their intended uses (AERA, APA, NCME, 2014, p. 111). Consequently, quality test administration is integral to the ***Theory of Action*** (TOA) for PARCC. A TOA indicates the intended uses and expected impact of an assessment system, and informs testable claims related to the interpretation of test scores (i.e., the ***Interpretive Argument***). The evidence to support those claims and assumptions represents the ***Validity Argument***. The findings included in this report speak to the validity argument for the Administration phase of the PARCC TOA. Test Administration is the fourth "phase" in the larger PARCC TOA. The specific claims from the Administration phase of the PARCC TOA are presented in Figure 1.

Several sources of information were used in evaluating the claims from the Test Administration phase in the PARCC TOA. First, we observed a sample of test administration sessions and completed an observational checklist and debriefing interview with individuals involved in test administrations at the observed schools. The observation checklist and debriefing interview protocol were created from HumRRO's review of the administration training materials and administration manuals. Second, we analyzed responses to Test Administrator (TA) Surveys. Finally, we analyzed responses to surveys completed by students who participated in the field test. Copies of the observational checklist, debriefing interview protocol, and survey instruments are provided in appendices to this report. The conclusions that follow were drawn from analyses of these specific data sources.

[1] http://www.parcconline.org/parcc-states-release-lessons-learned-report

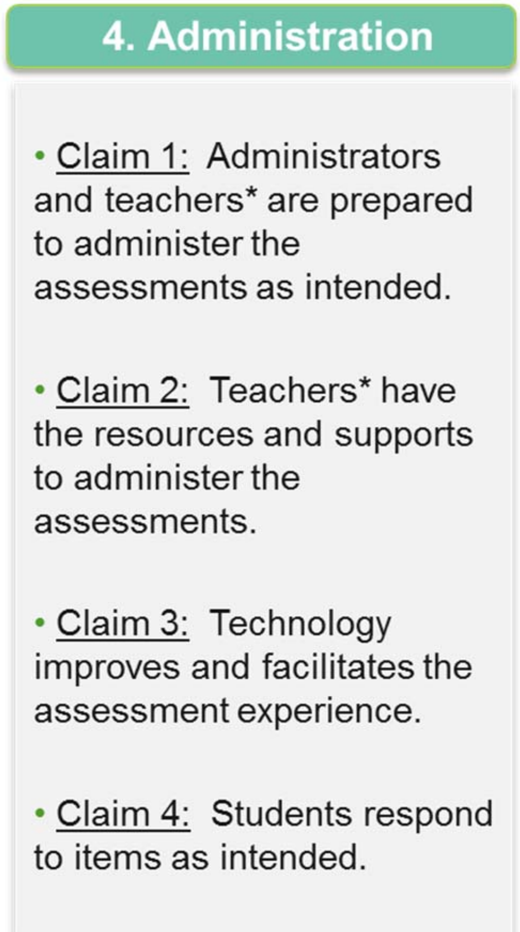

Figure 1. Claims from the Administration Phase of the PARCC Theory of Action.
The Quality of Test Administration research studies focus specifically on Test Administrators (TAs). Consequently, for the purposes of this report, Claims 1 and 2 are investigated specifically for TAs.

The findings from the research studies on test administration provide evidence in relation to the claims from the Test Administration phase of the PARCC TOA. A summary of these findings is presented next. Throughout this report, references are made to activities that address the *Standards for Educational and Psychological Testing* (hereafter referred to as the *Standards* [AERA, APA, & NCME, 2014]).

Claim 1: TAs are Prepared to Administer the Assessments as Intended

In order for this claim to be true important assumptions that must be verified are: (a) TAs are trained to administer the assessments and (b) training is effective. Findings related to several of the research questions provide evidence for these assumptions and for the overall claim of preparedness.

The research questions that provide evidence related to Claim 1 are:

- Research Question 2: To what degree do the TAs follow the protocols and instructions? (*addresses Standards 6.1 and 6.2*)
- Research Question 6: Are there any apparent attempts to record or copy test materials including the test questions by students or others? (*addresses Standards 6.6 and 6.7*)
- Research Question 8: If any disruptions, interruptions, or other problems occurred, did the test administrators deal with the issue appropriately and effectively? (*addresses Standards 6.1 and 6.3*)
    - Research Question 8a: Were the TAs' actions informed by training, by background experience, or a combination of the two? (*addresses Standard 6.1*)
    - Research Question 8b: Would a different approach have been more effective?
- Research Question 9: Was security of test materials maintained at all times? (*addresses Standards 6.6 and 6.7*)

The findings from the research studies on test administration provide the following evidence in relation to the research questions mapped on to Claim 1:

- The overall participation rates in the PARCC trainings indicate that the majority of Test Administrators (TAs) participated in some form of training; however, findings suggest that some TAs might not have received training.
- Of those indicating completion of online training, 78% completed the "Computer-based Testing Test Administration" module (i.e., 58% of all TAs who responded to the survey) and 41% completed the "Accessibility Features and Accommodations with Computer-based Testing" module (i.e., 30% of all TAs who responded to the survey). These were the two most frequently completed online modules.
- Less than half of the TAs had ever administered a computer-based test at the district or state level. Therefore, for the majority of TAs this suggests that their knowledge of computer-based test administration likely came from one or more of the trainings for PARCC. Although TAs were not asked to indicate whether they had ever taken a computer-based test in a proctored setting, it is possible that TAs might have assumed that they already knew enough about administering computer-based tests from prior experience taking computer-based tests in proctored settings.
- Of those who participated in online training, three-quarters agreed that it effectively informed them of the protocol to follow when administering assessments, and slightly more than half agreed that the online training prepared them to resolve basic problems related to technology (e.g., logging students in, exiting the test, etc.).
- Most TAs followed the major protocols and instructions in the TA Manual during test administration. However, there were a few minor exceptions. First, in nearly a fourth of the observed sessions the TAs did not post the "Testing – Do Not Disturb" sign. Second,

in over a third of the sessions the observers noted that TAs had not arranged computers so that there were partitions and/or sufficient space between computers (this has implications for test security.) Third, in approximately half of the observed sessions TAs did not keep track of time using a timing box[2] as instructed in the TA Manual. Finally, the most notable deviation from test administration instructions was that in nearly half of the observed sessions the TAs did not read the script verbatim. Observer notes indicate that the most common modifications to the script were: (a) skipping repetitive parts, (b) changing words (e.g., changing "session" to "part"), and providing additional guidance beyond what was in the script (e.g., for logging into TestNav, for using headphones). It should be noted that TAs were allowed to clarify the script after reading the entire script. In general, these deviations are considered minor.

- Overall, TAs handled the technology-related problems to the best of their ability. For example, they consulted their TA Manual for assistance, they worked with their Technology Coordinators, and they contacted the Help Desk for assistance. Nonetheless, in some instances the technological issues were substantive, and occasionally the issues were not resolved despite the TAs' best efforts. It should be noted that there were no system-wide technology issues during the field test. System-wide technology issues may stem from platform or infrastructure weaknesses, and may include overall performance degradation (e.g., long wait time between clicking next and next question appearing on the screen) or prolonged testing interruptions.[3] During the field test, there were no technology issues that impacted the platform for all. Most technology issues that did occur were local (e.g., firewall settings needed to be changed, computer settings needed to be adjusted, or students needed help logging in) — an expected result when school districts introduce computer testing for the first time, as was the case in most PARCC states. The majority of issues were quickly and easily resolved.

Recommendations that stem from the above findings related to Claim 1 are:

- Increase participation in training, including training on accessibility features and accommodations.

[2] The TA Manual instructs TAs to, "Draw a timing box on the board." The manual includes an example timing box for ELA/Literacy and Math. The examples differ slightly for ELA/Literacy and Math, but both boxes include lines on which TAs are to enter: Session Name, Session Time, Seal Code, Starting Time, Stopping Time, and Time Remaining.

[3] It should be noted that throughout this report there is evidence reported from the Test Administration studies of devices working slowly. However, "the referenced intermittent slowness is not evidence of a system-wide issue that impacts all users. Local bandwidth and infrastructure constraints play a key role in the delivery of online assessments. Thus, there are instances where local capacity can be maxed out on local network activity that is present on the network from typical instruction and administration activities, plus the bandwidth required for taking the PARCC assessment. To avoid local constraints, the bandwidth requirements outlined in the PARCC Technology Guidelines should be followed." Email communication from Pearson technology contact on January 26, 2015.

- Provide more in-person training.
- Condense and synthesize trainings and training material.
- Provide clearer training on managing testing time, including managing additional time allowed, to ensure that all students have the appropriate allotted time for completing the test.
- Implement efforts to ensure that TAs are consistent across sites in reading the script in the TA Manual (see Claim 2 for recommendations for improving the TA script).

Recommendations specific to Computer/tablet-based test (CBT) administration:

- Provide more (clearer) training on: (a) procedures for logging on and off, (b) disabling pop-up blockers, (c) use of headphones, and (d) use of tools.
- Provide additional practice with a "mock" test for both students and TAs, which would include practice accessing and navigating the TestNav system.
- Provide TAs with additional support from technology staff to help prepare for and deal with the technology issues.

Actions by PARCC to Address Concerns Related to Claim 1

In light of the information gathered during field testing, PARCC is already taking several actions to address concerns and potential threats to the claim that "TAs are prepared to administer the assessments as intended." Actions that are being implemented by PARCC to improve the preparedness of TAs include:

- Providing TA training modules earlier in the school year to facilitate advance preparation.
- Splitting modules into task based roles so that Test Administrators (TAs) and Test Coordinators (TCs) can clearly and easily identify which tasks they are responsible for; manuals include separate symbols for TA tasks and TC tasks for clarity. [4]
- Splitting up training modules into chapters by topic with search fields to allow easier navigation and to facilitate locating information. Providing a summary of where to find key training information.
- Enhancing the guidance and documentation around the SystemCheck tool to ensure wider use and understanding.
- Revising tutorials to include full array of tools, accessibility features, and item-computer interactions.

[4] The PARCC states have made several improvements to available modules based on field test feedback, including: Student Registration Import (September 19, 2014); PearsonAccess^{next} (October 9, 2014); Paper-based Testing for Test Coordinators (October 10, 2014); Paper-based Testing for Test Administrations (October 13, 2014); Introductions to Training (October 20, 2014); Accessibility Features and Accommodations (October 21, 2014).

- Updating the Accessibility Features and Accommodations training module, and updating the PARCC Accessibility Features and Accommodations Manual.
- Expanding practice tests to include paper and to include both the Performance-based Assessment (PBA) and the End-of-Year (EOY) Assessment in both content areas (Mathematics and English-Language Arts) so that TAs can become more familiar with the tests prior to administration.

These actions help to ameliorate concerns identified during the field test, and will help to ensure that TAs are better prepared to administer the PARCC assessments as intended during operational testing.

Claim 2: TAs Have the Resources and Supports to Administer the Assessments

For Claim 2 to be true important assumptions that must be met are: (a) resources and supports must be clear, sufficiently detailed, and easy to follow, and (b) resources and supports must not be overly burdensome for TAs to use and apply.

The research questions that provide evidence for this claim and these assumptions are:

- Research Question 1: To what degree do the test administrators (TAs) find the instructions clear, sufficiently detailed, and easy to follow? (*addresses Standard 4.15*)
- Research Question 10: Did the test administration create minimal disruption to the school and staff?

The findings from the research studies on test administration provide the following evidence in relation to the research questions mapped on to Claim 2:

- Approximately two-thirds of TAs agreed that the policies and procedures in the TA Manual were easy for them to understand.
- Slightly fewer (55% - 63%) agreed that the instructions (including the scripts for administering the assessments) were easy to implement.
- Feedback provided by the TAs indicates that there were some inconsistencies between what appeared in the TAs' scripts and what appeared on students' screens or booklets. Such disconnects contributed to some confusion in navigating through the tests.
- Some TAs also indicated that the instructions for submitting answers and completing tests (CBTs) were not easy to understand.
- Some TAs indicated that the TA Manual was confusing at times because large parts of the manual were not relevant to the particular grade being tested. This required the TAs to skip back and forth between sections of the lengthy manual to find the sections that were relevant to the grade being tested; TAs reported that having to skip around made it easy to get lost in the script.

- Some TAs reported that the instructions for timing the test, including the instructions for additional time, were not as clear as they would have liked.
- Some TAs reported confusion over ambiguous terminology in the TA Manual, such as the terms “sections” and “sessions,” which were used interchangeably and inconsistently.
- Some TAs reported that the “volume of materials” (e.g., online training, manuals, and various communications and updates), and the time required to synthesize and digest all that information was overly burdensome.
- Some TAs reported confusion about the read aloud accessibility feature/accommodation (text-to-speech vs. human reader) described in the Accessibility Features and Accommodations Manual.
- Points of confusion that were specific to the paper-based test (PBT) administration were: (a) no page numbers in the student instruction books (students did not know which page to turn to), and (b) confusion about the instructions for when calculator use was allowed and not allowed.

Recommendations that stem from the above findings related to Claim 2 are:

- Check instructions in the TA script against instructions on students’ screens/booklets to ensure there are no inconsistencies between what appears in the script and what appears on students’ screens/booklets.
- Clarify instructions in the TA manual for (a) managing time, including additional time, and (b) submitting answers and completing tests (CBTs).
- Remove and/or reconcile ambiguous terminology in the script (e.g., “sessions” and “sections”).
- Consider making calculators available for entire sections as opposed to parts of sections so that it will be easier for TAs to monitor their use (PBT version).
- Condense and synthesize the training and the training materials into a more digestible amount and format.
- Create grade-specific scripts.
- Develop a summary or checklist of major steps and key information for TAs.
- Clarify instructions in the Accessibility Features and Accommodations Manual on the read aloud accessibility feature/accommodation.

Actions by PARCC to Address Concerns Related to Claim 2

In light of the information gathered from field testing, PARCC is already taking several actions to address concerns and potential threats to the claim that “TAs have the resources and supports to administer the assessments.” The “resources” and “supports” (beyond the trainings discussed under Claim 1) that were the focus of these research studies were the TA Manual protocols and script. Actions that are being implemented by PARCC to improve the TA Manual are:

- Shortening the TA Manual by reducing redundancies so that there is not as much information to sort through.
- Working with grade level experts to ensure administration scripts are grade appropriate, as scripts are being split into grade bands within the TA manual to facilitate their use.
- Updating the TA manual to include simple and direct checklists of tasks to complete before, during, and after testing.
- Updating the TA manual to include more explicit directions, including graphics and icons to increase user understanding.
- Changing the terminology for testing sessions to clarify terms for testing.
- Clarifying instructions for calculator use to make it easier for TAs to monitor calculator use; for CBTs, changes are being made to the computer-based interface to make it easier to see if the student is in a calculator section; for PBT, a calculator icon will be added to the pages in the test booklet to make it easier for TAs to monitor.
- Updating instructions in the TA manual so there are no disconnects in directions for the “Submit” function and the “Exit & Save” function.
- Simplifying the testing time policies described in the TA manual so that it is easier for TAs to understand how to manage testing time.
- Sending the TA manual to PARCC and state representatives for review to ensure that procedures and directions are simple and clear.
- Updating the Accessibility Features and Accommodations Manual.

The above actions, coupled with actions to streamline and simplify TA training, help to ameliorate concerns identified during field testing with the PARCC resources and supports.

Claim 3: Technology Improves and Facilitates the Assessment Experience

For this claim to be true an important assumption that must be met is that the technology must work as intended. If the technology does not work as intended—for example, if there are functionality problems and/or delays in its application, then the veracity of this claim is threatened.

The evidence for this claim comes directly from Research Question 7a:

- Are there any hardware or software related problems during the test administration? (*addresses Standards 6.3 and 6.4*)

The findings from the research studies on test administration provide the following evidence in relation to the research question mapped on to Claim 3:

- Nearly 90% of TAs reported that they encountered one or more problems related to technology during the assessment administration.
- TAs reported that they most frequently encountered problems with logging into the assessment. The next most frequently encountered problems reported by TAs were with devices that stopped working ("shutting down"), devices working slowly, and losing internet connection, respectively. Loss of student data occurred in many instances when devices locked up and users were kicked out of the system.
- Overall, approximately half of the students indicated that they encountered technology-related problems during their test.
- Students reported higher occurrences of devices working slowly than of devices "stopping" (i.e., shutting down) entirely.
- Some students also reported difficulties with dragging or moving objects on the screen and difficulties making changes to answers. Difficulty making changes to answers was reported at a higher frequency for the Mathematics tests than for the English Language Arts (ELA) tests. Some students also reported difficulty entering math symbols and numbers into the equation editor on the mathematics tests.
- There was a reduction in the pervasiveness of the technological problems from the time in which the initial PBAs were administered to the subsequent administration of the EOY assessments. This suggests that improvements were made overtime, and that problems can be addressed and reconciled for future administrations. Although it should be noted that the PBAs included more technologically enhanced items than the EOY assessments.
- Of those students who reported using the highlighter tool and the magnifying tool, most indicated that they were easy to use.

Recommendations for TAs that stem from the findings for Claim 3 are:

- Prepare ahead of time to help discover and address potential technology difficulties prior to test administration.
- Utilize the support available from district technology staff.
- Investigate the PARCC SystemCheck tool to ensure that it is catching technological issues prior to test administration.

An additional recommendation is to:

- Update the training provided to TAs on handling technology-related issues to address the common technological issues encountered during field testing (e.g., logging on, submitting tests, disabling pop-up blockers, etc.).

Actions by PARCC to Address Concerns Related to Claim 3

In light of the information gathered from field testing, PARCC is already taking several actions to address concerns and potential threats to the claim that "Technology improves and facilitates the assessment experience." Although local districts are responsible for their own technology (e.g., devices, internet connectivity, etc.), the PARCC consortium is working to provide districts and schools with additional supports to improve the local technology experience. Actions that are being implemented by PARCC to address technology-related issues include:

- Improving exiting procedures in the test delivery system so that students are not locked out of tests prematurely.
- Conducting an extensive verification and validation process of the delivery system prior to the operational assessments to confirm that the system can support the thousands of simultaneous test-takers without interruptions and without loss of student answers.
- Working with a vendor to conduct a large-scale "dress rehearsal" to identify issues with the highlighter tool and other tools (e.g., magnifier and drag-and-drop) and develop solutions to further improve functionality before operational testing.
- Reviewing and improving information shared with school districts and schools about the technology requirements and about how to set up devices to reduce blockage of videos due to filter settings on testing devices.
- Providing more time for the infrastructure trial by making it available to schools earlier.
- Enhancing guidance and documentation around the SystemCheck tool to ensure wider use and understanding of the tool. The SystemCheck tool allows users to validate that their testing workstations meet the minimum requirements needed to run TestNav8 for the assessments and evaluate bandwidth capacity for internet and proctor-caching connections.
- Updating the training modules available to guide users in conducting an infrastructure trial and proctor caching to ensure that the modules are more comprehensive and provide clearer step-by-step instructions.
- Providing a new technology preparedness training module to help organizations understand, manage, and make decisions in preparing school technology to be used for online testing.
- Launching an updated interface for PearsonAccess (PearsonAccess^{next}) to make it more user-friendly.
- Improving the equation editor in the Mathematics assessments so that it is easier for students to use.
- Providing practice tests to allow students and teachers to become more familiar with the equation editor and other tools.

- Increasing the knowledge of Call Center staff so that they are better equipped to help TAs resolve technology-related problems.
- Increasing the number of representatives staffed at the Call Center.
- Creating a "Quick Start Checklist" to have a cohesive step-by-step guide to start up.
- Adding a live chat feature to the Customer Support Center to allow additional avenue for responses.
- Linking the call-in process to PearsonAccess^{next} user profiles to limit time spent identifying callers.
- Bringing in an independent vendor to test the platform and identify performance issues needing improvement.
- Conducting "load testing" and other tests to pinpoint performance issues and solutions.
- Improving information to the field on minimum technology specifications and how to set up devices.
- Developing clear, consistent, and comprehensive communication to be sent to states and districts regarding technology preparedness tools, resources, timelines, and support.

These actions help to ameliorate concerns identified during the field test, and will help to ensure that technology improves and facilitates the assessment experience.

Claim 4: Students Respond to Items as Intended

Finally, for Claim 4 to be true, several assumptions must be verified. First, for students to respond to items as intended, they must understand the directions read by the test administrator (i.e., the script). Second, students must also understand the directions they read for the questions on the test. If the students do not understand the directions read by the TA and/or if they are confused by the directions they read on the test, then they may not respond to the items as intended. Third, to respond to items as intended, students need to have some engagement with the assessment. If they are not engaged or if they have a low level of engagement, then they might not sufficiently attend to items so as to respond to them as intended. Several factors might negatively impact student engagement, such as distractions caused by: (a) unauthorized visitors, (b) disruptive student behavior, and (c) technological problems, to name a few.

The research questions that provide evidence for this claim and these assumptions are:

- Research Question 3: Do the students appear to understand the instructions provided to them? (*addresses Standards 4.16 and 6.5*)
- Research Question 4: To what degree are students engaged in taking the test? (*addresses Standards 4.16, 6.3, 6.4, and 6.5*)

- Research Question 5: Is there any disruptive student behavior during the session? (*addresses Standard 6.4*)
- Research Question 7: Are there any interruptions during the session? (*addresses Standards 6.3 and 6.4*)
    - Research Question 7a: Are there any hardware or software related problems during the test administration?
    - Research Question 7b: What type of questions, if any, do students ask during the test administration? (*also relevant to Standards 4.16 and 6.5*)

Overall, the findings from the research studies on test administration provide the following evidence in relation to the research questions mapped on to Claim 4:

- The majority of students (78% or more across the test types and administration modes) reported that they understood the directions (i.e., script) read by their TA.
- However, there was also converging evidence from the TA Surveys and from the observation study that the script read by the TAs was too lengthy, and that, as a result, some students had trouble staying engaged.
- Findings indicate that the majority of students had some difficulty in understanding at least some of the directions they read for the questions on the test. This was particularly true for the Mathematics tests with only about 15% of students indicating that it was hard to understand the directions for the questions on the test "almost never." For ELA tests, about a third of the students indicated that it was hard to understand the directions "almost never."
- Findings from the research studies indicate that the TAs effectively kept distractions such as, outside visitors and disruptive student behaviors, to a minimum.
- Some students reported that they "liked" the more interactive nature of the CTBs.
- The biggest distraction, and thus impediment to student engagement, appears to have been the technology-related problems, which sometimes caused delays in testing and/or resulted in the loss of student data. As a result, some students reported that they skipped items that were not functioning correctly or that they rushed to finish the test because of the delays caused by the technology problems.

Recommendations that stem from the above findings related to Claim 4 are:

- Shorten the scripts by removing repetitive content, particularly when TAs are administering back-to-back sessions.
- Provide students and TAs with more exposure to practice items so that they have greater familiarity and understanding of what the instructions for the questions on the test are asking them to do. Many of the test items are novel item types, which makes practice opportunities particularly helpful.

- Allow students to read a book as soon as they have completed their test so that they are less likely to distract other students who are still testing.
- Take steps to address technology-related problems, and thereby improve student engagement with assessment.
- Revising general directions on the tests, especially the mathematics tests, to make them clearer.

Actions by PARCC to Address Concerns Related to Claim 4

In light of the information gathered from field testing, PARCC is already taking several actions to address concerns and potential threats to the claim that "Students respond to items as intended." Many of the actions already identified under Claims 1, 2, and 3 will help to ensure that students respond to items as intended. Additional actions not already addressed above that PARCC is taking to help ensure that students respond to items as intended are:

- Expanding tutorials to include the full array of tools, accessibility features, and item-computer interactions.[5]
- Revising tutorials to make them more grade-appropriate.
- Expanding practice tests to include paper and to include both components (PBA and EOY in both content areas) so that students can become more familiar with the tests prior to administration.
- Updating the test scripts in the manual to contain more grade-appropriate language, which should help to improve students' attention to the scripts and understanding of the information conveyed in the scripts.

These actions combined with the actions described under Claims 1, 2 and 3 will help to address threats to the claim that students respond to items as intended.

Conclusion

These findings do not provide an exhaustive investigation of the validity evidence for the PARCC test administration. Consequently, the evidence presented here should not be taken as the final word on the PARCC field test administration. Nonetheless, the findings presented here do represent the foundation of the validity argument for the PARCC field test administration. There were some positive findings from this investigation; there is also some evidence indicating a lack of support for the claims in the Test Administration phase in the TOA. Because lack of support for earlier goals may undermine the validity of subsequent goals, the evidence

[5] The planned release dates for the expanded student tutorials for CBT and PBT are: High school tutorials: November 2014 (available at parcc.pearson.com/tutorial); Grade 3 – 8 tutorials: January 2015 (available at parcc.pearson.com/tutorial). Online practice tests for the mathematics EOY assessment and the ELA PBA assessment are currently available.

reported here represents concerns for the validity of PARCC test score interpretations for future operational assessments for their intended uses if these issues persist in future administrations. These issues should be addressed, to the extent feasible, prior to operational testing. The actions already being implemented by the PARCC consortium will help to ensure that those threats are reconciled prior to operational testing. The planned Test Administration Study for operational testing (i.e., TA Survey, Student Survey and Site Observations) will help to verify whether these corrective actions have been effective. This validity argument should be updated as new evidence is collected.

Table of Contents

List of Tables

List of Figures

Findings from the Quality of Test Administration Investigations: PARCC Field Test

Purpose

The purpose of the research studies described in this report was to investigate the quality of the administration of the Partnership for Assessment of Readiness for College and Careers (PARCC) field test in Mathematics and English Language Arts (ELA)/Literacy during the spring of 2014. These research studies were conducted for the purpose of formative evaluation. Findings from these studies are being used to identify potential threats to the validity of PARCC test administration so that those threats can be addressed and reconciled prior to operational test administration. Throughout this report threats are identified, suggestions for ameliorating those threats are provided, and actions that have been implemented, or are being implemented, by PARCC to address those threats are provided. All of the PARCC actions included in this report come from the *PARCC Field Test: Lessons Learned* report (PARCC, 2014).[6]

Background

Quality of test administration is integral to the ***Theory of Action*** (TOA) for PARCC. A TOA indicates the intended uses and expected impact of an assessment system and informs testable claims related to the interpretation of test scores (i.e., the ***Interpretive Argument***). The evidence to support those claims and assumptions represents the ***Validity Argument***. The findings included in this report speak to the validity argument for the Administration phase of the PARCC TOA. The *Standards for Educational and Psychological Testing* (hereafter referred to as the *Standards*) provide criteria for the development and evaluation of tests and testing practices as well as guidelines for assessing the validity of interpretations of test scores for the intended test uses (AERA, APA, & NCME, 2014, p. 1). Throughout this report references are made to findings that relate to the administration criteria from the *Standards*.

The validity studies for the PARCC field test take an argument-based approach to validation, whereby the goal is to evaluate the extent to which the evidence supports or refutes the proposed interpretations and uses of test scores (Kane, 2006). This approach is consonant with the *Standards* on validity, which state that a rationale should be presented for the intended interpretation of test scores for a given use, and that that rationale should identify the claims/propositions that must be investigated to support the intended interpretation of test scores (AERA, APA, & NCME, 2014, p. 23). Per the *Standards* it is "incorrect" to use the unqualified phrase "the validity of the test." Rather, validity is a matter of the validity of the interpretations and uses of test *scores*. Consequently, the evidence reported here represents

[6] http://www.parcconline.org/parcc-states-release-lessons-learned-report

concerns for the validity of PARCC test score interpretations from future operational assessments for their intended uses if these issues persist in future administration.

PARCC scores are intended to be interpreted and used as an indication of whether students are on track in their learning to be successful in college and their careers.[7] This is commonly referred to as "college and career readiness," or CCR. Based on the stated claims and purposes of the PARCC assessments as described in PARCC's publicly available documentation, a TOA for PARCC was developed with the end goal of college and career readiness (see PARCC Validity Studies Memorandum; Thacker, Sinclair, Wise, & Becker, 2014). The TOA for PARCC (see Figure 2) is organized as a series of interim goals that lead to an end goal. Each interim goal is a prerequisite for supporting subsequent interim goals. Again, the end goal of the PARCC assessment system is that PARCC scores in ELA and Mathematics provide an indication that students are, or are not, college and career ready (CCR), or on track to become CCR for younger students. In order to attain the end goal of CCR, each of the interim goals (denoted by the column headers in Figure 2) must be met. Lack of support for any of the interim goals potentially undermines the validity of the system to meet its end goal.

The findings in this report address the interim goal of Test Administration from the PARCC TOA (see Figure 2). In order to have a quality test administration, certain *claims* must be met. Those claims are depicted by the bullet points under the Administration heading in the TOA. They are: (a) Administrators and teachers[8] are prepared to administer the assessments as intended, (b) Teachers have the resources and supports to administer the assessments, (c) Technology improves and facilitates the assessment experience, and (d) Students respond to items as intended. There are numerous assumptions that underlie each of these claims. For example, if students are to respond to items as intended, then the Test Administrators (TAs) must follow the appropriate protocols and instructions for administering the test (this is Standard 6.1 from the *Standards*). The claims related to the Administration phase of the TOA served as a guide for identifying assumptions that must be met for those claims to be true. Those assumptions relate to the research questions guiding the investigations of the PARCC field test administration. The research questions and the investigations designed to address those questions were proposed by HumRRO to PARCC and revised after multiple rounds of feedback from PARCC leadership.

[7] From PARCC website: http://www.parcconline.org/about-parcc.
[8] The PARCC field test was administered by "Test Administrators" (typically teachers). Given that PARCC refers to the individuals administering the tests as "Test Administrators" as opposed to "teachers," the current report treats all references to "teachers" in the Administration phase of the TOA as "Test Administrators."

1 Design	2 Development	3 Implementation	4 Administration	5 Scoring	6 Reporting	7 Use
• **Connects to CCSS** • **Determines whether students are CCR or on track to be CCR** • **Measures full range of student performance, including high- and low-achieving students** • *Tests are faster and more efficient to administer* • *Informs instruction, interventions, and professional development* • **Provides data for accountability, including measures of growth** • **Incorporates innovative approaches, including technology, that are interactive and engaging** • *Administered on range of devices* • **Provides multiple measures of student achievement** • **Includes range of item types** • **Captures critical-thinking, problem-solving, and communication skills** • *Provides timely results* • **Accommodations are appropriate for SWD and ELL students** • **Assessments are accessible to SWD**	• **Subject matter, presentation, and language use is free of potential bias and is acceptable to students, parents, and other community members** • **Items are of sufficient quality and rigor** • *Teachers provided with instructional materials, professional development and other supports to enable them to effectively instruct students on CCSS curriculum so that students can demonstrate their achievement on the assessments* • **Schools have the resources and infrastructure to implement and administer the assessments as intended** • *Educators from across the country are trained by PARCC to become leaders and experts to share their knowledge and expertise within their community*	• *Teachers effectively instruct students on CCSS-aligned curriculum* • **Communication plan clearly conveys to stakeholders the policies and practices essential for effective implementation of assessment system** • **Students understand the format of the assessments and how to use the technology** • **Test vendors, departments of education, school districts, and schools are coordinated in the assessment process**	• **Administrators and teachers are prepared to administer the assessments as intended** • **Teachers have the resources and supports to administer the assessments** • **Technology improves and facilitates the assessment experience** • **Students respond to items as intended**	• *Timely scoring* • **Rubric is diagnostic** • **Scores accurately and reliably reflect student achievement on the assessed content** • **Growth inferences provide accurate information on changes in student performance.** • **Scores from multiple PARCC assessments provide both unique and complementary information.** • **Cut score is indicative of college- and career-readiness** • **Inferences across forms and years are appropriately comparable.**	• **Score reports are clear and easily understood by stakeholders** • *Results reported in a timely manner* • *Results reported in score reports are actionable*	• *Students use results to determine if they are on track to graduate ready for college and careers, and to identify where gaps may exist* • *Teachers use results to help inform instruction, and provide supports and interventions to students with readiness gaps* • *Parents have timely information about the progress of their children* • *States compare their results with other states to make decisions about their relative performance and use that information to better plan for and develop future workforce* • *Nation compares its performance to other countries to make decisions about relative performance and use that information to better plan for and develop future workforce*

Figure 2. Seven sequential phases from the simplified TOA for the PARCC assessment system.

Note. **Bold** font indicates claims related to test score interpretation and *italics* indicate claims regarding impact/consequences of test scores.

Those research questions and the *Standards* that they address are:

1. To what degree do the test administrators (TAs) find the instructions clear, sufficiently detailed, and easy to follow? *(addresses Standard 4.15)*
2. To what degree do the TAs follow the protocols and instructions? *(addresses Standards 6.1 and 6.2)*
3. Do the students appear to understand the instructions provided to them? *(addresses Standards 4.16 and 6.5)*
4. To what degree are students engaged in taking the test? *(addresses Standards 4.16, 6.3, 6.4, and 6.5)*
5. Is there any disruptive student behavior during the session (e.g., refusal to take the test or leaving the room without permission during the testing session)? *(addresses Standard 6.4)*
6. Are there any apparent attempts to record or copy test materials, including the test questions, by students or others? *(addresses Standards 6.6 and 6.7)*
7. Are there any interruptions during the session? *(addresses Standards 6.3 and 6.4)*
    a) Are there any hardware or software related problems during the test administration?
    b) What type of questions, if any, do students ask during the test administration? *(also addresses Standards 4.16 and 6.5)*
8. If any disruptions, interruptions, or other problems occurred, did the TAs deal with the issue appropriately and effectively? (*addresses Standards 6.1 and 6.3)*
    a) Were the TAs' actions informed by training, by background experience, or a combination of the two? *(addresses Standard 6.1)*
    b) Would a different approach have been more effective?
9. Was security of test materials maintained at all times? *(addresses Standards 6.6 and 6.7)*
10. Did the test administration create minimal disruption to the school and staff?

Additional research questions of interest, although not directly linked to the TOA, include:

11a. Did the observers' responses to the Test Administration Observation Checklist (TA-OC) adequately and accurately capture relevant aspects of the assessment session?

11b. Did the test administrators' responses to the Test Administrator Surveys adequately and accurately capture relevant aspects of the assessment session?

11c. Did the students' responses to the Student Surveys adequately and accurately capture relevant aspects of the assessment session?

While the above list of research questions address all of the standards related to test administration from the *Joint Standards,* the list should not be considered an exhaustive list of research questions on test administration. Rather, these research questions represent a combination of the topics of greatest interest at the time of PARCC field test administration and those that were most feasible on which to collect information. As stated in the PARCC validity studies memorandum (Thacker et al., 2014), the validity argument should be annually updated to document the *continuing* collection of validity evidence for the PARCC assessments. Furthermore, if support for a claim is weak or the evidence is inconclusive, then that aspect of the testing program must be improved or additional evidence gathered. As such, the information reported here should not be treated as the final word on the validity argument for the PARCC field test administration. Rather, the findings presented here provide initial evidence on the claims for an effective test administration, and provide guidance on actions to take to address threats to an effective test administration.

The next section of the report outlines the method used to collect evidence for the research questions on test administration.

Method

An effective test administration requires high quality training of TAs. The training of TAs establishes the foundation for a well-prepared administration team that follows standardized procedures and adapts as necessary when things do not go as planned. Effective test administration also requires clear and consistent test administration instructions, including consideration of various testing conditions and unplanned occurrences. A sound infrastructure allows the training and the instructions to be applied as designed. These prerequisites must be in place in order for students to respond to the test items as intended. Three separate research investigations were designed to collect information on these requirements for meeting the interim goal of effective test administration. They are: 1) observation visits to test administration sites, 2) surveys of TAs, and 3) surveys of student test-takers. These three investigations provide three different perspectives on the test administration, and thereby help to triangulate the findings related to the research questions. The procedures, instruments, and participants used for each of these studies are described next.

Study 1: Test Administration Observations

Procedure. HumRRO researchers visited administration sites to observe the administration of the PARCC Performance-Based Assessment (PBA) and End-of-Year (EOY) field test during the spring 2014 testing window. We based these observations on a successful protocol that HumRRO uses to ensure test administration quality for the National Assessment of Educational Progress (NAEP). That protocol is composed of detailed observation checklists that trained HumRRO staff use to document task completion during a sample of field test administrations. HumRRO revised the protocol based on the PARCC Test Administrator Manual and guidance from PARCC leadership.

Prior to conducting observations of testing in schools for any project, HumRRO conducts internal observer training for selected staff. Although staff used for PARCC observations were experienced, it is essential to provide observers information tailored to the project at hand. HumRRO conducted the training with staff via teleconference, with interested PARCC staff in attendance. The training covered the following topics:

- An overview of PARCC and the 2014 field test administration
- PARCC assessment system and materials
- What to expect when observing
- Observation checklist (detailed review)
- Observer conduct during school visit
- Coordination with the sampled schools
- What to take with you (e.g., observation forms, job aid, PARCC manual excerpts)

A key aspect of the training was a detailed review of the observation checklist (described below) to ensure that observers developed a common understanding of each “task” (i.e., the activities performed by the TAs) and that the ratings were consistent across observers. Tasks were discussed to ensure observers understood what they would see when the task is conducted, or in some cases, how they would know if a task is completed. This is an important discussion since there are times a task can be ambiguous. For example, the task, “Monitor student progress using administration computer.” If the observer can see the TA looking at usage screens during the assessment, as opposed to responding to a student computer issue (i.e., resetting TestNav), then the observer was trained to rate the task as “Met” on the observation checklist.

Additionally, procedures for interacting with the schools, school personnel, and students were reviewed. Observers were trained to not interfere with or provide guidance to test administrators and not to interact with students, instead striving to be as unobtrusive as possible.

The HumRRO observers assigned to visit schools were directed to contact the school's PARCC test coordinator to verify the testing date and time, address any last minute logistical details, and again to provide assurance that we were not visiting to evaluate the school or their staff. Observers arrived at the schools wearing their PARCC photo ID cards, followed school sign-in procedures, and were accompanied by the test coordinator or TA to the testing room. The observers positioned themselves near the administration computer when possible and remained seated (as students arrived) throughout the test. They used applicable resources (excerpts from the administration manual or a job aid[9]) and entered observation ratings and notes in the observation checklist using either their laptops or paper copies of the observation checklist.

Instruments. HumRRO developed two data collection instruments for use during administration observations. The first instrument contained a list of activities ("tasks") performed by the TA that were based on the guidance for test administration in the PARCC Test Administrator Manual. Observers rated each task on a rating scale (described below). This instrument included space for notes to provide the rationale for the rating as well as other observations not captured by the rating scales. The second instrument, a semi-structured debriefing protocol, was developed for post-assessment interviews. All instruments were reviewed and approved by PARCC prior to their use.

Test administration observation checklist. We designed the observation checklist as an internal data collection form, targeting specific test administration activities. The purpose of the form was to record whether specific administration tasks were conducted and to document exceptions to established procedures, if any were found. HumRRO used the PARCC Computer Based Testing (CBT) Test Coordinator, Administrator, Accessibility Features, and Accommodations manuals to identify the observable tasks included in the checklist.

The observation checklist was an Excel® document that HumRRO observers used to enter data; data was uploaded to Statistical Analysis Software (SAS™) to facilitate aggregated reporting across observations. The full observation checklist can be found in Appendix A. The observers were trained to rate each checklist task on a five-point rating scale. The rating scale and a description of each scale anchor are presented below in Table 2.

[9] This was a resource developed by HumRRO and PARCC staff containing the procedures used to administer accommodations.

Table 1. Checklist Observation Form Rating Scale

	Rating	Description
1	Met	The task was completed
2	Partially Met	Some parts of the task were not completed
3	Did Not Meet	The observer knows that the task was not completed
4	Not Observed	The task was likely completed but was not directly seen by the observer
5	Not Applicable	The task is not intended to be completed in certain situations

In addition, to support the use of the observation checklist when observing accommodated sessions, HumRRO developed an accommodation job aid. Since the tasks the test administrators (TAs) follow vary for each testing accommodation that students require, as specified in their Individualized Education Program (IEP), listing all possible combinations in the checklist was not feasible. Observers used the job aid, based on PARCC accommodation documents (e.g., manual, training slides), to guide their ratings while observing an accommodation session.

Test coordinator and administrator debriefing protocol. To obtain additional information regarding the overall test administration experience of the Test Administrator (TA), Test Coordinator (TC), and other school or district staff (e.g., other teachers helping the TA, technology personnel), we developed a debriefing form as a guide for conducting post-assessment interviews. If time permitted, HumRRO observers asked the TA or other staff about their experiences and feedback regarding the testing process, training materials, and support from PARCC. See Appendix B for the debriefing protocol.

Participants. HumRRO sampled from the following states: Illinois, Maryland, New Mexico, Ohio, and Tennessee. PARCC provided HumRRO the contact information for a point of contact (POC) at each state department of education. Additional factors that applied when selecting and scheduling schools included: academic content area (ELA/Literacy and Mathematics), grade spans (elementary, middle, and high schools), and geographic locale. Our goal was to complete observations in 70 schools across the PBA and EOY computer/tablet-based administrations.

School recruiting was a multistep process. Once states were identified, HumRRO received login permission to PearsonAccess™ which contained PARCC's test registration information for each state. HumRRO only accessed the state ("organization") extracts; this information included school names or codes, the testing planned at each school (PBA, EOY, or both), city names, and some district- or school-level contact information. HumRRO was not authorized to access any student-level information from PearsonAccess, nor did they have any interest in student-level information. We initially selected 25-30 schools in various cities, districts, or counties in each state. We sent the list of schools we compiled to each state POC requesting permission to contact the schools. After obtaining state-level authorizations (typically a letter or reference), we contacted school districts requesting the testing schedule for each school we selected. After the school district verified our request, they generally referred us to specified school staff to obtain that information. After obtaining testing schedules we confirmed the visit with the school, provided schools a document introducing HumRRO, and reinforced our commitment to observe testing as unobtrusively as possible. Additionally, we assured schools that our findings would be reported in aggregate only and that we would focus on the administration of the PARCC field test for validity, quality assurance, and process improvement purposes. After this process, we obtained permission to observe 77 individual test sessions (e.g., grade 4 ELA session 3, grade 7 Mathematics session 2) in 61 schools. Table 1 provides descriptive information on the site observations.

When discussing the notes made by the observers, throughout this report, the frequency of occurrence of those notes are reported by number of schools rather than by the number of sessions. This is because in every case, except one, the additional session observed at a school was the continuation of the test for the same students, in the same testing room, and administered by the same TA.

Table 2. Summary of CBT Administration Observations

	Number of Sessions Observed		Total Sessions Observed	% of Total Number of Sessions	Number of Schools Visited		Total Schools Visited	% of Total Number of Schools Visited
	PBA	EOY			PBA	EOY		
State								
Illinois	0	17	17	22.1	0	10	10	16.4
Maryland	16	11	27	35.1	13	10	23	36.7
New Mexico	6	8	14	18.2	6	6	12	19.7
Ohio	7	3	10	13.0	7	2	9	14.8
Tennessee	9	0	9	11.7	7	0	7	11.5
Total	38	39	77		33	28	61	
Content area								
English/ Language Arts	24	22	46	59.7	22	16	38	62.3
Mathematics	14	17	31	40.3	11	12	23	37.7
Total	38	39	77		33	28	61	
Grade level								
Elementary	17	20	37	48.1	16	14	30	49.2
Middle	9	16	25	32.5	7	12	19	31.1
High	12	3	15	19.5	10	2	12	19.7
Total	38	39	77		33	28	61	

Note. Percentages may not add to 100 due to rounding.
Total Number of sessions observed n = 77; total number of schools visited n = 61.

Study 2: Test Administrator Surveys

Procedure. An online Test Administrator Survey was completed by TAs following administration of the PARCC PBA and/or EOY field test. The primary purpose of the survey was to collect information from the perspective of TAs on the effectiveness of the training they received and to identify potential problems that arose during test administration. The TAs were provided a web link to the online survey in their test administrator manual. They were instructed to log on and complete the survey after test administration was completed. If TAs administered both the PBA and the EOY, then they were instructed to complete the survey *after* the EOY administration. The TAs responded to a separate survey for computer/tablet-based test (CBT) administration and for paper-based test (PBT) administration. The online test administrator survey was available from March 24, 2014 to June 13, 2014, which corresponded to the first day of PARCC field test administration and to one week after the last day of PARCC field test administration.

Instruments. HumRRO researchers developed a draft Test Administrator (TA) Survey based on an earlier version of the survey that HumRRO developed for the PARCC Item Try Out study in spring 2013 (Sinclair & Thacker, 2013). The draft survey was submitted by HumRRO to PARCC leadership for review and edits. The draft version covered the following topic areas:

- potential issues and areas for improvement with regard to the training of TAs
- potential issues and areas of improvement with regard to the administration protocol
- potential sources of confusion for students
- occurrence of technical difficulties
- qualitative input on recommendations for improving administration policies and procedures

The draft version was revised and edited based on PARCC leadership feedback to include survey items addressing these additional topic areas:

- PARCC's timing policy
- use of accessibility features and accommodations
- practice with sample items and tutorials
- options for students after completion of testing

Additional response scales were also added to the survey. A separate survey for TAs administering paper-based tests (PBTs) was also developed, as several survey items related to technology were not relevant to administrators administering PBTs. The items that appeared on the CBT version of the TA survey are presented in Appendix C and the items that appeared on the PBT version of the TA survey are presented in Appendix D.

The TA Surveys included a combination of close-ended survey items and open-ended survey items. Across the two TA Surveys there were 20 items that were open-ended or text box items. The purpose of the open-response data from these TA Surveys was to help identify concerns from field test that should be considered for operational testing. Given that there were several thousand TAs who responded to the surveys, every comment to every open-ended item was not individually coded. Rather, thousands of comments were read by analysts to identify recurrent themes for each open-ended item. Keywords were identified for each recurrent theme, and keyword searches were conducted on those keywords. This provided a good indication of the relative prevalence of the themes. However, because the intent of the field test surveys was to discover potential concerns, not to identify the frequency of each concern, coding of every comment on each open-ended item was not conducted. Consequently, throughout this report the common themes identified in the open-ended comments are reported, although the percentage of times that each theme was mentioned is not reported.

The CBT Student Survey included an open-ended survey item asking students to describe anything that was confusing or unclear about the test. Across the four breakouts of the CBT Student Survey (i.e., PBA Math, PBA ELA, EOY Math, EOY ELA), approximately three-quarters of a million students responded to the CBT Student Survey. The purpose of the open-response data from this survey item was to help identify concerns from field test that should be considered for operational testing. Given that there were nearly three-quarters of a million students who responded to the CBT Student Surveys, every open-ended comment was not individually coded. Rather, thousands of comments were read by analysts to identify recurrent themes to the open-ended item. Keywords were identified for each recurrent theme, and keyword searches were conducted on those keywords. This provided a good indication of the relative prevalence of the themes. However, because the intent of the field test surveys was to discover potential concerns, not to identify the frequency of each concern, coding of every comment was not conducted. Consequently, throughout this report the common themes identified in the open-ended comments are reported, although the percentage of times that each theme was mentioned is not reported.

Participants. There were 8,729 respondents who logged on to the TA Survey link. Respondents who only responded to the background survey items and/or who only responded to one or two other items on the survey were removed from the analysis. This resulted in 6,322 respondents with 4,635 of those responding to the survey for CBT administration and 1,687 responding to the survey for PBT administration. The response breakout by state and by mode of administration is presented in Table 3.

Table 3. TA Survey Response Breakout by State and by Mode of Assessment Administration

	Computer/tablet-based test Administration		Paper-based test Administration	
State	n	%	n	%
Arizona (N = 493)	295	59.8	198	40.2
Arkansas (N = 471)	314	67.0	157	33.0
Colorado (N = 223)	152	68.2	71	31.8
District of Columbia (D.C.; N = 35)	31	89.0	4	11.0
Florida (N = 8)	7	87.5	1	12.5
Illinois (N = 1024)	737	72.0	287	28.0
Louisiana (N = 311)	304	98.0	7	2.0
Maryland (N = 1171)	710	60.6	461	39.4
Massachusetts (N = 776)	601	77.4	175	22.6
Mississippi (N = 148)	94	63.5	54	36.5
New Jersey (N = 788)	785	99.6	3	0.4
New Mexico (N = 48)	48	100.0	0	0.0
New York (N = 57)	54	94.7	3	5.3
Ohio (N = 393)	240	61.1	153	38.9
Rhode Island (N = 183)	128	69.9	55	30.1
Tennessee (N = 183)	128	69.9	55	30.1
All States (N = 6322)	4635[a]	73.3	1687[b]	26.7

Note. Percentages are based on the total number of valid responses for each state. Number of missing for CBT administration = 7. Number of missing for PBT administration = 3.
[a] Includes the 7 cases that did not indicate their state.
[b] Includes the 3 cases that did not indicate their state.

Study 3: Student Surveys

Procedure. Upon completion of the PBA and EOY field test, students completed a survey about their test-taking experience. Different surveys were administered following completion of Mathematics and ELA assessments. There was considerable overlap in the content of the items on the Mathematics and ELA surveys, although each contained a subset of items specific to the content area being assessed. There was no difference in the Student Survey for PBA and EOY, although the survey data was collected and reported separately for each. Similar to the TA Survey, a slightly edited version of the surveys were administered to students who were administered paper-based versions of the field test.

Instruments. HumRRO researchers developed draft Student Surveys based on an earlier version of the Student Survey that HumRRO developed for the PARCC Item Try Out study in spring 2013 (Sinclair & Thacker, 2013).[10] Separate draft surveys were developed for Mathematics and ELA, and for CBTs and PBTs. In addition, separate versions of the survey were developed for elementary students and for middle and high school students with the primary distinction being the response scale. The surveys for elementary grades contained a “Yes/No” response scale, and the surveys for middle and high school grades contained a four-point

[10] During item try-outs in spring 2013, only students taking the ELA tests were surveyed.

agreement scale. The draft surveys were submitted by HumRRO to PARCC leadership for review and edits. The draft versions covered the following topic areas:

- clarity of the directions read by the Test Administrator
- clarity of the directions for questions on the test
- helpfulness of the tutorial (practice questions)
- whether the words on the test were easy to understand
- whether the test questions covered topics already learned in school
- ease of navigating through the test
- usefulness of tools (CBT version only)
- familiarity with using computers and keyboards
- preference for computer-based or paper-based tests
- occurrence of technical difficulties (CBT version only)
- qualitative input on whether there was anything particularly confusing or unclear about the test (CBT version only)

Based on feedback from PARCC leadership, minor revisions were made to the topics covered on the submitted draft Student Surveys, although the formats of the questions were edited considerably. Also, the separate surveys for elementary students and for middle and high school students were eliminated. Instead, the same surveys were administered to all grade levels, which included a variety of response scales (e.g., dichotomous yes/no response scales, multiple Likert-type rating scales, and select all that apply rating scales). In total, four versions of the Student Surveys were developed. The items that appeared on the Student Survey for the computer/tablet-based PARCC Mathematics field test (CBT math) are provided in Appendix E. The items that appeared on the Student Survey for the computer/tablet-based PARCC ELA field test (CBT ELA) are provided in Appendix F. The items that appeared on the Student Survey for the paper-based PARCC Mathematics field test (PBT math) are provided in Appendix G. Finally, the items that appeared on the Student Survey for the paper-based PARCC ELA field test (PBT ELA) are provided in Appendix H.

Participants. Participants were the students completing the PARCC field test. Table 4 below identifies the number of cases (i.e., students) contained in the initial raw data files[11] provided by Pearson as compared to the number of cases for which there was valid survey data. Valid survey data was defined as non-duplicate cases for which there was a response to at least one item on the survey. In other words, duplicate cases[12]—i.e., those that had the same

[11] Raw data files for Student Surveys included individual student responses to each question on the student survey. Student IDs and test IDs were included in the raw data file, but HumRRO had no way of matching student names to Student IDs. Student ID and test codes were stripped from the data file prior to running analyses.

[12] Duplicate cases for the same students were possible on the CBTs if a test was submitted, un-submitted, restarted, and then resubmitted again. Personal communication with Pearson analyst on August 6, 2014.

student ID, the same test ID, and the same survey responses—and cases with all missing data were removed from the analysis file. The information presented in Table 4 indicates that, of those who took the PARCC field test, approximately 85% - 90% responded to one or more items on their Student Survey.

Table 4. Student Survey Response Rates

	Number of Cases in Initial Raw Data File	Number of Valid Cases in Analysis File	Percentage of Valid Cases in Raw Data File
Test Type	**n**	**n**	**%**
CBT			
PBA Math	207,966	183,099	88.04
PBA ELA	252,602	221,158	87.55
EOY Math	180,731	157,872	87.35
EOY ELA	180,606	160,820	89.04
PBT			
PBA Math	81,644	71,452	87.52
PBA ELA	77,322	65,573	84.81
EOY Math	70,573	60,073	85.12
EOY ELA	60,477	53,279	88.10

Note. CBT = Computer/tablet-based Test administration; PBT = Paper-based Test administration; PBA = Performance-based Assessment; EOY = End-of-Year; ELA = English Language Arts.

Results

The findings from the three studies are presented in this section according to the research question they address. It is should be noted that there are several instances of overlap among the research questions. For example, Research Question 7 (*Are there any interruptions during the session?*) overlaps with Research Question 4 (*To what degree are students engaged in taking the test?* (i.e., interruptions often negatively impact engagement)). Consequently, one set of findings may be relevant to multiple research questions. Thus, there is some redundancy in the reporting of results across research questions; however, in order to reduce the length of the report some results are presented for one research question, but are identified as being relevant to other research questions. Where applicable, references are provided to the actions that PARCC is taking to address these research findings; the PARCC actions come from the *PARCC Field Test: Lessons Learned* report (PARCC, 2014).[13]

The full set of item-level results for the TA Surveys (with breakouts by state) can be found in Appendix I (CBT version) and Appendix J (PBT version). The full set of item-level results for the Student Surveys (with breakouts by state, and by PBA and EOY) can be found in: Appendix K (CBT Math version), Appendix L (PBT Math version), Appendix M (CBT ELA version), and Appendix N (PBT ELA version).

[13] http://www.parcconline.org/parcc-states-release-lessons-learned-report

Findings for Research Question 1: To what degree do the TAs find the instructions clear, sufficiently detailed, and easy to follow?

The claim in the theory of action most directly related to this research question is, "Teachers have the resources and supports to administer the assessments." The instructions in the Test Administrator Manual serve as the TAs' primary resource for administering the assessments. An important assumption underlying this claim is that this resource (i.e., the TA Manual) is sufficiently clear and detailed, and easy to implement. To verify the veracity of this assumption the TA Surveys asked TAs to rate their agreement with the statements, "The policies and procedures within the Test Administrator Manual were *easy for me to understand*," and "The instructions (including the scripts) within the Test Administrator Manual were *easy for me to implement*." The findings presented in Figure 3 indicate that more than two-thirds of the administrators agreed that the policies and procedures in the TA Manual were easy for them to understand. Slightly fewer (55% - 63% for PBT and CBT, respectively) agreed that the instructions (including the scripts) in the TA Manual were easy for them to implement (see Figure 4).

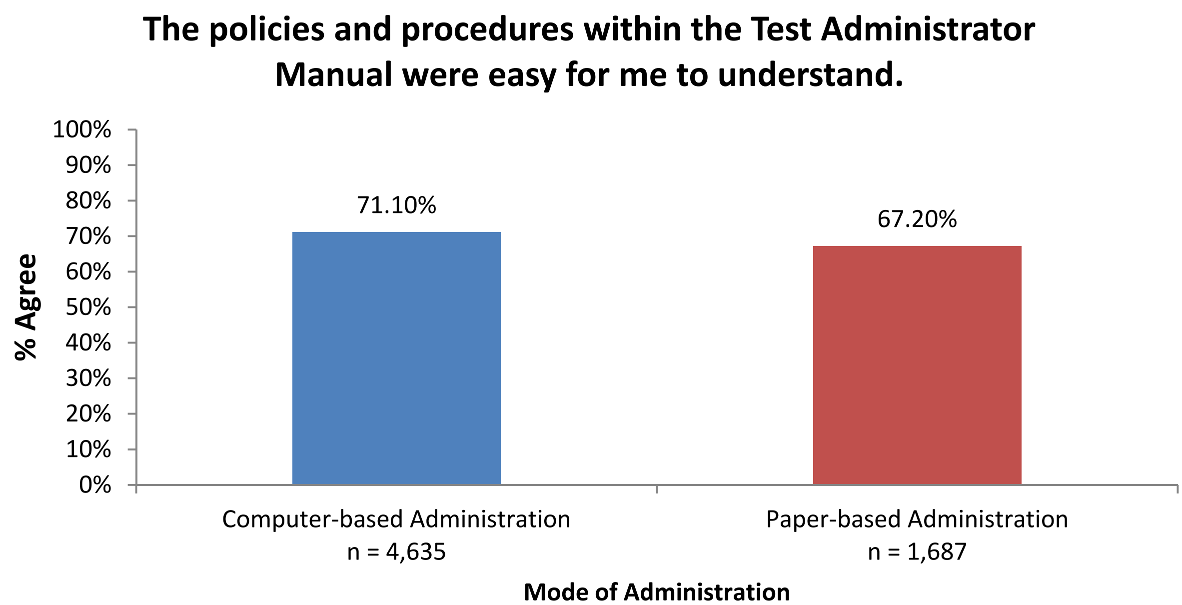

Figure 3. Percentage of TAs agreeing that TA Manual is easy to understand.

Percentages are based on the number of valid responses. Missing = 223 for CBT administration and missing = 16 for PBT administration. Ratings made on a 4-point agreement scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, and 4 = Strongly Agree. Results reported here reflect the combined percentage of "Agree" and "Strongly Agree."

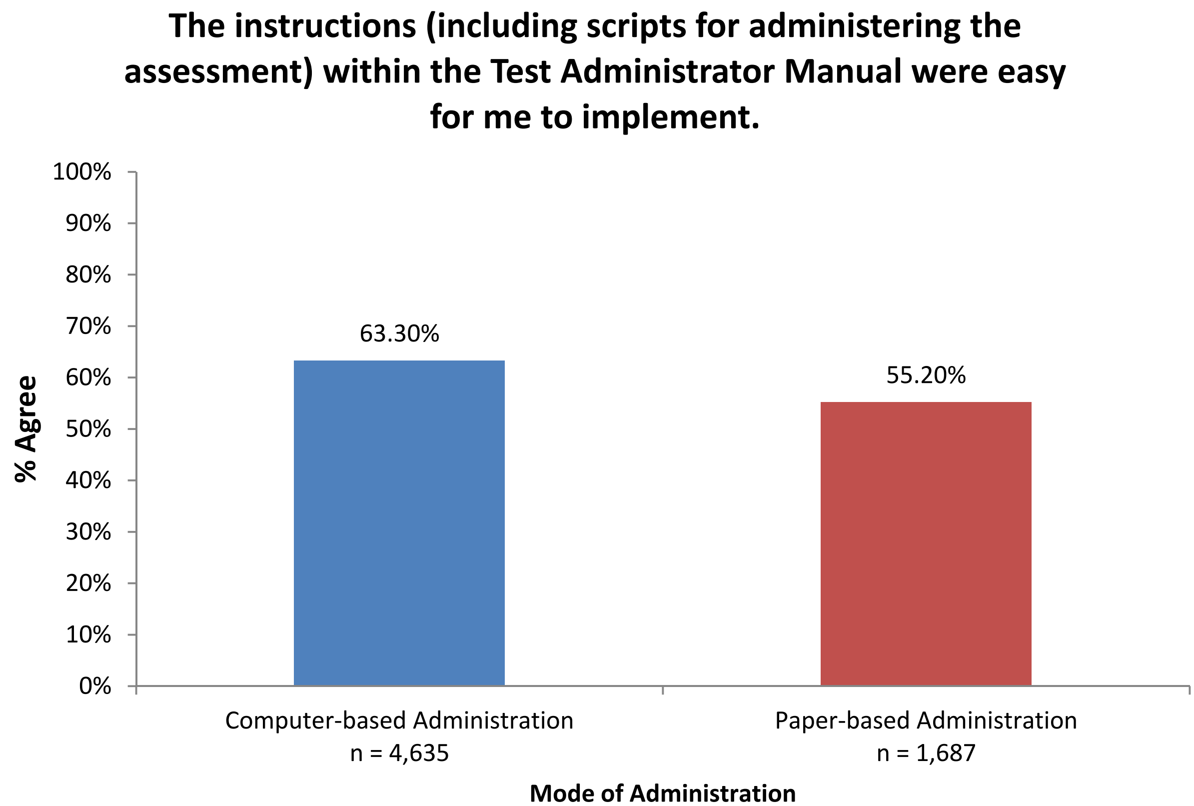

Figure 4. Percentage of TAs agreeing that instructions in the TA Manual were easy to implement.

Percentages are based on the number of valid responses. Missing = 225 for CBT administration and missing = 19 for PBT administration. Ratings made on a 4-point agreement scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, and 4 = Strongly Agree. Results reported here reflect the combined percentage of "Agree" and "Strongly Agree."

Although the instructions were largely rated as easy to implement, open-ended comments from the TA Surveys provide some insights into sources of confusion with instructions in the TA Manual.[14] Several themes emerged in the TAs' comments on the CBT version of the TA Survey. Those themes and example comments[15] illustrating the themes are:

<u>Confusion caused by skipping parts of instructions that were not relevant:</u>

- *The direction manual was very difficult to follow along with. Directions should be separated by grade level for easier teacher reading and less confusion or mistakes.*
- *It was confusing to have to skip large sections at a time because they did not apply to my grade level. It made it very easy to get lost in the script.*

[14] These open-ended comments are also relevant to Research Question 3, "Do students appear to understand the instructions provided to them."
[15] All survey comments in this report are provided unedited, exactly as they were entered by TAs and students.

- *The instructions should be separated by grade level. It was confusing to have to jump from box to box, skipping over 3-5 to get to 6-8, etc.*
- *Manual was confusing at first because directions were not specific to the actual grade level; they were very generic. I had to search the manual for the times of each section. There should be "tabs" or separate sections for the different grade levels that are more specific so the company can ensure that the directions are truely being given the same way no matter where the test is given -- take out part of the human error from the directions. Very specific directions would be better!*

Confusion over number of test items and time to complete items:

- *The timing of the test was confusing. I tried to make it as simple and clear as possible for students but it was difficult since I was having difficulty understanding it. Example: The time chart on pg. 27 of manual couldn't be completed because the test never indicated how many questions were in each section or how much time a section could take.*
- *The script for additional time vs. regular time was a bit confusing. Also the script for the save and return option at the end of the session was confusing.*
- *it was really confusing that the exact testing time, number per session, etc., was not right along with the directions for me to see. I had to go back and skim through the book as I administered which was a time waster. The manual was not user-friendly at all.*
- *The one thing that I thought was confusing is that I didn't think the directions were clear in how many questions the students would answer.*
- *It was unclear how many sessions we would do in a day. The students finished session one in about a third of the allotted time. Because there was so much time left, it was assumed that there must be a few sessions to be given on that day. So my students completed the three days of testing in one morning. Ending a section with a green button that said "Continue" was very confusing. We were also given 9 different seal codes so we thought that there would be three sessions a day.*
- *When the children logged in, it said there would be 3 parts with 41 questions, but it was unclear if that was all for the first day or for the entire test over the two days. Students (and teachers) wanted to know how it would be broken down. In the testing we are used to administering the script will say, "Today you will take Part 1. There are 13 questions in this part," or "Today you will take 3 parts. The first part has 8 questions."*
- *The Seal Code instructions were not clear. When administering the test, because there were 9 Seal codes offered, it was unclear (and I did not find any instructions within the manual) whether Seal Codes were used WITHIN Section 1 so all 9 Seal codes could be used or to move from one full section to the other, which is the correct way. My Students moved forward to Session 2 before everyone was finished with Session 1. Therefore Session 2 has random start times. I also would have been helpful to know the number of*

questions in each section. It did not seem right that there were only 11 question in a section and they needed 80 + minutes... Another reason I was confused about the use of Seal Codes. I felt it should have taken longer to complete one section given the time therefore we used the Seal Codes too early. I get it now! but would have been more helpful to practice this during the infrastructure trial.

- *Providing the additional time beyond the regular session time was confusing because students weren't sure whether they were supposed to try to answer all questions by the end of the original given time or not.*

Confusion over "Section" vs. "Session":

- *In the testing manual, the words are intertwined; sessions, sections, tests, etc. It is confusing. Too many different places for references in the various manuals and they aren't always the same directions.*
- *There was some confusion because the field test said there were four sessions on the students computer direction page, they were including the survey and that was confusing for students.*
- *The use of 'section' and 'session' was confusing.*
- *The tests are 'sessions', but the directions say 'sections'*

Confusion caused by inconsistencies between what is in the script and what is on the screen:

- *The script has the proctor tell the students to click on the start button and then continue reading directions. This means that the first test question was visible on the screen BEFORE the students were allowed to begin testing. This confused some students. The script does not accurately describe the buttons students should click. For example, the directions instructed students to click on the blue button in the middle of the screen, when in fact the button was in the upper right-hand quadrant.*
- *The instructions did not match the screen the students were looking at while I read them. The instructions for ending a session and finish later were confusing for students and some clicked the wrong one and it completed their test and they still had 3 sessions to take.*
- *Too many buttons to press or not press. Confusion about buttons that say 'continue', but students are not supposed to press them, until further directions are given. Buttons about submitting final answers: If students are not supposed to press them, then why have it as an option??? It should only be an option for the last test students take. During test 2 and 3 reference to blue buttons is sometimes omitted in manual...I used the directions from day 1.*
- *When the students first log in, they are sent to a welcome screen. In the script, it never tells the students to click on the option to begin the test. Therefore, when you tell the*

students to enter the seal codes, they are not on the right screen. This was a little confusing. I also found the instructions confusing for the students who are taking extended time, or not requiring any at all. I had to backtrack a little to figure out what part I was supposed to be reading to them.

- *In the directions, it stated that students should NOT press the green continue button after each section. However, when students reached this page after testing, it told them to do one of two things, one of which was to hit the green continue button to go to the next session. This confused students because I told them in the directions not to touch it but then they were given the option to click on it.*

<u>Confusion about navigating through the test:</u>

- *The directions were somewhat unclear about when to click continue and move on to future screens. There were many questions throughout the test if they were to go on or not. It would be nice if there were directions on the screen for students when they finish a portion that says, please continue or stop.*
- *At the end of a session, there should be a STOP button, not a CONTINUE button as this caused great confusion with the students and test administrators.*
- *The instructions to stop on the green "continue" button were confusing because during Algebra 2 session 1, students were actually supposed to continue from the non-calculator to the calculator part of the test.*
- *There was confusion on day one regarding submitting answers, completing tests, and how many seal codes were necessary.*

Open-ended comments from the PBT version of the TA Survey indicate that, as with the CBT administration, some TAs administering paper-based tests reported that the instructions were confusing with regard to: additional time, skipping over instructions that were irrelevant to the grade being tested, and disconnects between what appeared in the script and what appeared in students' test booklets. There were some additional themes that emerged that were unique to PBT administration. Those themes and example comments illustrating those themes are presented below.

<u>Confusion caused by no page numbers:</u>

- *Students were confused without page numbers in the instructions. Students found navigating between two books confusing.*
- *Some students wondered why I didn't tell them the exact page and question number to begin on. Some wanted to help me out by telling the class what page we were on, but not all students were on the same page! I know they are used to different Test Forms from previous standardized tests, but the different page numbers confused some of*

them. I would suggest that blank pages be inserted as necessary so all students are basically on the same page at the same time.

- *When starting a new session it was hard to find the page to start since there were no page numbers in the directions to direct students too. While monitoring the test it was hard to determine if the students were on the right section because it did not indicate on the top of the page which section students were working on.*
- *Page numbers were not provided for students to find starting page for each session. Instructions did not explain how to find proper spot in answer booklet, it seemed to be implied from instructions for Test booklet. Students were confused and were not ready to start the test after instructions were finished.*
- *Students were confused that I was unable to give them a page number to turn to in the answer document and test booklet.*

<u>Confusion about calculator use:</u>

- *Additionally, there was confusion, both while reading instructions and during the test, about the directions for the distribution of calculators during session*
- *It was very confusing to the students as to when they were able to use their calculators on session 1. In the directions I read to them, the script, it stated they couldn't use their calculators at all and then later on stated their were some problems they were able to use their calculators.*
- *Allowing calculators for part of one test is impossible to monitor.*
- *Unsure when they could or could not use calculators.*
- *During part 1 of session 1, it was confusing to them and to me with the use of calculators. They were allowed during part of part 1 but not during the entire time. The second session went more smoothly since they had calculators during the entire session. Perhaps the test could be set up so that there is a cutoff to give calculators all at once to students.*

Next, findings from the observation study also provide valuable insight about sources of confusion with instructions in the TA Manual. Concerns about the TA script surfaced through the researchers' observation notes and from the feedback provided during the debriefing interviews. Issues noted by the researchers conducting the observations included the script's lengthiness and ambiguous terminology. First, the observers noted that some TAs had difficulty following the script because of its lengthiness. Consistent with feedback on lengthiness, observer notes from 11 schools indicated that modifications were made while reading the script to adapt to specific testing conditions, such as back-to-back sessions or to address common issues that arose during previous testing sessions. The most common modification made by TAs (noted in five school observations) was skipping repetitive parts of the script when starting subsequent sessions. Another modification noted in three schools was to provide additional guidance on logging into TestNav or on use of headphones. Typical observer notes were, “Modified script to direct students through Java issues,” “… (need to state) go to the URL on the ticket,” and “TA added note about headphones before beginning the script.”

Observer notes from six schools indicate that there was confusion caused by ambiguous terminology in the TA scripts. For example, observers noted the following: “…directions tell students to click the ‘start’ button, but the screen has a ‘resume’ button,” “TA had to clarify that the ‘testing device’ is the computer,” “change the session word to mean part at times. You can continue to the second part of the session (page 113) but what does session mean this time?” Also, observers in six schools indicated that there was ambiguity in the instructions for ending sessions and for managing the session time during the mathematics fluency portion of the assessment. Some of the comments from observers were, “The TC and TA had difficulty interpreting the script’s instructions for ending the session,” “…students needing more time had to be told over and over not to do anything and not to follow the instructions (the TA was reading for the students who were finished),” “ The TA pointed out in one place the survey was referred to as the ‘survey’…and in another place referred to it as a third ‘session,’” and “…the fluency questions messed up the timing because students were told to stop and the script was not clear enough (i.e., that there were more items).”

In addition to observer notes, there were comments and suggestions from 25 schools obtained during the debriefing interviews in reference to the organization of the script. Findings from the debriefing interview, revealed that some TAs did not like using one script for all grades and testing situations (i.e., one session per day vs. consecutive test sessions within the same day), and in some cases this was a source of confusion. Skipping the sections TAs did not need and finding the sections they did need was sometimes difficult as they administered the assessment; therefore, the TAs indicated that they would like a streamlined script that they could read from start to finish. Typical comments were, “…confusing to skip across sections that were not relevant to her grade level,” “…need to streamline (scripts) to only what has to be said and is said only once and targets the grade…,” “…a lot of directions for other grades that had to be skipped, which required a lot of page flipping,” and “Students need more visual instructions instead of the wordy script.” Moreover, eleven schools described confusion with the script when they started or stopped a session. A suggestion repeated by several TAs during the debriefing interviews was that an overview of the procedures in a bulleted list with the time chart would be helpful.

Furthermore, the comments received during the debriefing interviews at 18 schools provided additional support to the observer notes above regarding confusion with navigating through the test. TAs described initiating and closing sessions as confusing. For example, a suggestion received from two different schools was to mirror the icons students are accustomed to seeing on paper and pencil tests such as a stop sign, rather than displaying a green button at the end of a session, which students misinterpreted as a signal to continue. Other TAs suggested clarifying and minimizing the steps necessary to close sessions.

Although most comments described concerns with the scripts, comments received from 19 schools indicated that the administration manuals were cumbersome to use and contained information that was not relevant for their role in testing. Typical comments were, "too many manuals, too long," "would like a summary page or checklist of major steps I have to do," "…would also like computer screen captures since I am a visual person," "couldn't easily find the information regarding of the number of questions on each test session…and timing," and "better to have chapter summaries." On the other hand, comments received from eight other schools indicated the administration manuals and materials were appropriate and helpful. One TA commented that the best part (of the materials) was the computer set-up information (Infrastructure Readiness Guide), which was "well written, organized, and step-by-step."

In summary, overall, more than two-thirds of TAs agreed that the policies and procedures in the TA Manual were easy for them to understand. Slightly fewer agreed that the instructions in the TA Manual were easy for them to implement. Open-ended feedback from the TA Surveys and from the debriefing interviews indicates that some TAs encountered confusion with the TA Manual. The TAs commonly indicated that the TA Manual was poorly organized (i.e., inclusion of material that was not relevant to the grade being tested made it overly cumbersome and difficult to find relevant sections), contained ambiguous terminology (e.g., "sections" and "sessions"), and had disconnects between what appeared in the script and what appeared on students' tests. These findings suggest that some improvements are needed to enhance the clarity of the TA Manual. Improvements to the clarity of the instructions in the TA Manual should help to ensure that the test is administered in a standardized manner by all TAs, which will thereby tighten adherence to *Standard 4.15*. Actions that PARCC is taking to address these concerns are provided in the Executive Summary and in the Summary and Recommendations sections under Claim 2.

Findings for Research Question 2: To what degree do the TAs follow the protocols and instructions?

The claim in the theory of action most directly related to this research question is, "Administrators are prepared to administer the assessments as intended." For this claim to be true at least two assumptions must be met: (a) administrators must be trained on how to administer the assessments, and (b) that training must be effective. To investigate the veracity of these assumptions, the TA Survey (CBT version) asked the TAs a series of questions about the training they received prior to administering the assessments. First, TAs were asked to indicate if they completed any of the PARCC online training modules. Nearly, three-fourths (74%) of the

TAs indicated that they had completed one or more of the online PARCC training modules. Next, those indicating they had completed online training module(s) were asked to identify which modules they had completed. The findings displayed in Figure 5 indicate that more than three-fourths completed the Computer-Based Test Administration module. In other words, just over half of all the TAs responding to the TA Survey (for CBT) completed the Computer-Based Test Administration module. Furthermore, of those who indicated they completed online training only a small percentage of TAs (16% or less) reported that they completed any of the other training modules.[16]

[16] While not included in the results presented in Figure 5, the TAs were also asked to indicate if they completed the online training module for "Accessibility Features and Accommodations with Computer-based Testing." Those results are reported in a separate, subsequent section titled, "Findings for Research Question 2 Specific to Accessibility Features and Accommodations."

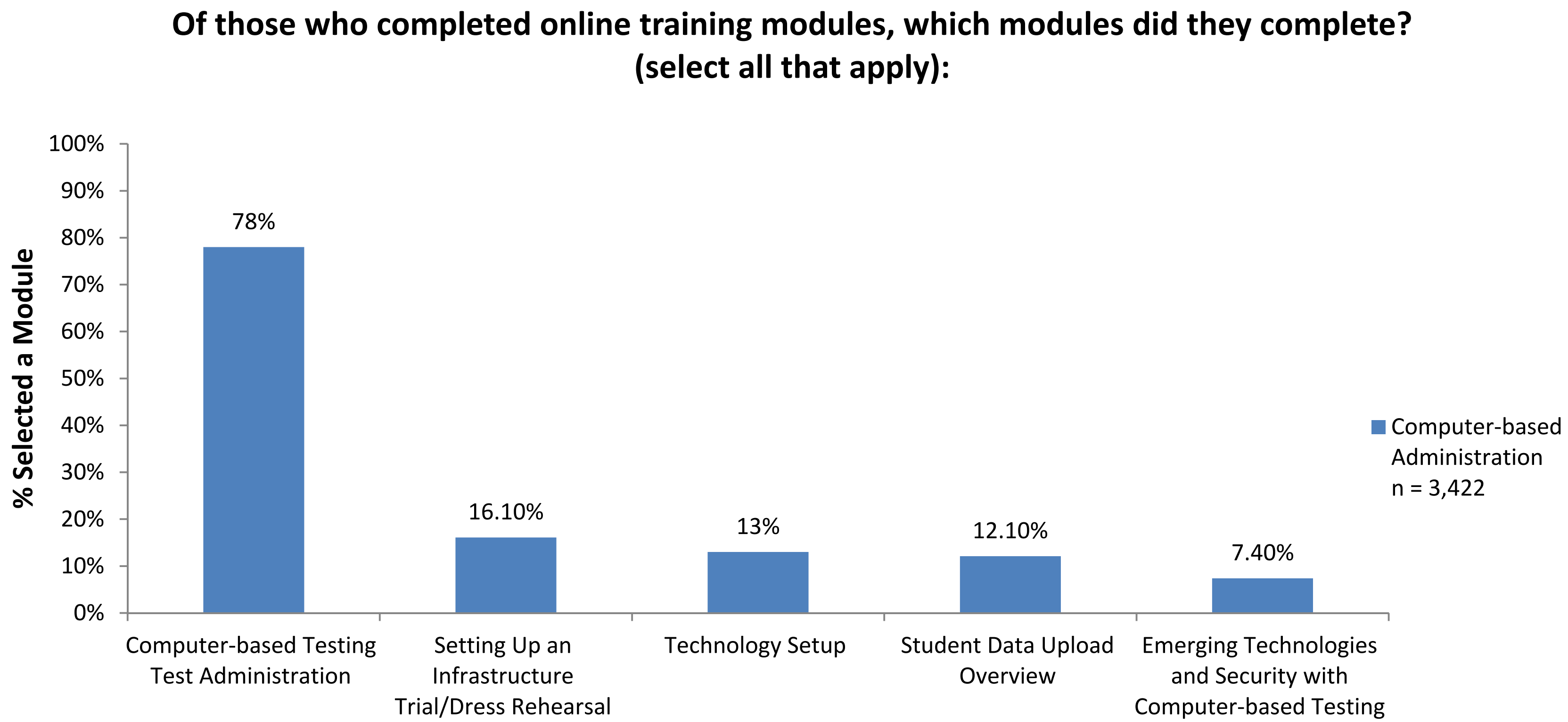

Figure 5. Of the TAs indicating completion of online training, percentage who completed each module.

TAs who did not select any of the online modules were excluded from the results presented here.

The TAs were also asked about completion of online training on Accessibility Features and Accommodations with Computer-based Testing; those results are reported in a separate, subsequent section on accessibility features and accommodations.

The TAs were also asked to indicate whether the online trainings were effective at informing them of the protocol to follow when administering the assessments, and whether the training had effectively prepared them to resolve basic problems related to technology (e.g., logging students in, exiting the test, etc.). Those results are presented in Figure 6, and indicate that three quarters of the TAs (75%) agreed that the online training effectively informed them of the protocol to follow when administering assessments, and slightly more than half (53%) agreed that the online training prepared them to resolve basic problems related to technology.

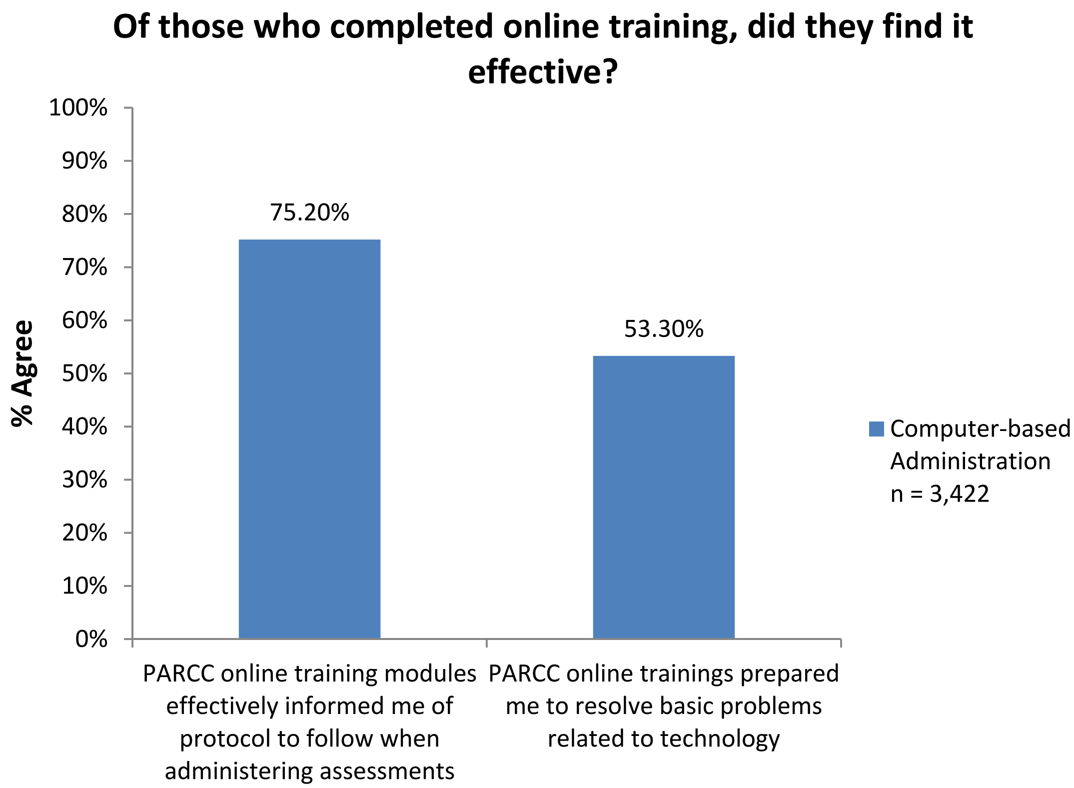

Figure 6. Percentage of TAs agreeing that online training was effective.
Percentages are based on the number of valid responses. Ratings made on a 5-point scale where 1 = Not Applicable, 2 = Strongly Disagree, 3 = Disagree, 4 = Agree, and 5 = Strongly Agree. For the percentages reported in this figure, "Not Applicable" responses were recoded as Missing. Results reported here reflect the combined percentage of "Agree" and "Strongly Agree."

In addition to inquiring about the online training modules, the TAs (both those administering the CBT and the PBT) were asked to indicate if they had received any training from their state, district, or school. The results in Figure 7 indicate that most had received training from their school, particularly those administering the PBT. Less than half of those administering the CBT had received training from their district and less than a third of those administering the PBT had received training from their district. Very few TAs indicated they had received training from their state, regardless of whether they were administering the CBT or the PBT.

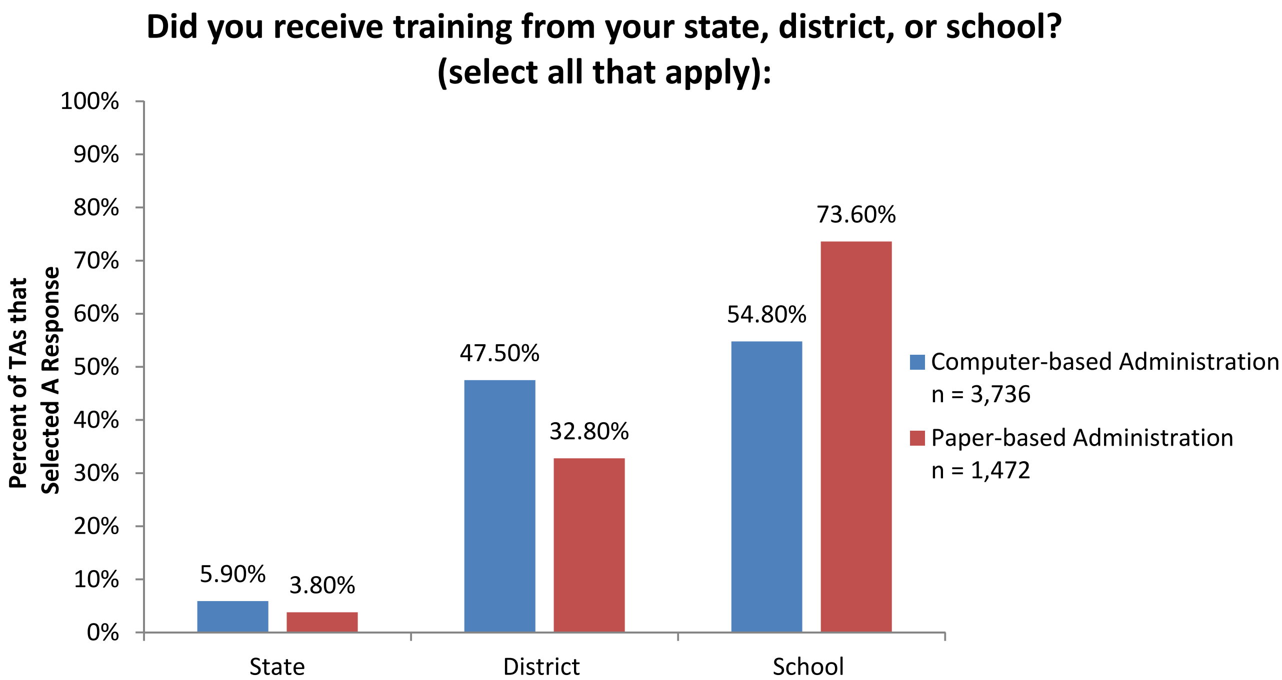

Figure 7. Percentage of TAs receiving training from state, district, or school.
Those who selected, "No, I did not receive any training from my state, district, or school" were removed from the analyses.

The survey for TAs administering the CBT included an open-ended item asking TAs for recommendations on how PARCC can improve its online training. Several themes were identified from the TAs' comments. The TAs recommended that training could be improved by:[17] (a) clarifying procedures for logging on and off, (b) clarifying instructions for additional time, (c) improving navigability of the TA Manual by reducing the amount of 'if this, then go to page X', (d) including more training on how to use the tools, (e) condensing the amount of training materials by reducing redundant information and highlighting major responsibilities of TAs, and (f) making the TestNav system more user-friendly (e.g., by making it easier to troubleshoot technical problems). Another commonly mentioned recommendation was to provide in-person training.

The findings from the observation study provide evidence that both supports and expands upon the findings from the TA Surveys. The observation study directly addresses the degree to which the TAs followed the administration protocols and instructions. First, the observation checklist

[17] Note that some of the TAs' suggestions for improving training dealt more explicitly with recommendations for changing the materials used by TAs (e.g., the TA Manual) and making improvements to the technology (e.g., TestNav).

includes a set of "pre-assessment activities" that, per the Test Administration Manual, TAs were to engage in prior to students beginning testing. The findings reported in Table 5 (the summary of pre-assessment tasks), indicates that most pre-assessment tasks (activities) were completed as intended with three exceptions.[18] The first exception dealt with spacing between students (which has implications for cheating). Observer notes from 20 schools (26 observations) indicate that the primary issue with room preparation was the lack of use of partitions or the lack of sufficient space between computers. Typical observer comments were, "not enough seats (space) to put extra space," and "students were close together but accustomed to it." The second exception was posting of the "Testing in Progress" sign. In nearly a fourth of the observed sessions, the TAs did not post the sign. There were no observer notes of significance to indicate anything other than TAs neglecting to post the sign (such as significant interruptions caused by neglecting to post the sign) so this should be easily remedied in the future. The third exception, "Drawing a timing box on the board," was either partially met or not met in about half of the observations. Observer notes reveal that: (a) a chalk or white board was not available at four schools (6 observations), (b) TAs used verbal updates only at six schools (7 observations), and (c) TAs quit using the timing box at three schools (3 observations) because students finished early or connectivity issues made it challenging to keep track. Another eight schools (11 observations) did not use the timing box exactly as described in the manual and received "Partially Met" ratings. The findings reported above under Research Question 1 might help explain why many of the TAs did not follow the protocol of drawing a timing box on the board. Open-ended comments from the TA Surveys revealed that some TAs struggled to understand the instructions in the TA Manual for determining testing time. Consequently, if the TAs could not determine the number of items and the time to complete those items, this might explain why they did not use a timing box.

Table 5. Summary of Pre-Assessment Observation Checklist Tasks*

	Ratings				
	Met	Partially Met	Did Not Meet	Not Observed	NA
Test Administrator Tasks	%	%	%	%	%
Prepare student computers for testing (close browsers and programs, launch TestNav).	63.6	14.3	5.2	14.3	2.6
Prepare Test Administrator computer.	59.7	1.3	2.6	33.8	2.6
Prepare testing room (every other seat or partitioned, room configured for security/privacy).	63.6	15.6	18.2	1.3	1.3
Post "Testing - Do Not Disturb" sign on outside door(s).	51.9	3.9	22.1	20.8	1.3

(continued)

[18] It is important to note that a "Not Observed" rating only indicates that the observer did not see the task completed; therefore, in many cases the task was completed.

Table 5. Summary of Pre-Assessment Observation Checklist Tasks* (continued)

	Ratings				
	Met	Partially Met	Did Not Meet	Not Observed	NA
Test Administrator Tasks	%	%	%	%	%
Ensure prohibited materials are not visible.	81.8	0.0	2.6	0.0	15.6
Confirm correct Student Authorization Tickets and seal codes for session.	80.5	0.0	0.0	18.2	1.3
Draw a timing box on the board as described in script.	46.8	15.6	37.7	0.0	0.0
Allow authorized visitors only.	83.1	0.0	1.3	0.0	15.6

Note. NA= Not applicable. Number of observed testing sessions is n = 77.
*Only CBT administrations were observed.

Next, the observer findings from tasks completed during the actual test administration are summarized in Table 6. In addition to the timing box issues discussed above, another notable exception to following the administration protocol and instructions was reading the script verbatim. The task for reading the script verbatim was only met for approximately half of the sessions. This is an important task that helps to ensure consistency throughout PARCC test administrations. Observer notes indicate that the most common modifications were to skip repetitive parts of the script, change words (e.g., change “session” to “part”), and provide additional guidance (e.g., for logging into TestNav or on use of headphones). As discussed above under the findings for Research Question 1, several concerns about the script surfaced during the observations and during the debriefing interviews, including reports that the scripts were too lengthy and included parts that did not apply to the test takers, that some terms in the script were confusing (e.g., “session” vs. “section”), that the instructions on how to end sessions, how to manage additional time, and how to instruct students on the mathematics fluency assessment were difficult to understand, and that some of the information in the manuals was difficult to find when needed, such as the number of items per test and time limits for each test. These findings help explain why observers noted that scripts were followed verbatim in only about half of the observed sessions.

Another deviation from protocol that was noted in approximately 20% of the observed sessions was that TAs did not meet or only partially met the requirement for monitoring student performance using the administration computer. The observer notes reveal that in six schools the administration computer was primarily used to reset students for connectivity problems and rarely used to monitor student progress. And, in at least three schools, the administration computer was not located in the room where students were testing.

Table 6. Summary of Assessment Observation Checklist Items

	Ratings				
	Met (%)	Partially Met (%)	Did Not Meet (%)	Not Observed (%)	NA (%)
Seat students at a computer with non-permitted materials removed.	96.1	2.6	0.0	1.3	0.0
Fill in timing box when script advises.	57.1	18.2	24.7	0.0	0.0
Provide students with the following items, as appropriate:					
a. Student Authorization Ticket.	97.4	0.0	0.0	1.3	1.3
b. Scratch paper and pencil. Print name in upper right-hand corner	67.5	14.3	14.3	1.3	2.6
c. Hand-held calculators.	23.4	1.3	3.9	1.3	70.1
d. Tracing paper, reflection tools, straight edge, compass.	5.2	0.0	3.9	1.3	89.6
e. Headphones.	33.8	10.4	2.6	2.6	50.6
Read script verbatim.	50.6	29.9	14.3	5.2	0.0
Keep track of time during the test as noted in the script.	51.9	28.6	18.2	0.0	1.3
Ensure students log in and have access to the test.	98.7	0.0	0.0	0.0	1.3
Monitor student progress using administration computer.	74.0	6.5	13.0	5.2	1.3
Monitor students by circulating around the room.	97.4	2.6	0.0	0.0	0.0
Answer student questions following script guidance.	62.3	6.5	3.9	5.2	22.1
Provide up to 50% additional time if needed.	48.1	1.3	6.5	1.3	42.9
Provide a group 3 minute break, if necessary.	16.9	0.0	1.3	0.0	81.8
Maintain test security if test is interrupted.	6.5	0.0	1.3	0.0	92.2
Handle testing irregularities.[a]	23.4	1.3	0.0	0.0	75.3
Handle students finishing early appropriately.[b]	87.0	6.5	2.6	0.0	3.9
Ensure students receiving the same accommodations are grouped together.	2.6	0.0	2.6	0.0	94.8

Note. NA= Not applicable. Number of observed testing sessions is n = 77.
[a] Respond appropriately in cases of loss of internet connectivity, safety threat, fire drill, or student cheating.
[b] Follows state level guidance as documented in the PARCC Test Administrator Manual.

Table 7 provides the observer rating summaries for the post-assessment tasks. Findings indicate that most post-assessment tasks were completed as intended, with two exceptions. First, observers did not often observe test materials being returned to the test coordinator because in 14 schools (17 observations) the same person filled both roles, and in four other schools the testing went directly into another test session. Second, observers typically did not observe TAs completing the TA Survey. Although it is not clear why observers rarely saw the TA complete the survey, it is likely because teachers were returning to their classrooms and completing it later. In three schools, observers asked if the TA was planning to complete the survey. One TA indicated he or she would complete it later and two others indicated that they were not aware of the survey.

Table 7. Summary of Post-Assessment Observation Checklist Items

	Ratings				
	Met	Partially Met	Did Not Meet	Not Observed	NA
	%	%	%	%	%
Students log off of the session.	88.3	3.9	2.6	1.3	3.9
Collect Student Authorization Ticket and any test materials.	88.3	3.9	1.3	2.6	3.9
Dismiss students in accordance with school procedures.	88.3	2.6	1.3	2.6	5.2
Return testing materials to the Test Coordinator.	48.1	0.0	1.3	23.4	27.3
Completes the test administrator survey.	1.3	0.0	1.3	72.7	24.7

Note. NA= Not applicable.
Number of observed testing sessions is n = 77.

In addition to the findings from the observation checklist presented in Tables 5 -7, findings from the debriefing interviews provide additional contextual information to help explain the degree to which TAs followed protocols and instructions. Findings from the debriefing interviews reveal that TAs at eight schools indicated they were unaware of the training modules, videos, and practices tests; however, comments from 32 other schools referenced using the training resources. Comments received from 14 of those 32 schools described the training materials as helpful, while 7 schools indicated the training for TAs and students was not particularly helpful. Eight schools commented that the district-level training they received was the most beneficial. Finally, 13 schools suggested providing students and TAs with several “mock” testing programs so both students and TAs can practice accessing and navigating TestNav; they also expressed that gaining experience with all item types prior to test administration would be highly beneficial.

In summary, training is an important component for ensuring that TAs carefully follow standardized procedures for test administration (AERA, APA, NCME, 2014, p. 114). Findings from the research studies indicate that only about half of the TAs who responded to the survey for CBT (which was 78% of those who indicated that they completed one or more of the on-line training modules) completed the training module on Computer-based Test Administration. Of those who completed one or more training modules, three quarters agreed that the training was effective for informing them of the protocol to follow when administering assessments and slightly more than half agreed that the training prepared them to resolve basic problems with technology. For paper-based test (PBT) administration, TAs most commonly indicated that they received training from their school, but even then, more than a fourth indicated that they did not participate in any school-provided training on PBT administration. These findings suggest that a substantive number of TAs might not have received training on administering the PARCC field test, and for those who did, there may have been deficiencies in the effectiveness of the training for some. Findings from the observation study indicate that, for the most part, TAs did follow standardized procedures during test administration; however, there were a few exceptions. The most notable exception was that only about half of the TAs in the observed sessions read the administration script verbatim. The lack of adherence to the script might partly be due to training deficiencies. Deviations from the script might also be partly due to a lack of clarity in the TA Manual, as discussed under the results for Research Question 1. Also, TAs were allowed to clarify directions after the script was read verbatim. Greater adherence to the standardized test administration procedures, through such means as greater participation in training, improved training, and improved clarity of the TA manual, should help strengthen adherence to *Standard 6.1.* Actions that PARCC is taking to address these concerns are provided in the Executive Summary and in the Summary and Recommendations sections under Claim 1.

Findings for Research Question 2 Specific to Accessibility Features and Accommodations

Both the TA Surveys and the Observation Checklist included a section specific to the PARCC guidance on accessibility features and accommodations. The TA Survey (CBT version) asked TAs if they completed the PARCC online training module on, "Accessibility Features and Accommodations with Computer-based Testing." Less than a third (30%) indicated that they had completed this training. The TA Surveys (both CBT and PBT versions) also asked if TAs had received training from their school or district on administering accessibility features or accommodations. Less than half of the TAs indicated that they had received this kind of training, regardless of CBT or PBT administration (see Figure 8).

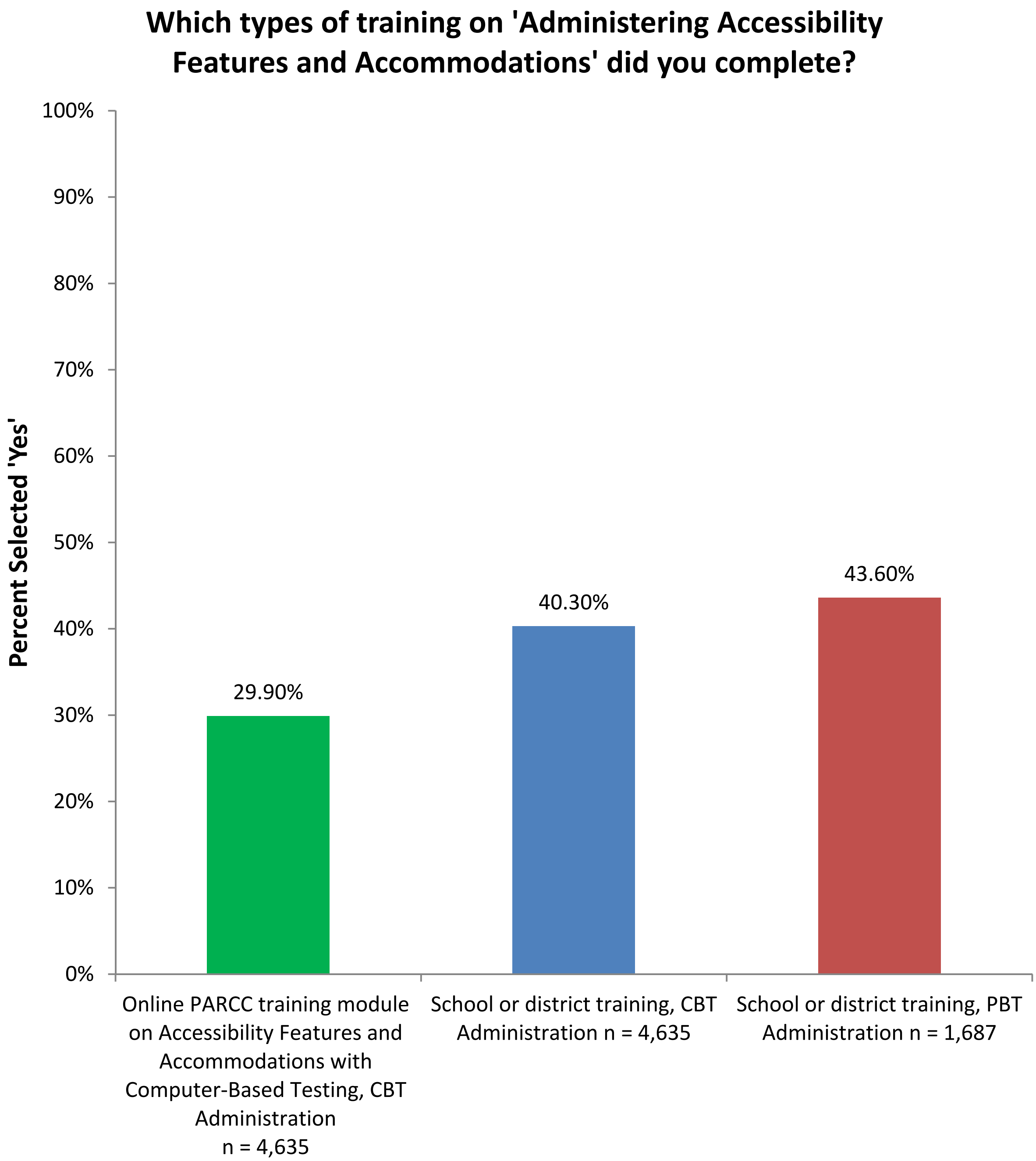

Figure 8. Percentage of TAs indicating they received various types of training on Accessibility Features and Accommodations.
CBT = Computer/tablet-based test; PBT = Paper-based test.

The TA Surveys also asked TAs to indicate if they were aware that there is an approved PARCC Accessibility Features and Accommodations Manual and if they had read it. Those results indicate that only about two-thirds of TAs were aware of this manual, and, of those, only about two-thirds actually read the manual (see Figure 9). Relatedly, those administering the CBT were asked if they were aware that there is approved PARCC guidance on “Computer-based Accessibility Features and Embedded Accommodations” and if they had read that guidance. Only slightly more than half of the TAs administering CBTs indicated that they were aware of this guidance, and, of those, nearly three-fourths read the guidance (see Figure 10).

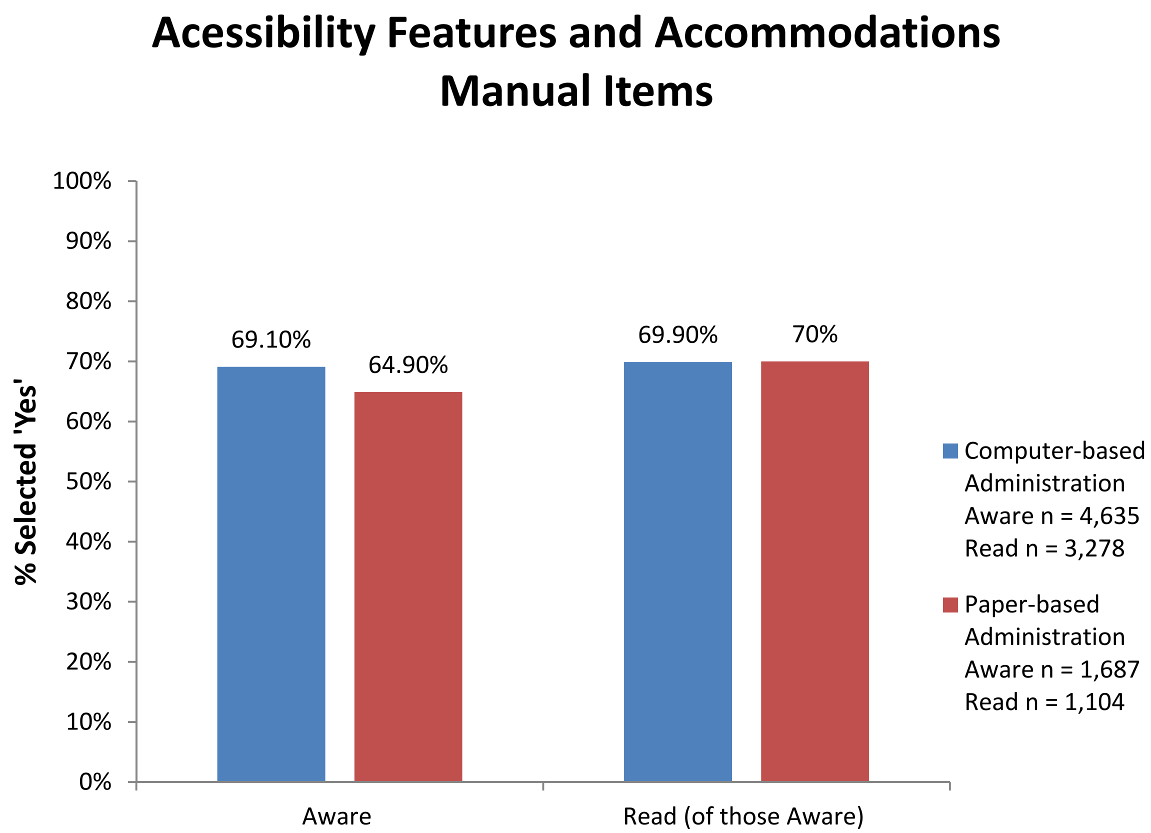

Figure 9. Percentage of TAs aware that there is an Accessibility Features and Accommodations Manual and, of those, percentage who read it.

Percentages are based on the number of valid responses. Missing = 241 for CBT Aware and missing = 25 for PBT Aware; Missing = 248 for CBT Read and missing = 28 for PBT Read. CBT = Computer/Tablet-based administration; PBT = Paper-based administration.

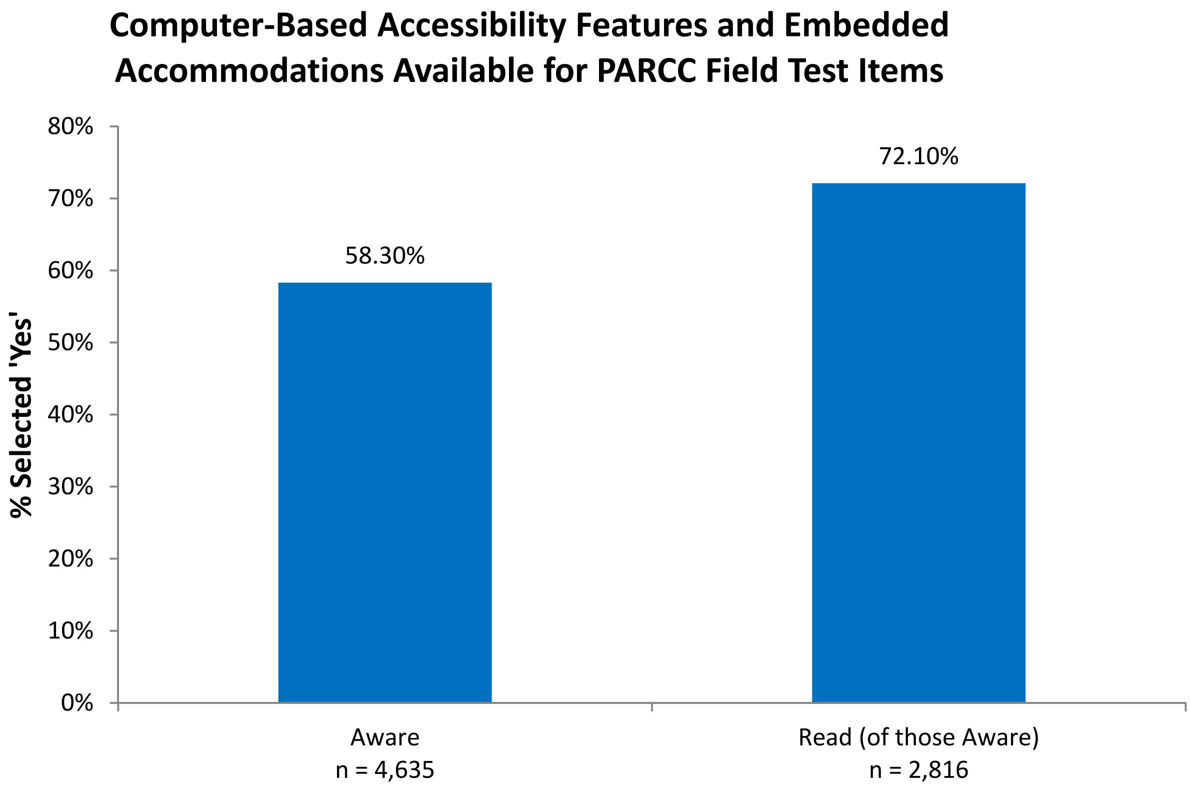

Figure 10. Percentage of TAs aware that there is approved PARCC guidance on computer-based accessibility features and embedded accommodations and, of those, percentage who read it.

Percentages are based on the number of valid responses. Missing = 276 for Aware and missing = 292 for Read.

The TA Surveys also included an open-ended question asking TAs to provide recommendations on how PARCC can improve the training and information available on accessibility features and accommodations. Several themes were identified, most of which dealt with recommendations for changing aspects of the overall system of accessibility features and accommodations, rather than changes to the actual training on accessibility features and accommodations. First, TAs recommended that all features and tools should be made available. These comments were made by TAs who indicated that specific accessibility features, such as text-to-speech, were sometimes not available to students, even though they stated that they had checked beforehand with Pearson or someone in charge of test coordination at the school to ensure that those features *would* be available during testing. Moreover, this theme included comments that features and tools that were available to students in the tutorials (e.g., magnifying glass, highlighter) were *not* available to them during testing. (It should be noted that not all accessibility features and accommodations were available at all grade levels during the field test; however, all approved accessibility features and accommodations are available for all grades for operational testing.) Second, TAs recommended that there should be a clear protocol for requesting accommodations for students. Relatedly, some TAs raised concerns about potential legal ramifications if particular accommodations were not available for testing, but those accommodations are required by the students' IEPs. Third, TAs commented that the amount of information provided in the instructions to students should be condensed. They felt that students were presented with too much extraneous information, especially for students with disabilities and/or ELL students. Fourth, TAs recommended that both students and TAs should have access to a full practice test prior to actual testing so that they can become familiar with aspects of the assessment such as, icons, where tools are located, and the general layout of the test. TAs felt that this would have helped them to be better prepared to answer student questions regarding the overall test and specific accessibility features and accommodations. Fifth, some TAs recommended more training, either because they did not receive the training on accessibility features and accommodations or because they felt that the training they did receive was insufficient to deal with problems that arose during testing.

Finally, there appeared to be confusion with the read aloud accessibility feature/accommodation. Some TAs expressed confusion about the text-to-speech read aloud accessibility feature/accommodation versus the human reader read aloud accessibility feature/accommodation. The following comments from the TA Survey illustrate this confusion:

- *There is also confusion when to use human reader and when to have read aloud. We thought* read *aloud was built into the computer system and that clearly was not the case when we tried it (student pre-identified).*
- *There is confusion as to reading to student: text to speech, and human reader, differences?*
- *Instead of human reader is there a way the test could be read through the testing device?*
- *a computer-based assessment should not need a human reader! Please add a feature to the test where it can read the students the test questions/answers over the microphone.*

The first two comments above indicate confusion about when to use the text-to-speech accessibility feature/accommodation and when to use the human reader accessibility feature/accommodation, whereas the latter two comments indicate a lack of awareness of the text-to-speech accessibility feature/accommodation.

Of the 957 TAs who provided recommendations on improving accessibility features and accommodations training (CBT administration), nearly half of those provided recommendations that dealt with one or more of the topics identified above.

There was considerable overlap in the recommendations provided by TAs administering the PBT. The most common recommendations for improving accessibility features and accommodations training made by these TAs were to: (a) make all features and accommodations available during testing, (b) provide a clear protocol for requesting accommodations for students, and (c) condense the instructions so that students with disabilities and ELL students do not have to process extraneous information. Of the 413 TAs who provided recommendations on improving accessibility features and accommodations training (PBT administration), nearly half provided recommendations that dealt with one or more of these three topics.

The findings from the observation study reveal that the observers had little opportunity to observe separate accommodated sessions; only four of the 77 sessions (3 schools) included students receiving accommodations. For the task, “Ensure students receiving the same accommodations are grouped together,” two sessions (at 2 different schools) were rated as having “met” this criterion (see Table 6 above). The “not met” rating was used by an observer at another school (2 sessions) because the “General Administration Directions Clarified in Student’s Native Language” accommodation was administered with the regular test group instead of being in a separate testing location. Another separate accommodation session was scheduled to be observed; however, it was cancelled because the TA could not load Adobe Flash® on the computers.

Additional information regarding accommodations was received during the debriefing interviews at seven schools. Comments from four schools indicated they had problems setting up the accommodations prior to testing, stating that the documentation to support this process was “insufficient.” It is important to note that they later discovered they had misunderstood the instructions. Three schools using the text-to-speech accessibility/accommodation indicated that they found it effective; the students were able to start, rewind, stop, and navigate through the test with very little support from the TA. However, there were two other schools that reported they were unable to get the text-to-speech accessibility/accommodation to work, and they abandoned their efforts to test students with IEPs. Finally, two schools said they revised IEPs to better match the accommodations provided on the PARCC assessment, and that they intend to apply that revision in their annual IEP reviews for the next year to better prepare for the assessment next spring.

Overall, the findings related to accessibility features and accommodations suggest that efforts should be made to increase participation rates in training on accessibility features and accommodations—for both CBT and PBT administrations. Relatedly, efforts should be made to help ensure that all TAs are aware of and familiar with the PARCC manuals on accessibility features and accommodations. Particular attention should be given to addressing the concerns noted above with the read aloud accessibility feature/accommodation. Such efforts will help to tighten adherence to *Standard 6.1*. The findings also reveal that additional guidance and clarity are needed to the procedures for requesting and receiving accommodations; such efforts will help to strengthen adherence to *Standard 6.*2. To help address this particular concern, all approved accessibility features and accommodations are available for all grades for operational testing. Other actions that PARCC is taking to address the concerns related to Research Question 2 are provided in the Executive Summary and in the Summary and Recommendations sections under Claims 1 and 2.

Findings for Research Question 3: Do the students appear to understand the questions provided to them?

The claim in the theory of action most directly related to Research Question 3 is, “Students respond to items as intended.” For this claim to be true, important assumptions that must be verified are that: (a) students understand the directions provided by the TA, and (b) students understand the directions on the test. Findings from the Student Surveys directly address these assumptions.[19] Upon completing the test, students were asked, “Did you understand all of the directions read by the person who gave you the test?” and “How often was it hard to understand the directions for the questions on the test?” The Student Survey results indicate that the vast majority of students indicated that they understood the directions read by the TA; this was somewhat more true for the ELA assessments than for the Mathematics assessments, and for the PBA assessments than for the EOY assessments, such that the lowest endorsement occurred for the Mathematics EOY assessments (regardless of CBT or PBT) with approximately 78% indicating, ‘yes’ they understood all the directions read by the TA (see Figures 11 and 12).

[19] Additional evidence for Research Question 3 is presented under Research Question 7b. Research Question 7b asks, “What types of questions, if any, do students ask during the test administration?” The TA Surveys included an open-ended question asking TAs to describe the types of questions asked by students. Many of the questions asked by students pertained to confusion about the instructions. Examples of those comments are provided in the results for Research Question 7b.

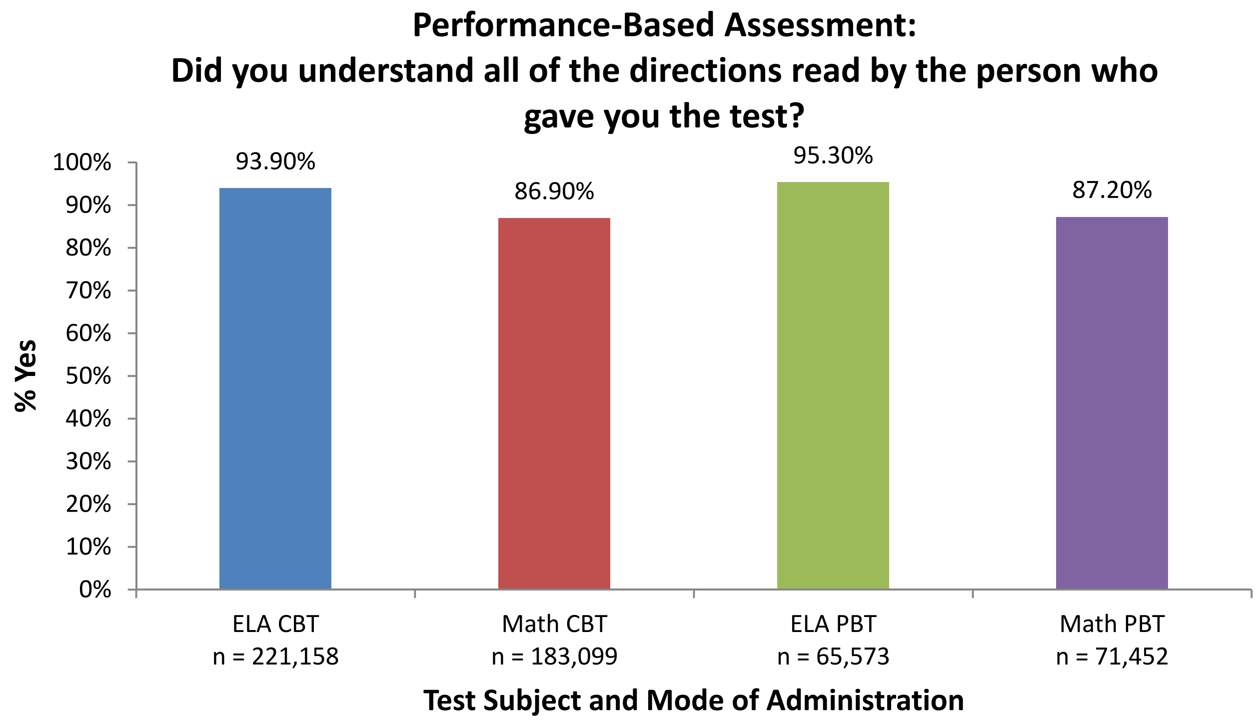

Figure 11. Percentage of students indicating they understood all the directions read by the TA (PBA).

Percentages are based on the number of valid responses. ELA CBT missing = 170; Math CBT missing = 194; ELA PBT missing = 138; Math PBT missing = 253. ELA = English Language Arts; CBT = Computer/tablet-based Test; PBT = Paper-based Test.

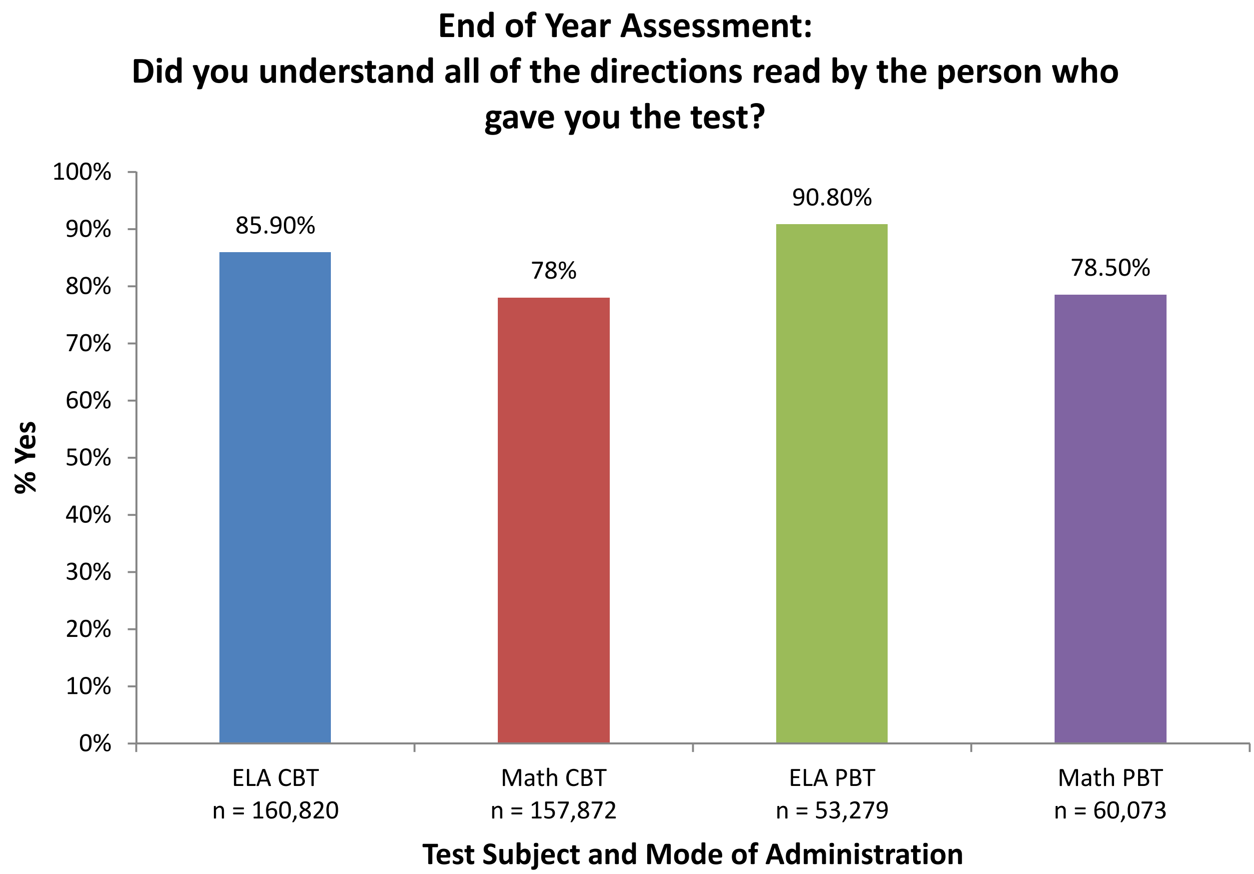

Figure 12. Percentage of students indicating they understood all the directions read by the TA (EOY).

Percentages are based on the number of valid responses. ELA CBT missing = 90; Math CBT missing = 159; ELA PBT missing = 106; Math PBT missing = 176. ELA = English Language Arts; CBT = Computer/tablet-based Test; PBT = Paper-based Test.

Next, with regard to students' understanding of the *directions for the questions on the test*, approximately 20% of the students responding to the ELA Student Surveys indicated that it was hard to understand the directions on the test either "most of the time" or "almost all of the time" (see Figures 13 and 14). One-third of the students indicated that it was hard to understand the directions on the test "almost never." These results were true for students responding to the ELA Student Surveys regardless of the assessment type (PBA or EOY) or mode of administration (CBT or PBT). For the Mathematics tests, results indicate that students had even more difficulty understanding the directions on the tests. A third or more of the students reported that it was hard to understand the directions on the test either "most of the time" or "almost all of the time" (see Figures 13 and 14). Students completing PBA Mathematics tests administered via computer or tablet reported the most difficulty in understanding directions on the test with 43% (see Figure 13) indicating that it was hard to understand the directions for questions on the test "most of the time" or "all of the time." Only about 15% of students responding to the Student Surveys for Mathematics indicated that it was hard to understand the directions for the questions on the test "almost never" (this was true regardless of the assessment type or mode of administration).

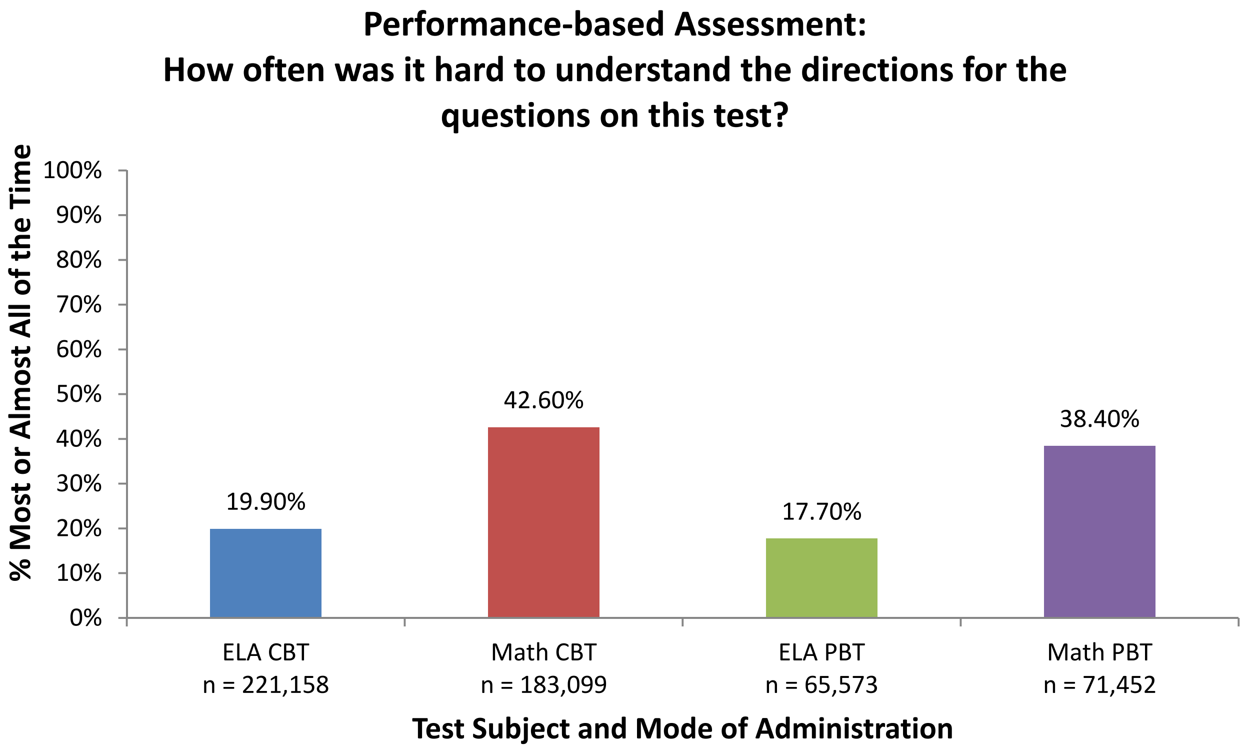

Figure 13. Percentage of students indicating that it was hard to understand the directions for the questions on the test most of the time or almost all of the time (PBA).

Percentages are based on the number of valid responses. ELA CBT missing = 383; Math CBT missing = 347; ELA PBT missing = 170; Math PBT missing = 249. ELA = English Language Arts; CBT = Computer/tablet-based Test; PBT = Paper-based Test. Ratings made on a 4-point scale where 1 = Almost Always, 2 = Most of the Time, 3 = Some of the Time, 4 = Almost Never. Results reported here reflect the combined percentage of "Most of the Time" and "Almost Always."

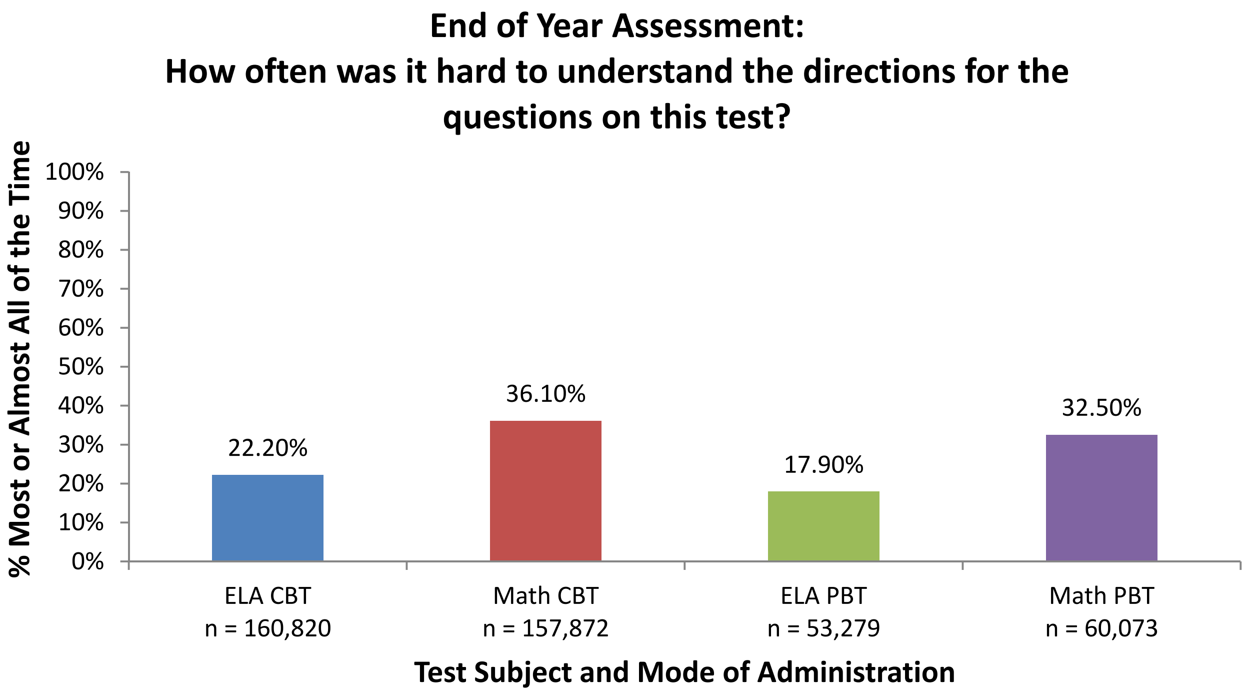

Figure 14. Percentage of students indicating that it was hard to understand the directions for the questions on the test most of the time or almost all of the time (EOY).
Percentages are based on the number of valid responses. ELA CBT missing = 292; Math CBT missing = 359; ELA PBT missing = 131; Math PBT missing = 208. ELA = English Language Arts; CBT = Computer/tablet-based Test; PBT = Paper-based Test. Ratings made on a 4-point scale where 1 = Almost Always, 2 = Most of the Time, 3 = Some of the Time, 4 = Almost Never. Results reported here reflect the combined percentage of "Most of the Time" and "Almost Always."

The TA Surveys also addressed the question of whether students appeared to understand the instructions provided to them. The TAs were asked to indicate their agreement with the statements, "Students appeared to understand the instructions I read to them during test administration," and "The instructions I read to the students covered all of the information necessary to take the test." The results presented in Figure 15 indicate that approximately 75% of the TAs administering the CBTs agreed that students appeared to understand the instructions they read to them, whereas 50% of TAs administering PBTs agreed that students appeared to understand the instructions they read to them. The results presented in Figure 16 indicate that about two-thirds of TAs administering CBTs agreed that the instructions they read to students covered all the information needed for students to take the test, and slightly more than half of the TAs administering the PBTs agreed with this statement.

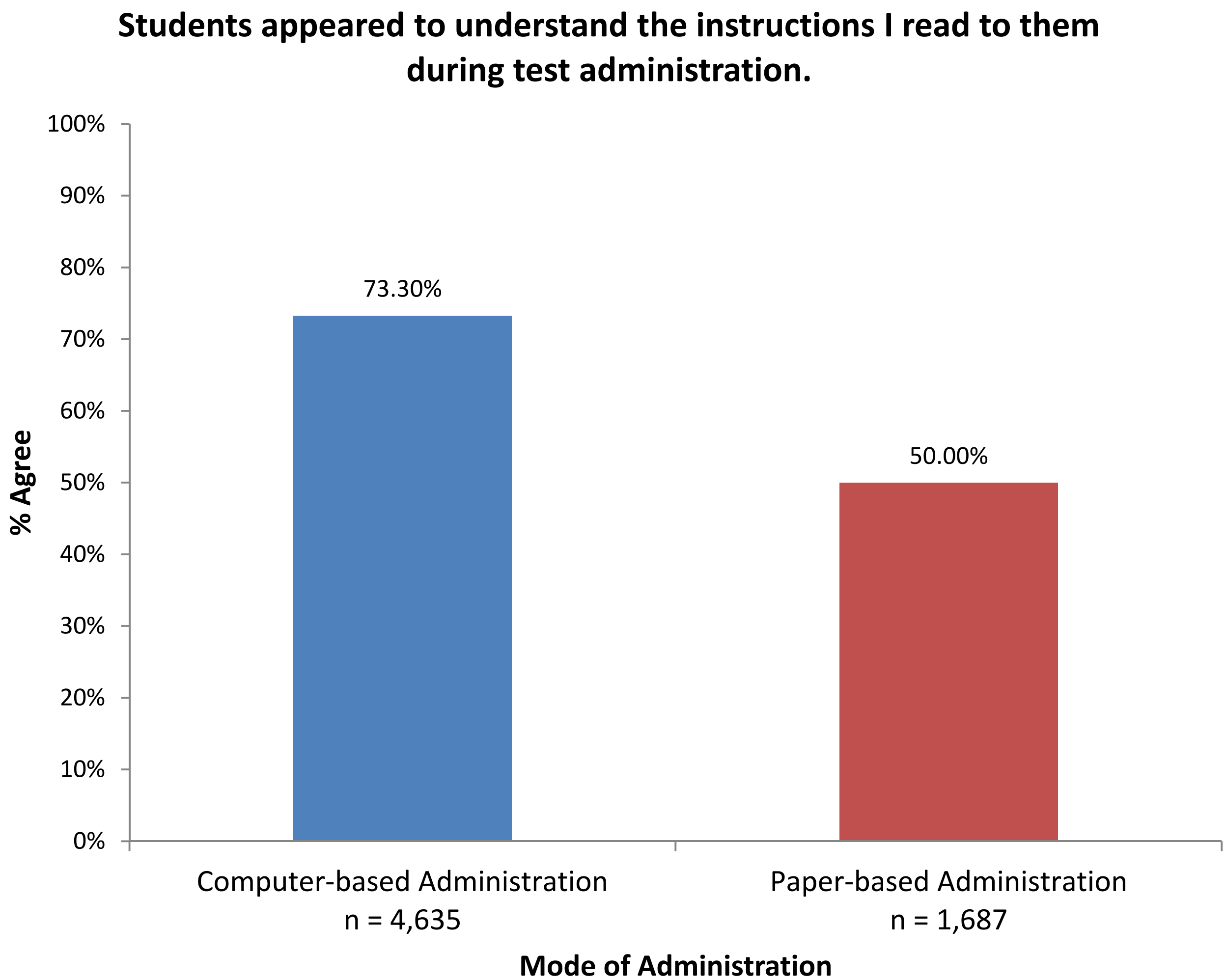

Figure 15. Percentage of TAs agreeing that students appeared to understand the instructions they read to them.

Percentages are based on the number of valid responses. Missing = 225 for CBT administration and missing = 29 for PBT administration. Ratings made on a 4-point agreement scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, and 4 = Strongly Agree. Results reported here reflect the combined percentage of "Agree" and "Strongly Agree."

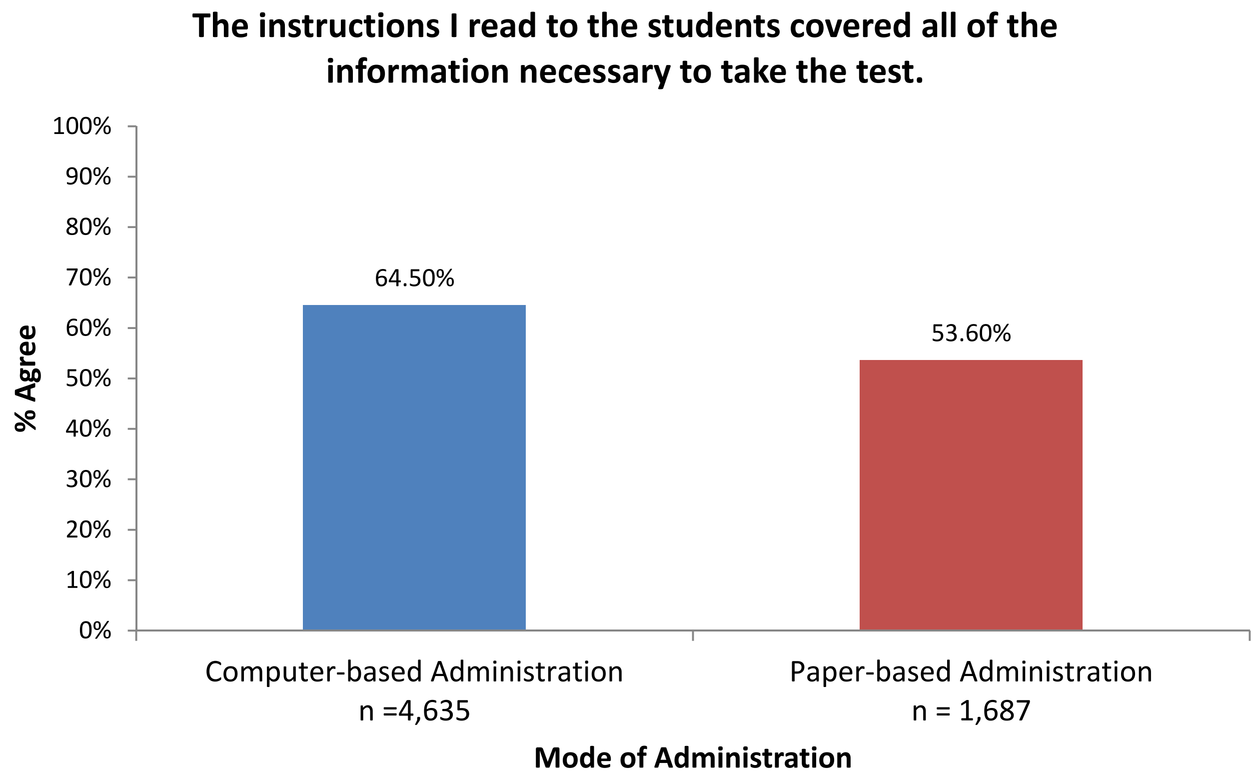

Figure 16. Percentage of TAs agreeing that the instructions they read to students covered all of the information students needed to take the test.

Percentages are based on the number of valid responses. Missing = 244 for CBT administration and missing = 26 for PBT administration. Ratings made on a 4-point agreement scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, and 4 = Strongly Agree. Results reported here reflect the combined percentage of "Agree" and "Strongly Agree."

A factor that may affect whether students understood the instructions provided to them is whether they had the opportunity to gain familiarity with the new PARCC assessments prior to actual administration. Given that the PARCC assessments are brand new to students, it is reasonable to expect that students may be better positioned to understand the instructions if they had already practiced with PARCC sample items. Practice with sample items is consistent with the guidance for *Standards 4.16* and *6.5*. The TA Surveys helped to investigate this question by asking TAs to indicate, "Did the students in your session(s) practice with PARCC sample items prior to administration?" and "Did the students in your session(s) complete the PARCC tutorial prior to administration?"[20] The results in Figure 17 reveal that more than three-fourths of TAs administering the CBT indicated that students practiced with sample items prior to administration, whereas only about a fourth of TAs administering the PBT indicated that students practiced with sample items prior to administration. Relatedly, approximately three-

[20] This information also directly addresses the Implementation Phase in the TOA, most notably the claim that "Students understand the format of the assessments and how to use the technology."

fourths of TAs administering the CBT indicated that students completed the PARCC tutorial prior to administration, and less than a tenth of TAs administering the PBT indicated that students completed the PARCC tutorial prior to administration (see Figure 18). With regard to the results for PBT administration, it should be noted that were no sample items or tutorial specific to PBT; this explains why percentages for PBT administration in Figures 17 and 18 are low. Even though the majority of TAs indicated that students taking the CBTs had gained familiarity with the PARCC assessments prior to administration via sample items and/or via the PARCC tutorial, the survey results reveal that a substantive number of students did not complete either of these; this might partly explain why there was some confusion with instructions on the test.

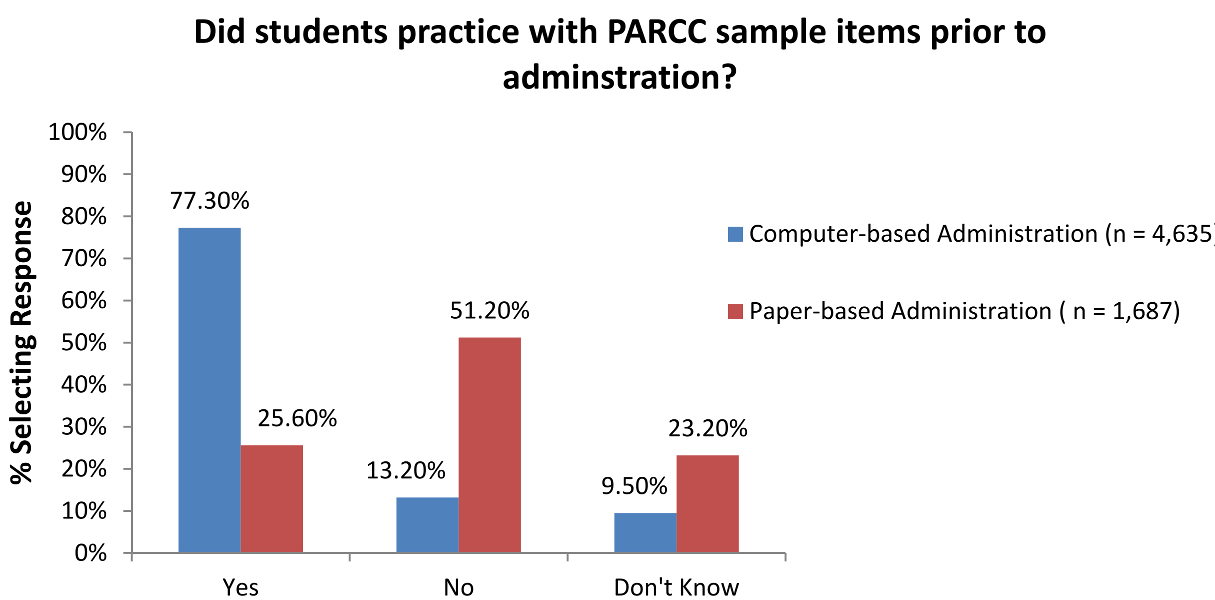

Figure 17. Percentage of TAs indicating that students practiced with PARCC sample items prior to administration.

Percentages are based on the number of valid responses. Missing = 389 for CBT administration and missing = 80 for PBT administration.

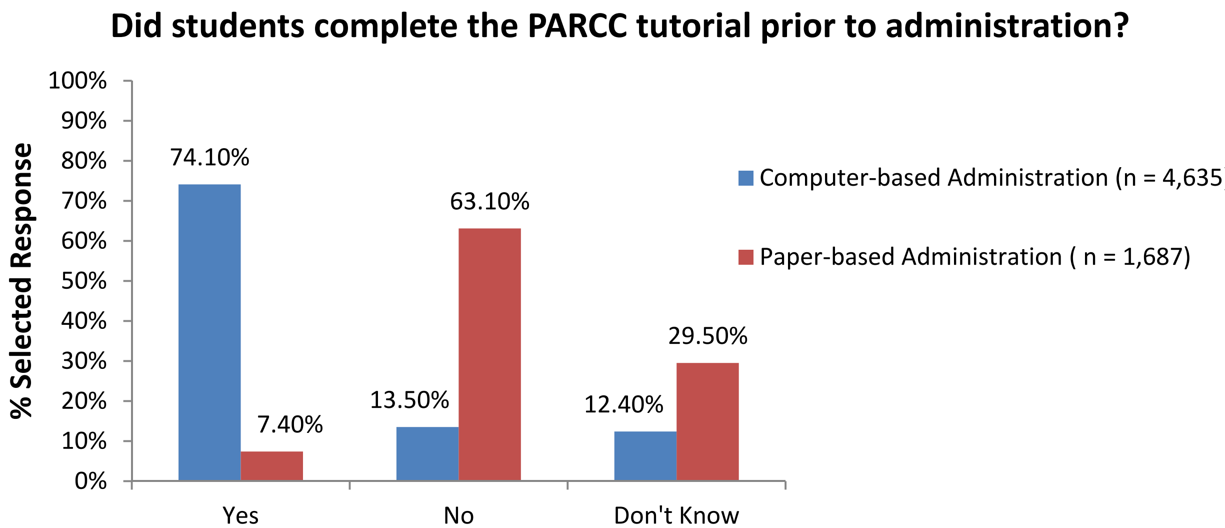

Figure 18. Percentage of TAs indicating that students completed the PARCC tutorial prior to administration.
Percentages are based on the number of valid responses. Missing = 387 for CBT administration and missing = 76 for PBT administration.

Finally, findings from the observation study also shed some light on Research Question 3 by providing concrete examples of the kinds of confusion encountered by students with regard to instructions. For example, as initially discussed in the results for Research Question 1, observer notes from six schools indicate that confusion was caused by terminology in the scripts. For example, observers noted the following: (a) the directions instructed students to click the ‘start' button, but the button is called ‘resume,' (b) the TA had to clarify that the ‘testing device' is the computer, and (c) that "sections" and "sessions" mean different things in different places. Furthermore, observer notes from five schools indicated that students spent considerable time figuring out how to undo what a tool did (e.g., highlighting tools). Most of the notes regarding tool usage were from the EOY test administration. Several observer notes were specific to the Mathematics tests (CBT administration). For example, observers noted that students were confused as to how to enter fractions into the equation editor and how to change answers when plotting points in a graph. Observers also noted that the answer boxes did not allow commas (e.g., to indicate thousands) so students had to go back and delete commas before submitting their answers on the Mathematics CBTs. (See the results for Research Question 7b for more information on the types of questions students asked TAs about test instructions).

These concrete examples from the observations help shed some light on findings from the Student Surveys and findings from the TA Surveys regarding confusion in instructions, particularly for the Mathematics CBTs for which 43% of students reported that the instructions were hard to understand all or most of the time.

Finally, an additional theme surfaced in the debriefing interviews regarding sources of confusion with instructions. Five schools expressed concern about younger and "at-risk" students having adequate keyboarding or computer experience to reasonably respond to various types of answer options and multistep test items. This concern was supported by observations of some students who did not know simple keyboarding skills, such as how to use the scroll bar.

In summary, most students reported that they understood the directions read to them by the TA. The majority of TAs also reported that students appeared to understand the directions they read to them; however, agreement with this perception was considerably less for TAs than for students, particularly for TAs administering PBTs. Furthermore, only about half to two-thirds of the TAs agreed that the instructions they read to students covered all of the information students needed to take the test. With regard to the instructions students read on the test, students reported more difficulty in understanding those directions than in understanding the directions read to them by the TAs; this was particularly true for mathematics. Per *Standards 4.16* and *6.5*, students are more likely to understand test instructions if they have had practice with the items and with the mode of testing (e.g., computer-administered) prior to actual testing. Overall, the findings indicate that approximately three-fourths of students taking the CBTs completed practice items and the tutorial prior to testing. While some students who took the PBTs completed the practice items and/or tutorial, those activities were targeted for CBTs, not PBTs. There were no specific practice items or tutorials for PBTs. This might partly explain why TAs administering PBTs generally reported lower levels of agreement that students understood the instructions they read to them. Additional clarity and detail in test instructions and increased practice opportunities are two efforts that could help tighten adherence to *Standards 4.16* and *6.5*. Actions that PARCC is taking to address these concerns are provided in the Executive Summary and in the Summary and Recommendations sections under Claim 4.

Findings for Research Question 4: To what degree are students engaged in taking the test?

Research Question 4 also most directly addresses the claim that, "Students respond to items as intended." For this claim to be met, students must have some engagement with the assessment. Consequently, another assumption underlying the claim "that students respond to items as intended" is that students are engaged in taking the test. If students are not engaged or if they have low levels of engagement, then they might not sufficiently attend to the items so as to respond to them as intended.

Across the various studies and instruments, several sources of information were collected that help to shed light on the issue of student engagement. First, the observer ratings from the observation study provide an indication of the extent to which certain kinds of potential distractors were minimized. For example, ratings from the observation checklist indicate that, of the 77 observed sessions, more than 98%[21] were rated as having 'Met' the task of: "Allow authorized visitors only." This indicates that student engagement was not likely to have been impeded by outside visitors.

Qualitative evidence of student engagement comes from two additional sources—students' open-ended comments on the Student Surveys and TAs' comments from the debriefing interviews.[22] The Student Surveys concluded with an open-ended question asking students, "Please use the space below to tell us about anything that was confusing or unclear about the test. We are not asking whether a question on the test was hard, but we would like to know if there was anything about the test that didn't make sense." Even though this open-ended question was directed at identifying confusing content, a substantive number of students (i.e., approximately 15% of all students providing open-ended comments) took the opportunity to report that they "liked" the test or that they found it "interesting," "fun," or "cool." These kinds of comments suggest engagement, at least for some students. Relevant examples of student comments are:

- *No I actually really liked taking this test (: only issue would be the speed of the PCs or tablets , my tablet seemed to work fine then it would take its time like (type slowly) . Otherwise its a really cool/ interactive way to test.* [PBA Math Grade 8]
- *I thoght this test was so awesome. Nothing was confusing. I liked the test on the computer alot better than on paper. I understood everything my hands weren't getting tired from writing because I was on the computer typing. I dont think you could've made this test any better!!!!!* [Math EOY Grade 5]
- *test was cool because i have a chance to do more test in the comuter it was cool becuse it is very osom to do a test on acoputer and i will like to do more test in the coputer and some of the questions were dificlt* [PBA ELA Grade 5]
- *On my test there was nothing that didnt make sense. Actauly my test was fun a littel bit hard at the same time. Next year I hope it will be the same way.* [EOY ELA Grade 3]

Converging evidence of student engagement was obtained from the debriefing interviews. While the debriefing interview protocol did not include a specific interview question regarding student engagement, during the interviews fourteen schools commented that students liked the CBTs overall with typical comments such as, "students stated they preferred taking an assessment online compared to paper and pencil," "students thought the videos were cool," "…kids enjoyed the test format…loved the cut and paste function as a way of citing evidence," and "students seemed engaged and mentioned they enjoyed the format of many items."

[21] All "not applicable" testing sessions have been removed from the percentage reported here.
[22] The qualitative evidence of student engagement from the Student Survey and from the debriefing interview is only pertinent to CBTs; the Student Survey administered to students taking the PBTs did not contain an open-ended item and the observation study only included schools administering CBTs.

Additionally, some TAs described characteristics of the items that engaged students. For example, the on-screen math tools and video segments were mentioned during several interviews as positive features of the assessment. Comments from six schools indicated that items were either more difficult or required more rigor than their current accountability assessments. One of the six schools indicated they will make recommendations to their building and district administration to better align instructional practice to the rigor of these assessments.

There was also some evidence contrary to the evidence provided above. There is converging evidence across the various studies and instruments that problems related to technology were a likely impediment to student engagement. Findings from the TA Survey indicate that only 13% of TAs reported that they encountered "no technology-related problems" during test administration. The students appeared to be less aware of technology-related problems than the TAs; nonetheless, the percentage of students indicating that there were no technology-related problems during the test was between 40% - 60% (see Figure 19). Relatedly, observer notes from the observation study indicate that there were technology issues (e.g., not being able to sign in, timing out, kicked-off) at 49 of the 61 schools visited (80%). The problems with technology were identified as either "severe" in nature, defined as an interruption in test-taking of at least 10 minutes, or as "minor" in nature, defined as problems that were resolved in less than 10 minutes. During field test observations, 40 schools experienced an issue(s) categorized as minor, and 20 schools experienced an issue(s) categorized as severe(some schools encountered both minor and severe problems). More detail on the observer notes from those sessions is provided below in the results for Research Question 7a (*Are there any hardware or software related problems during test administration?).*

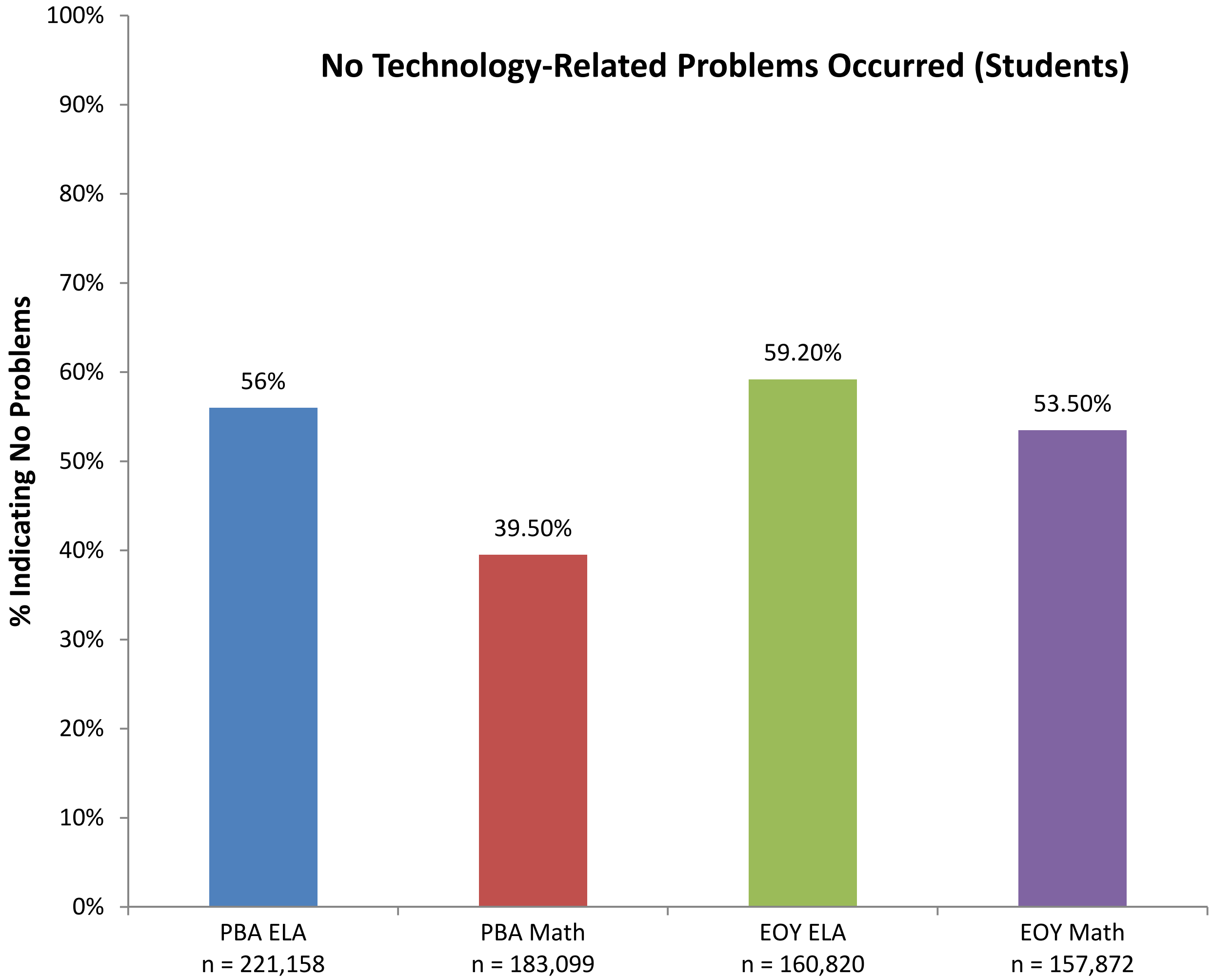

Figure 19. Percentage of students indicating there were no problems related to technology during their test.

PBA = Performance-based Assessment; EOY = End-of-Year; ELA = English Language Arts.

As a consequence of the technology problems, students reported that in some instances they skipped items that were not functioning correctly or that they rushed to finish the test because of the delays caused by technology-related problems. For example, comments made by students on the Student Surveys included:

- *The internet was not responding very well and I sometimes couldn't sign in to take my test. Most of the time when I try to sign in, a pop up will come and it's an EO. Fixing the computer would take so much time that sometimes I had to rush my test once I was able to sign in.* [PBA ELA Grade 8]

- *I had an extremely difficult time getting to the test because of either problems with the test itself or the computer, this caused me to have less than half of my time to finish, which made me feel very rushed.* [PBA ELA Grade 9]
- *There was a lot of difficulty when attempting to select an answer and move it to the correct box, scores will be a lot lower because people had to skip over questions that did not work.* [EOY ELA Grade 10]
- *On one question of the test, we had to drag evidence to support our answer out of the selection. I was not able to get it to work so I skipped the question; all I could do was highlight it* [EOY ELA Grade 6]
- *On the test part my digital keyboard did not work. On paper this test would of took me 30 minutes, but on the computer it took me 2 hours. When I hit next question, it took about thirty seconds to load so I felt rushed when time was running short.* [EOY Math Grade 4]

If students are rushing through the test to finish on time and/or skipping items, then student engagement is negatively impacted, which means students might not be responding to items as intended. It is unknown whether students would have been more engaged, irrespective of technology issues, if the test had been operational rather than field test and/or if student-level stakes were attached to scores.

Additional themes regarding problems with technology were identified in the open-ended comments on both the TA Survey and the Student Surveys, and during the debriefing interview with TAs; more detail is provided below in the results for Research Question 7a.

Another potential impediment to student engagement is the lengthiness of the instructions read by the TAs. The lengthiness of the TA script was connected with contributing to students' lack of attention. For example, typical notes made by four observers during the observation study were: "Students quit listening after page 31," "…so redundant (for a consecutive session)," "…kids not paying attention," and "LOTS of instructions to listen to (took 15 minutes to read)." Evidence from the TA Surveys is consistent with the reports from the observation study. The TA Surveys included an open-ended item asking TAs to, "describe any questions students asked about the test-taking instructions you read to them." A prevalent theme identified in these open-ended comments was that the instructions were too long. A typical comment from TAs was, "Directions were too long—students either stopped listening or were unable to retain that much information at one time." The issue of retention/comprehension of the lengthy instructions was noted as a particular concern for students with an IEP and/or ELL students. For example, a typical comment made by TAs was, "I found the lengthy directions were way too hard for students to follow. We have a high number of ELL and IEP students and the amount of information given allowed no processing time for the typical students let alone our ELL and IEP students."

In summary, there is some evidence of student engagement that comes from both the Student Surveys and the observation study. Qualitative comments from some students on the Student Surveys indicate that they "liked" the CBT. Also, comments made by TAs during the debriefing interviews indicate some reports of students preferring the features of the CBT (note that observers only visited CBT administrations). Moreover, findings from the observation study indicate that student engagement was not likely to have been impeded by unauthorized visitors in the testing session. Diverging evidence of student engagement, however, comes from reports of technological-related issues. Evidence of technology-related problems comes from the TA Survey, the Student Surveys, and the observation study. Qualitative comments on the Student Surveys indicate that some students skipped items or rushed through the test in order to make up for delays caused by technology-related problems. Efforts to rectify technological issues should help to minimize disruptions and thereby increase adherence to *Standards 6.3* and *6.4*. Also, evidence from the observation study and the TA Surveys suggest that the instructions read by the TAs were too lengthy and contained redundant information (particularly for students participating in consecutive testing sessions), which contributed to lapses in attention for test-takers. Consequently, efforts to streamline the instructions read by the TAs and to remove and/or reduce redundancies in instructions could help to improve student attention and engagement, and thereby increase adherence to *Standards 4.16* and *6.5*. Actions that PARCC is taking to address these concerns are provided in the Executive Summary and in the Summary and Recommendations sections under Claim 4.

Findings for Research Question 5: Is there any disruptive student behavior during the session?

This research question also gets to the heart of the claim that "students respond to items as intended." Another assumption underlying this claim is that students' attention is *not* adversely impacted by other disruptive students. To the extent that disruptive student behavior is minimized, then this increases the likelihood that students attend to the test and respond to items as intended.

Across the various studies and instruments, several sources of information were collected that help to shed light on this research question. First, the observer ratings from the observation study provide an indication of the extent to which disruptive student behavior was minimized. Ratings from the observation checklist indicate that, of the 77 observed sessions, more than 90%[23] were rated as having 'Met' the tasks of: "Seat students at a computer with non-permitted materials removed (i.e., cell phones, other electronics, and reference books),"

[23] All "not applicable" testing sessions have been removed from the percentage reported here.

"Monitor students by circulating around the room," "Handle test irregularities (e.g., student misconduct, cheating, using electronic devices)," and "Handle students finishing early appropriately (i.e., following state guidance)." This information helps support the assumption that students' attention was not adversely impacted by disruptive student behavior.

While disruptive student behavior does not appear to be a widespread concern, there was some evidence of instances of disruptive student behavior across studies. First, from the observation study there were reports of disruptive student behavior in two sessions (at two different schools). The observer notes from one school indicate that, "… (there was) disrespectful talking, students being physical with each other. There were some attempts to control the misbehavior." The observer notes from the second school indicate that, "student arrived late; was unwilling to write his name on scratch paper; then refused to answer any questions. The test coordinator removed him from the room and brought him back later because he had agreed to participate. He logged in while the other students waited to be read item #5 then immediately hit the Enter key to go through the assessment and the Student Survey without responding."

From the Student Surveys, there were some reports of disruptive student behavior, but it was rare. Some example comments provided by students were:

- *Sometimes, my classmates would become disruptive, and they would make me lose focus.*
- *When we were done we had nothing to do so if we did anything we would be distracting other people. I did not like that part.*
- *I couldn't really focus and concentrate as much because of the test coordinator continually screaming and the classmates that were in the room with me kept talking*

The open-ended comments provided by TAs on the TA Surveys help to provide some additional context to the student comments listed above. The TAs noted that students who finished early were often times "fidgety," and thus distracting to other students still taking the test. These TAs commonly mentioned that students should be allowed to read a book as soon as they finish their test to help stave off such "fidgety" behavior. Example comments from TAs were:

- *The fact that students need to wait until the end of the initial testing session before being allowed reading materials did lead to more kids beginning to get fidgety.*
- *Students need to be able to turn in their tests when they are done and be able to read a book immediately. Watching 20 kids fidget for 15-20 minutes is distracting for those still working.*
- *Although the children could read a recreational book when finished, the directions seemed to indicate that they could not do this until the additional time period, which meant that they were sitting there doing nothing after they checked their test. This is a*

waste of time and can lead to potential behavior problems. If this is not right, the directions need to be clarified.

In summary, the findings for Research Question 5 indicate that disruptions caused by students' behavior during the testing session were not widespread. Given that such disruptions were very limited, there are no planned PARCC actions in the Lessons Learned document to address disruptive student behavior. The most common reports of disruptive student behavior were reports of students being "fidgety" after finishing the test early. The most common recommendation made by TAs was to allow students to read a book as soon as they completed their test to help reduce such fidgety behavior. [24] This might be one way of helping to further increase adherence to *Standard 6.4*.

Findings for Research Question 6: Are there any apparent attempts to record or copy test materials including the test questions by students or others?

This research question most directly addresses the claim that, "Administrators and teachers are prepared to administer the assessments as intended." An important component of test administration is ensuring that the test content remains secure. To do otherwise would threaten the validity of the testing system. A source of evidence for this research question is the observation study. Several tasks on the observation checklist pertain to issues related to test security. That collective set of selected tasks and the degree to which they were met (as determined by the trained observers) are presented in Table 8. The results in Table 8 indicate that most of the tasks related to test security were rated as "Met." Tasks that did not have a high percentage of "Met" ratings were typically because that task was either "Not Observed" or was "Not Applicable." Notable exceptions to the "Met" ratings occurred for "prepare testing room" and "post testing signs on outside doors." Observer notes from 20 schools (26 observations) indicate that the primary issue with room preparation was with the lack of use of partitions or lack of sufficient space between computers as required. Typical comments were: "not enough seats (space) to put extra space" and "students were close together but accustomed to it." With regard to posting of the "Testing – Do Not Disturb" sign, there were no observer notes of significance to indicate anything other than TAs neglecting to post the sign (such as significant interruptions caused by failure to post the sign). It is important to note that a "Not Observed" rating only indicates that the observer did not see the task completed; therefore, as noted above, in many cases the task was completed.

One observer gave a rating of "did not meet" for the "Allow authorized visitors only" task with a note that an ELA teacher entered the room and stayed about 2 minutes after looking at a couple of screens. The observer noted that the TA and the district assessment director did not

[24] Decisions about what students are allowed to do after they complete testing is a state policy issue.

take any overt action at that time. For the task of "Maintain test security if test is interrupted," one observer provided a "did not meet" rating because the TAs (multiple classrooms testing concurrently) sent students back and forth between the room with the Test Coordinator and the room with the administration computer to try to get reset.

Table 8. Summary of Observation Checklist Items Pertinent to Test Security

	Ratings				
	Met	Partially Met	Did Not Meet	Not Observed	NA
	%	%	%	%	%
Prepare testing room (every other seat or partitioned, room configured for security/privacy).	63.6	15.6	18.2	1.3	1.3
Post "Testing - Do Not Disturb" sign on outside door(s).	51.9	3.9	22.1	20.8	1.3
Confirm correct Student Authorization Tickets and seal codes for session.	80.5	0.0	0.0	18.2	1.3
Allow authorized visitors only, such as PARCC staff, state/local/school assessment monitors.	83.1	0.0	1.3	0.0	15.6
Seat students at a computer. Materials not allowed are cell phones, other electronics, or reference books.	96.1	2.6	0.0	1.3	0.0
Provide students with a *Student Authorization Ticket.*	97.4	0.0	0.0	1.3	1.3
Monitor students by circulating around the room.	97.4	2.6	0.0	0.0	0.0
Provide a group 3 minute break if necessary (computer screens must be turned off or apply visual block to monitor). Students must not communicate during breaks.	16.9	0.0	1.3	0.0	81.8
Maintain test security if test is interrupted.	6.5	0.0	1.3	0.0	92.2
Handle testing irregularities (e.g., student misconduct, cheating, using electronic devices, fire drills or safety threat, loss of internet connectivity).	23.4	1.3	0.0	0.0	75.3
Collect *Student Authorization Ticket* and any test materials (including all scratch paper).	88.3	3.9	0.0	2.6	5.2
Return testing materials to the Test Coordinator.	48.1	0.0	0.0	23.4	28.5

Note. NA= Not applicable.
Number of observed testing sessions is n = 77.

In summary, there was no evidence of overt attempts to record or copy test materials by students or others. Findings from the observation study indicate that most of the tasks related to test security were rated as "Met," thereby indicating evidence to support adherence to *Standard 6.7*. Exceptions to the "Met" ratings occurred for "prepare testing room" and "post testing signs on outside doors." Observer notes indicate that the primary issue with room preparation was with the lack of use of partitions and the lack of sufficient space between computers. With regard to posting of the "Testing – Do Not Disturb" sign, there were no observer notes of significance to indicate anything other than TAs neglecting to post the sign. Given that there was only one reported instance of an unauthorized visitor entering a testing session, not posting the "Do Not Disturb" sign does not appear to be a major threat to test security. Moreover, some schools have an "open concept" in which there are no doors to classrooms and/or classrooms are joined together. Consequently, posting the "Do Not Disturb" sign might not be practically feasible in some settings. Therefore, based on findings from the field test, it appears that addressing the lack of sufficient space and/or lack of partitions between computers is the test preparation task that is in most need of improvement. Increased following of this test administration instruction will help to tighten adherence to *Standard 6.6*.

Findings for Research Question 7a: Are there any interruptions during the test administration related to hardware or software problems?

This research question is most closely related to the claim that, "Technology improves and facilitates the assessment experience." If there are interruptions caused by problems with hardware and/or software, then the veracity of this claim is threatened. Both the TA Survey and the Student Surveys (CBT versions) include questions that address this research question. The TA Survey asked TAs to select which, if any, of the following types of technology-related problems occurred during test administration: difficulty logging into the assessment, devices stopped working, devices worked slowly, and lost internet connection. As reported earlier, under Research Question 4, only 13% of TAs indicated that no technology-related problems occurred during test administration. The results for the types of technology-related problems encountered by the remaining 87% are presented in Figure 20. These findings indicate that technology-related problems were not uncommon, and that the most frequently encountered problems were with logging onto the assessment and with devices locking up (i.e., "stopped working").

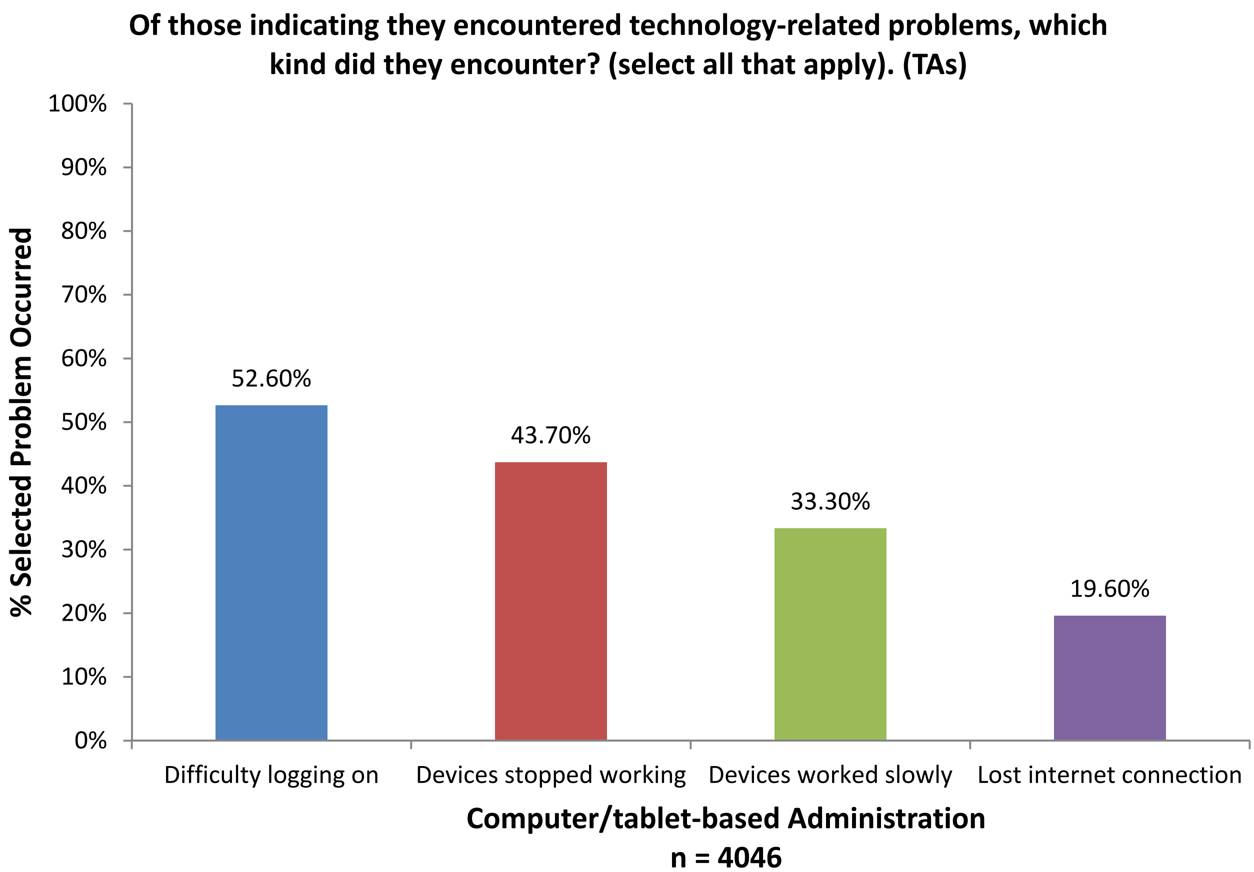

Figure 20. Percentage of TAs indicating particular kinds of technology-related problems occurred during test administration.

TAs indicating no technology-related problems were excluded from this analysis.

As reported under Research Question 4, the percentage of students indicating that there were no technology-related problems during the test was between 40% - 60%. The Student Surveys also asked students to indicate which kinds of technology problems occurred while they were taking the test. The types of technology-related problems indicated by the approximately half that did indicate problems are presented in Figure 21 (for PBA) and Figure 22 (for EOY). The results in those figures indicate that, overall, more technology-related problems were reported during PBA administration than during EOY administration. An exception to this pattern occurred for “Difficulty dragging or moving objects on screen,” such that more students reported this being a problem on the EOY assessment than on the PBA. The most common technological problem—difficulty making changes to answers—was reported for students taking the Mathematics PBAs on the computer/tablet, with two-thirds of students indicating that this problem occurred. Other notable findings displayed in Figures 21 and 22 are that more than half of the students said their computer worked slowly on the PBA, and slightly less than half said their computer worked slowly on the EOY assessment. In addition, more than a third reported that their computer stopped working on the ELA PBA.

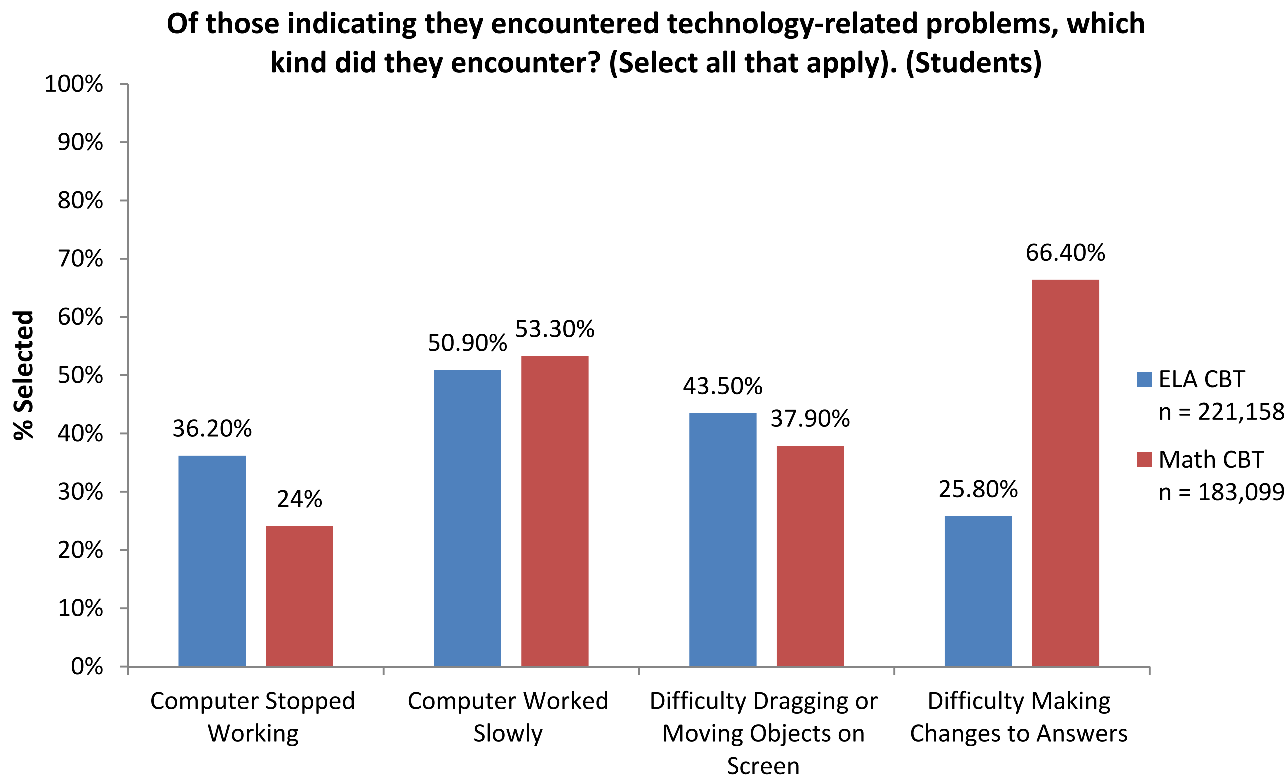

Figure 21. Percentage of students indicating particular kinds of technology-related problems occurred during test administration (PBA).

Individuals who selected 'No problems' were excluded from this analysis. ELA = English Language Arts; CBT = Computer/tablet-based Test.

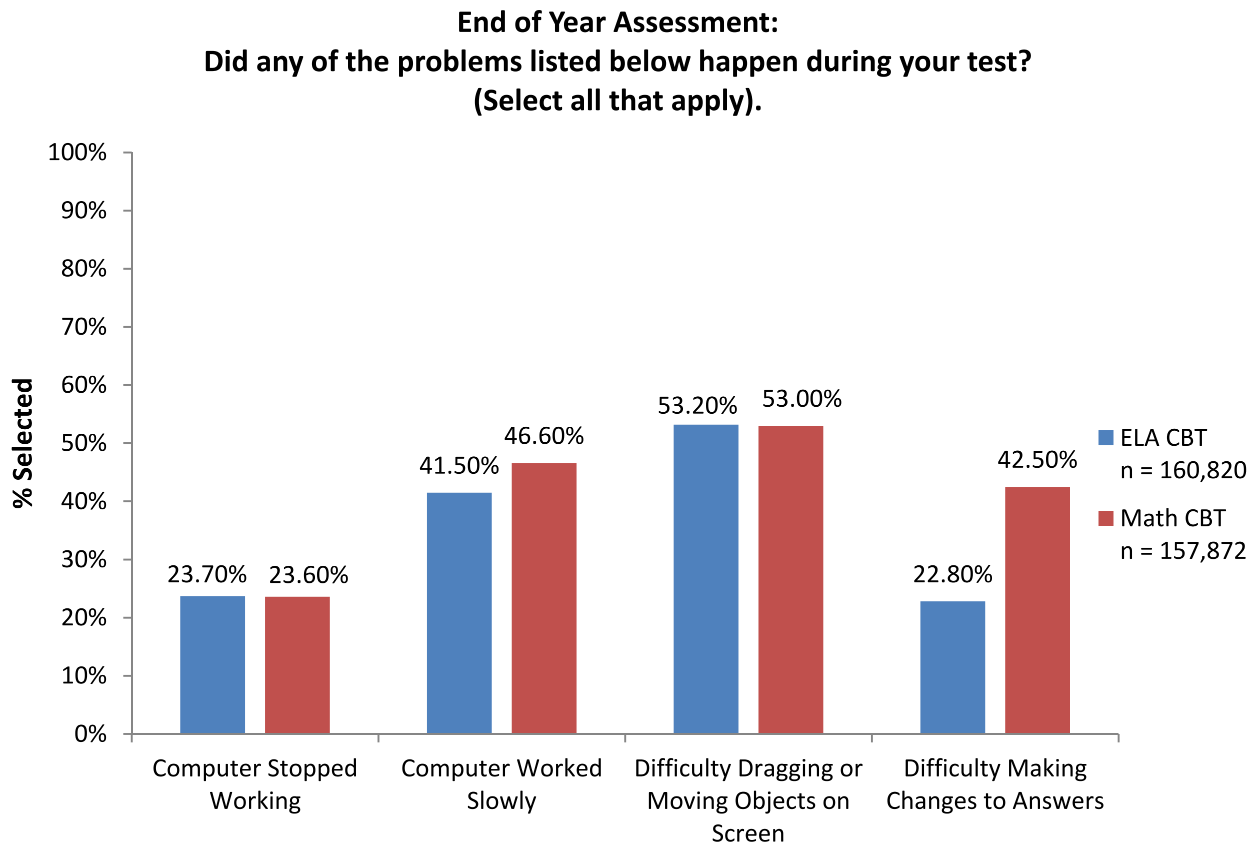

Figure 22. Percentage of students indicating particular kinds of technology-related problems occurred during test administration (EOY).

Individuals who selected 'No problems' were excluded from this analysis. ELA = English Language Arts; CBT = Computer/tablet-based Test.

While the survey findings suggest that students might not have been as aware of technology-related problems as the TAs, the results from both the TA Survey and the Student Surveys indicate the presence of some technology-related problems. The findings from the observation study provide converging evidence to support this finding, and also provide an indication of the degree of the problem. Observer notes indicate that there were technology problems (e.g., not being able to sign in, timing out, kicked-off) in 52 observed sessions at 49 of the 61 schools visited (80%). The technology issues were categorized as severe or minor. Severe technology issues were defined as those that interrupted testing for 10 minutes or more, while minor issues were defined as those that were resolved in less than 10 minutes. Some schools experienced multiple technology problems, some minor and some severe.

Tables 9 and 10 provide examples of the observer notes for each of the types of technology issues identified by the observers. Table 9 indicates that, of the 20 schools (in 20 sessions) encountering severe issues, the majority of those were caused by problems with signing in and with the assessment shutting down/kicking students out. Seven of those schools experienced delays that took more than an hour to resolve, and in five of the seven schools testing was not completed for all students that day. All seven of these schools were part of the PBA test administration. There were five EOY schools in the severe category; however, all instances were resolved in less than 30 minutes.

Table 9. Summary of Observation Checklist Notes: Severe Technology Issues

Technology Issues	# of Schools	Example Observer Notes
Testing suspended or incomplete	5	• All but three kids are nearing finishing the first session (1300) they had started at 0900 and had so many problems… • not really much observing occurring…so many problems getting students logged in and back in after their screens freeze up. The accommodation session was cancelled…
Sign in	12	• Popup blockers have to be turned off they kept kicking students out. Now they got the orange box to be logged in by proctor…none of this in script… • 28 minutes…the delay was because they needed to add one student to the roster…they are experienced at using the TA management tool but it still took quite a bit of time. • …the rest (of students) began 40 minutes after the period started because of all the login difficulties.
Loading/timed out	5	• Various tech problems interrupted the test throughout so it is impossible to know whether students would have requested extra time in a normal session. • Some of the early test items took a long time to load…in the end only 2 students (out of 18 regular students)…finished the test.
Shutdown, kicked-off	11	• one student was kicked off and says her test is completed. They have tried to get her back in and the system won't allow it so they sent the student to class. • Locking up at "loading" in between questions.- When answering questions keyboard is lagging/freezing • Two students were bounced out of the system right after login…After a long delay they both got an erroneous error that Java was not installed.

Note. Twenty schools experienced "severe" technology problems. Some of those schools experienced multiple issues; therefore the sum of the number of schools in the table is greater than 20.

Table 10 shows that, of the 40 schools (in 43 sessions) identified as having minor technology issues, the majority of issues were also caused by problems with signing in and with the assessment shutting down/kicking students out. Minor technology issues were experienced at similar frequencies for PBA and EOY administrations. Seven schools had sign in problems due to the operating systems, Java® updates, and controlling pop-ups. Technical staff from one county school system developed a shortcut to TestNav that also disabled popup blockers. Another school system's technical team suggested that PARCC should develop an application that essentially accomplishes the same outcome—that is, disable popup blockers and access TestNav, regardless of the equipment, operating system, or Java® version.

Table 10. Summary of Observation Checklist Notes: Minor Technology Issues

Technology Issues	# of Schools	Example Observer Notes
Sign in	20	• The TA moved the student to another computer and he was able to log in and complete the survey. • one student received an error message that said the Seal Code was incorrect but the student was already inside the cognitive portion of the test…logged out then back in. • Needed to navigate through java and pop-up blocker screens. • Effort to "resume" tests failed because all students to include those in "ready" status were checked. The error was corrected within one minute and all students were able to start the test.
Loading/timed out	6	• When student computers time out their screens show they are logged off. But the admin computer shows they are still active. • Test-timed out during intro when teacher was reading the script. • Some students are seeing a strange character on their monitor…character is a dark triangle with a white question mark in it.
Shutdown, kicked-off	25	• Four students were kicked off when they started the test and had to log back in. • A few kids had to be reset didn't take but 5 minutes to get them all started. One student got an error message, logged him out and back in. • One student's computer locked up during the student survey. Authorization tickets had already been collected and his ticket had to be located so he could log back in • Two students received Error 3005 at different points in the assessment - so another program was running in the background

Note. Forty schools experienced "minor" technology problems. Some of those schools experienced multiple issues; therefore the sum of the number of schools in the table is greater than 40.

Comments received from the debriefing interviews are consistent with observer notes describing technology issues. Generally, the number and severity of problems described by TAs were less frequent during the EOY administrations than the PBA administrations. In fact, one additional question asked during the EOY debriefing interviews was to compare technology issues to what TAs experienced during PBA administrations. Seven schools indicated they participated in both test administrations and all agreed their EOY experience was better than their PBA experience with regard to technology-related issues.

Similarly, technology-related problems were a common theme in responses to the open-ended items on the TA Survey and the Student Surveys. The most commonly mentioned problems were with log-on[25] and log-off and with saving/recovering student test data, which was a consequence of devices locking up and getting kicked off the system.

Some illustrative comments provided by TAs on the TA Survey of technology-related problems were: [26]

- *Students frequently got stuck on pages that would not advance or would not auto-save. Each time we were stuck we had to re-login and re-fresh the student page. When this occurred on an open response page sometimes a student had to re-type lost information. Java was a bit of a pain, we had to re-install that on some computers daily--I don't know if this had to do with the computer or the program but it was a bother.*
- *TestNav needs to run faster and allow more students to be logging on at the same time.*
- *There were several glitches in the system that seem to need to be worked out before the test can run smoothly. Some students were logged out for no reason on day two, as well as slow computers and freeze ups when typing extended responses.*
- *Students repeatedly had issues where pages loaded slowly or froze, not allowing them to continue their train of thought. Also they had issues with their work being deleted and not being able to recover it.*

Some illustrative comments provided by students on the Student Surveys of technology-related problems were:[27]

- *I have a problem when the keyboard does not let me use the caps lock when i need to use it and when I tried to type something it makes a spelling error like this (like changed to ike). Last time when I was doing a response it logged me out then I went back it was okay, but before that happen I ws typing my writing about reading on this and it deleted it. Was turned into ws and about turned into abot. I think there should be some fixes on the keyboard and testnav. there was some errors too so please fix testnav it would great with none of this happening* [ELA PBA Grade 6]
- *That thing I did not like about this test is that the internet was very slow and that it took at least an hour and a half to log in and take the test.* [ELA PBA Grade 8]

[25] The term "log on" and "sign in" were used interchangeably.
[26] See page 55 for discussion of the percentage of TAs encountering technology-related problems, and Figure 20 for the percentages of TAs indicating that they encountered specific types of technology-related problems.
[27] See page 56 for discussion of the percentage of students encountering technology-related problems, and Figures 21 and 22 for the percentages of students encountering specific types of technology-related problems. Also, see Figures 23 -30.

- *Like every time I tried to log on my computer froze, and it did not let me move on to the next section. Even when I put the right code in. When I tried to click an answer it wouldn`t let me, and it made the computer restart, and I had to do the test all over again.* [ELA EOY Grade 6]
- *I did not like this test. It has too many issues with logging in and highlighting. I would not like to take this in the future due to all the issues. It is easier to focus better with words on paper. You get easily booted off of the site and it is very time consuming.* [ELA EOY Grade 9]
- *It took a bit of time to log in; there were some errors that prevented us from logging in.* [Math PBA Grade 5]
- *Halfway through section 1, my keyboard stopped working and I had to type my answers using the iPad keyboard. When I tried to delete a letter or unneeded space in my answer, the entire answer got deleted. Sometimes the iPad would freeze when I tried to scroll down.* [Math PBA Grade 8]
- *There were a ton of problems with students trying to log on and it took way over an hour to figure out why.* [Math EOY Algebra 1]
- *When I was trying to type my answer it would delete my answer and when I had went to log out and I needed to log back in it would give me a notification saying I don't have authorization.* [Math EOY Grade 7]

Another technology-related topic identified from the observer notes involves preparing the computer for test administration. A summary of topics on computer preparation is provided in Table 11. An issue identified from the debriefing interviews as common to four schools administering PBAs and three schools administering EOY assessments was learning through trial and error that the audio needed to be unmuted and volume adjusted before logging into TestNav. If not, students had to sign out of TestNav to make the adjustment then sign in again to resume testing. Observer notes from two schools, in Table 11, indicated technology staff created shortcuts to help speed up the computer preparation. Observer notes also indicated that schools varied widely in their experience with operating system software. Four schools stopped using Internet Explorer, and experienced fewer problems with Firefox and Google Chrome. Six schools described Java® pop-ups interfering with the assessment, in some cases immediately after the PARCC SystemCheck tool indicated that their computers were set up correctly.

Table 11. Summary of Observation Checklist Notes: Computer Preparation

Computer Preparation Topics	# of Schools	Example Observer Notes
Headphones and volume	4	• Students had to unmute audio prior to logging on to the test or else they would have to log off and back on.
Operating system and shortcuts	5	• At this school they'd set up icons with the desktop rather than having kids navigate to the TestNav. • Someone at the County Board of Education created a shortcut to TestNav for all schools. The shortcut disabled popup blockers and brought up the TestNav welcome screen. This allowed for quick and efficient preparation of the computers. • The tech had to disable the antivirus and the windows popups so they have to touch every computer.

The final issue related to technology that was identified as a concern was ease of use of the tools embedded in the assessment. The Student Surveys (CBT version) asked the students to indicate if it was it easy to use the highlighter and if it was easy to make pictures or words bigger or smaller. The results presented in Figures 23 – 24 indicate that more than half of those taking the Mathematics assessments did not use the highlighter tool, but of those that did use it, the vast majority indicated that it was easy to use. About two-thirds of those completing the ELA assessment indicated that they used the highlighter tool, and the vast majority of those indicated it was easy to use.

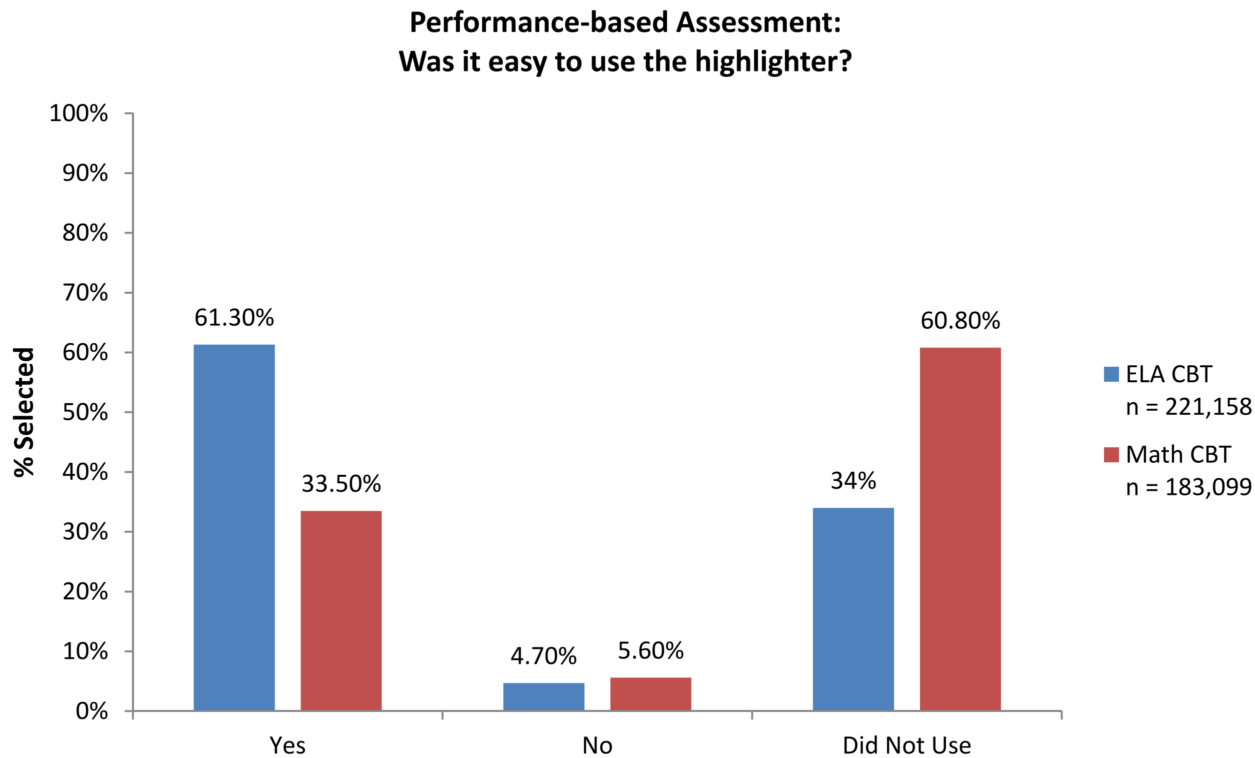

Figure 23. Percentage of students indicating it was easy to use the highlighter (PBA).
Percentages are based on the number of valid responses. ELA CBT missing = 1,081; Math CBT missing = 958.
ELA = English Language Arts; CBT = Computer/tablet-based Test.

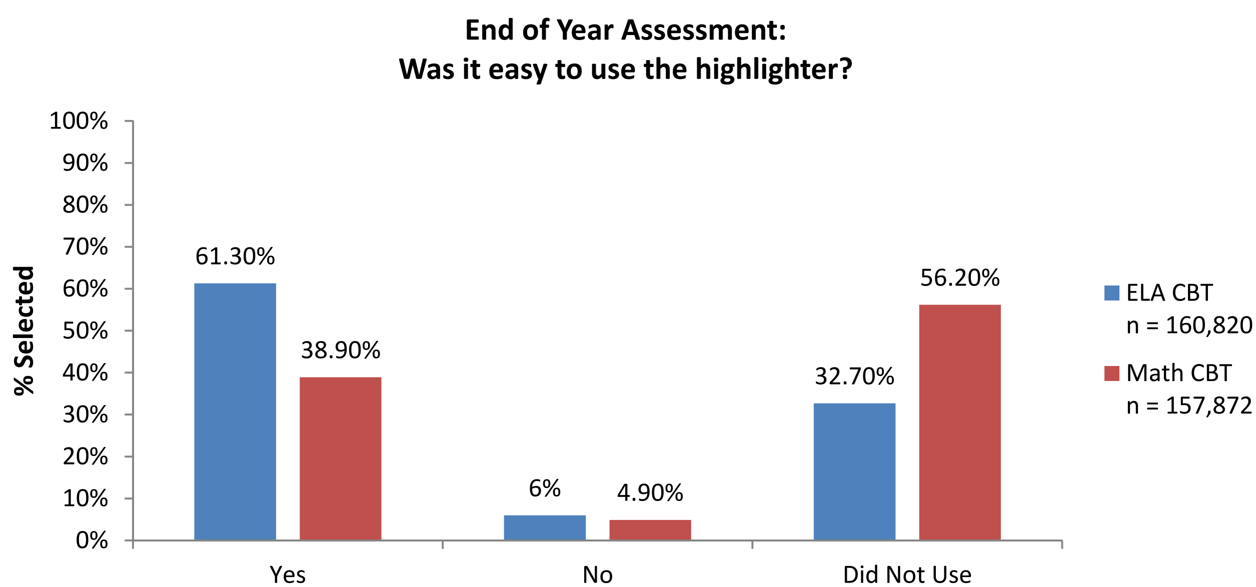

Figure 24. Percentage of students indicating it was easy to use the highlighter (EOY).
Percentages are based on the number of valid responses. ELA CBT missing = 593; Math CBT missing = 871.
ELA = English Language Arts; CBT = Computer/tablet-based Test.

The results presented in Figures 25 – 26 indicate that only about one-third of students used the tool to make pictures or words bigger or smaller, regardless of whether it was a Mathematics or ELA assessment. Of those who did use the tool, most indicated it was easy to use.

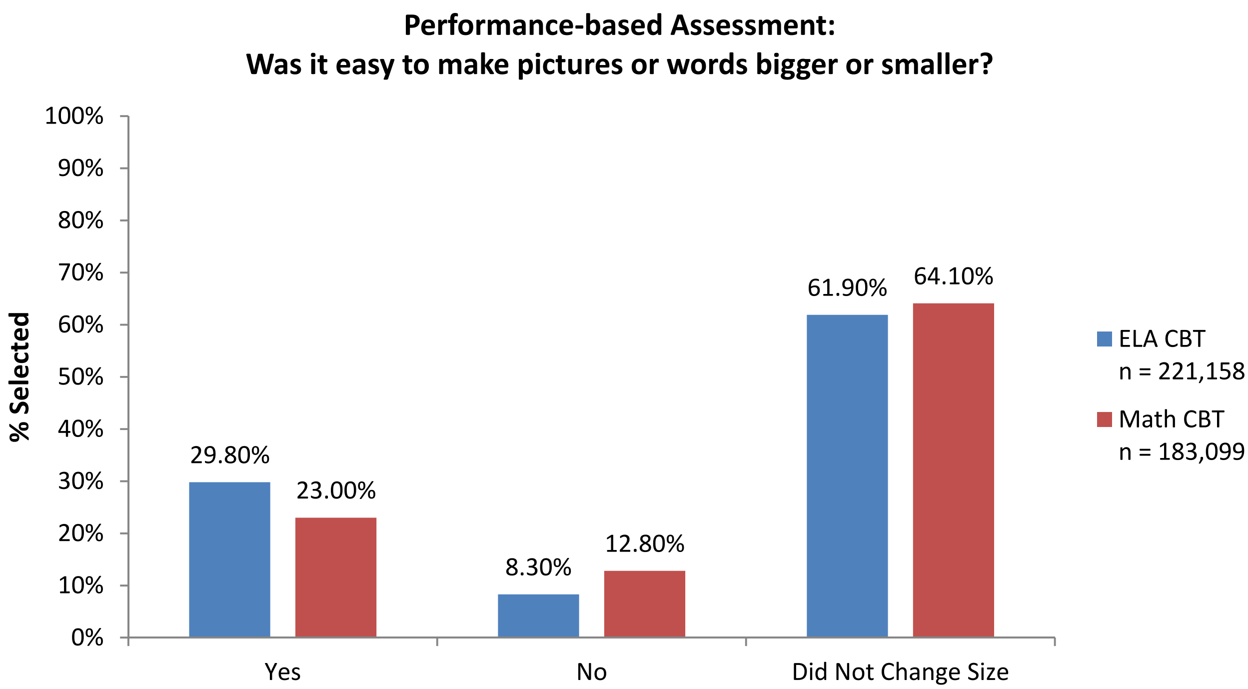

Figure 25. Percentage of students indicating it was easy to make pictures or words bigger or smaller (PBA).

Percentages are based on the number of valid responses. ELA CBT missing = 1,281; Math CBT missing = 1,093.
ELA = English Language Arts; CBT = Computer/tablet-based Test.

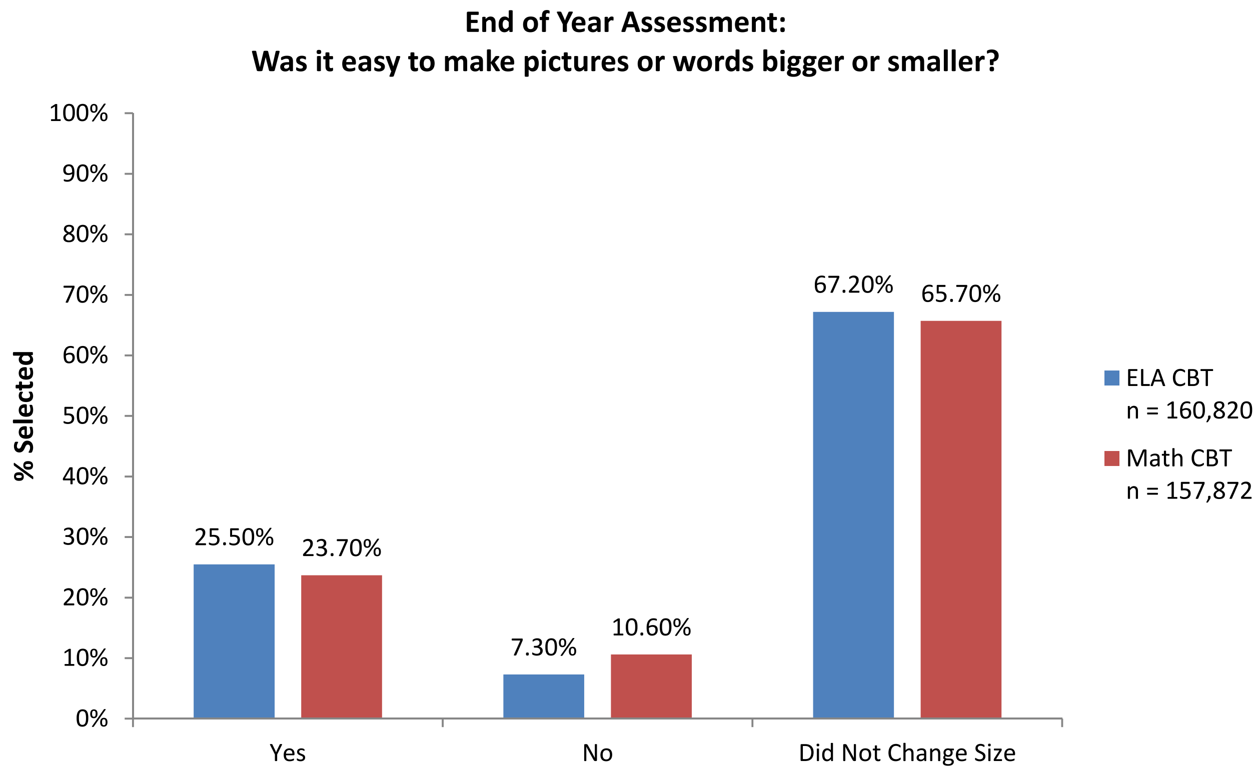

Figure 26. Percentage of students indicating it was easy to make pictures or words bigger or smaller (EOY).

Percentages are based on the number of valid responses. ELA CBT missing = 685; Math CBT missing = 1,021.
ELA = English Language Arts; CBT = Computer/tablet-based Test.

Finally, the CBT version of the math Student Survey asked students to indicate if the calculator tool was easy to use. The results in Figure 27 and Figure 28 indicate that about half of the students who responded to the survey indicated that they used the calculator tool. Only about 10% indicated that it was *not* easy to use the calculator tool. The results in Figure 29 and Figure 30 indicate that more students had problems with entering math symbols and numbers than they had with the calculator tool. Across both PBA and EOY, approximately one fourth of students reported that it was not easy to enter symbols and numbers into the equation editor. Comments from the Student Survey that illustrate difficulty with the equation editor are:

- *When I was typing my equation it did not let me fix my mistake so i had to move on to another question and went back and could not change my answer*
- *What didn't make sense on the test was putting the fractions in, and soliving the equations*
- *One thing that made me mad was that when I typed an equation into the computer it auto-corrected it for me. The auto-correct changed my answer and it was not what I was going to write.*
- *While showing my work in the text box I was not able to create a fraction bar.*

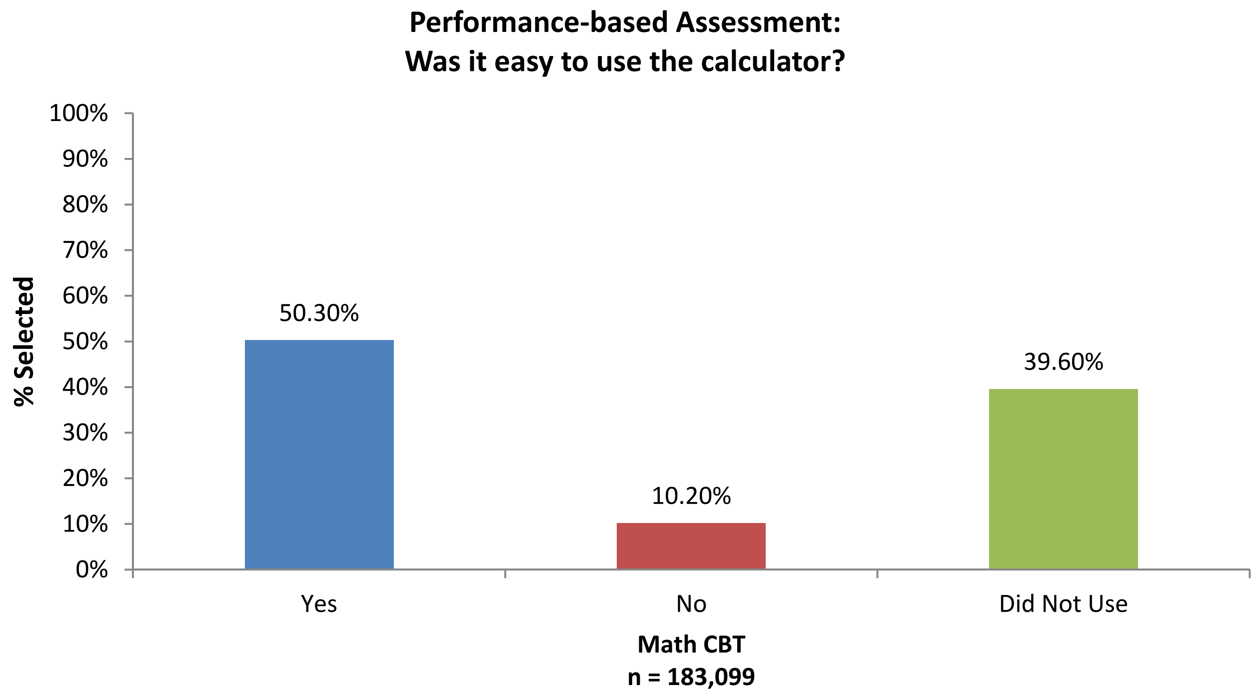

Figure 27. Percentage of students indicating that the calculator tool was easy to use (PBA).
Percentages are based on the number of valid responses. Missing = 1,210. CBT = Computer/tablet-based Test.

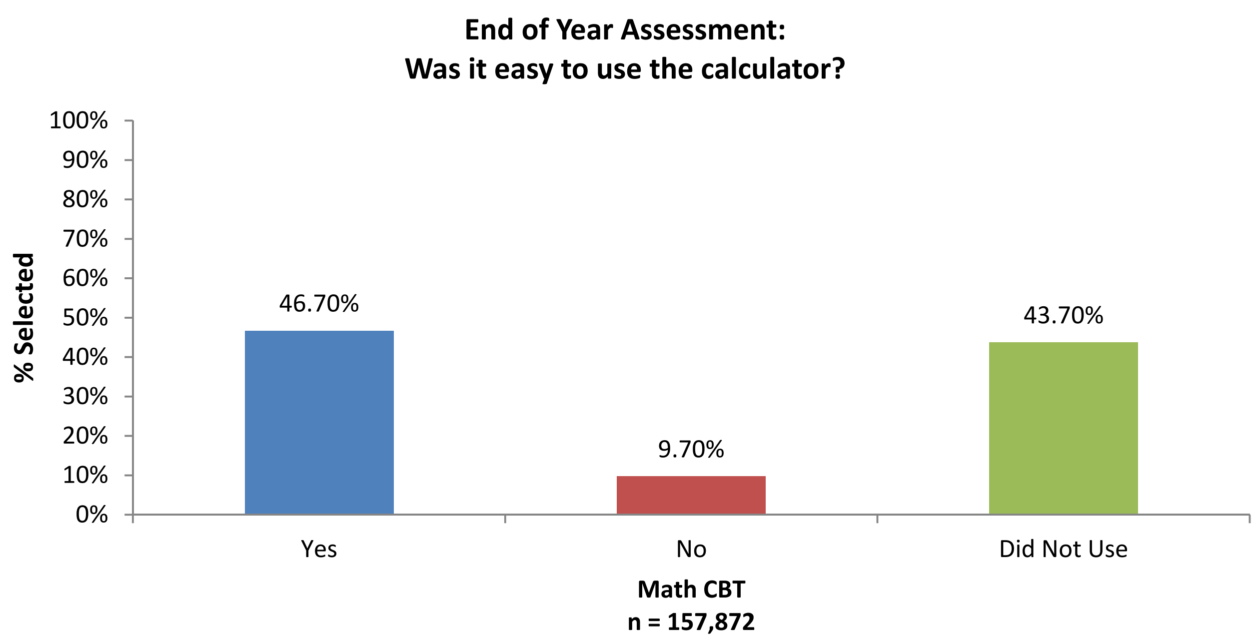

Figure 28. Percentage of students indicating that the calculator tool was easy to use (EOY).
Percentages are based on the number of valid responses. Missing = 1,280. CBT = Computer/tablet-based Test.

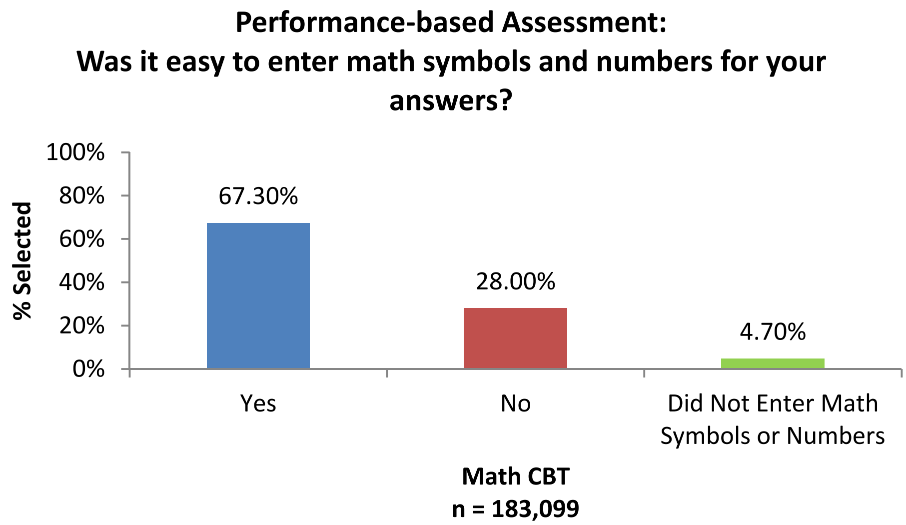

Figure 29. Percentage of students indicating whether it was easy to enter math symbols and numbers (PBA).

Percentages are based on the number of valid responses. Missing = 1,212. CBT = Computer/tablet-based Test.

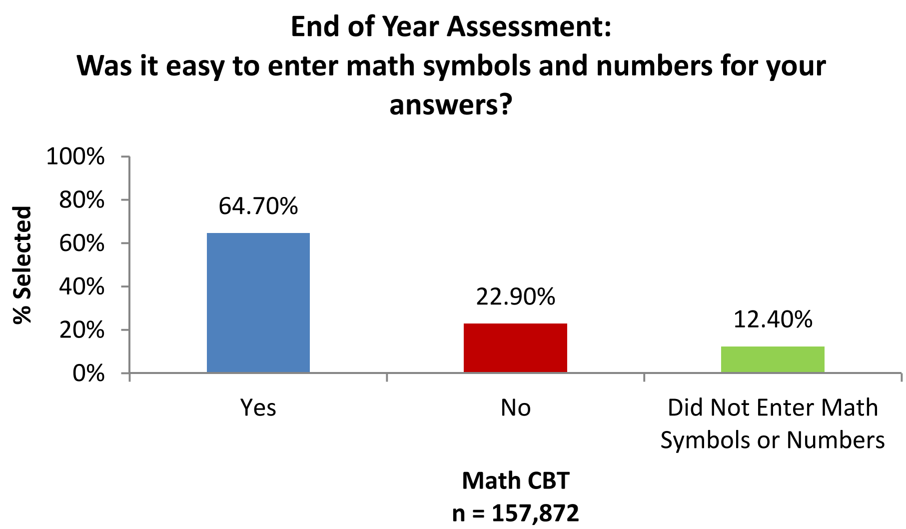

Figure 30. Percentage of students indicating whether it was easy to enter math symbols and numbers (EOY).

Percentages are based on the number of valid responses. Missing = 1,169. CBT = Computer/tablet-based Test.

In summary, the findings indicate the presence of technology-related problems that resulted in some interruptions during the testing session. Many TAs reported that they encountered technology-related problems during test administration with the most frequently encountered problems being logging onto the assessment and devices locking up (i.e., “stopped working”). Converging evidence comes from the observation study; technology-related problems were observed in 80% of the schools visited, and problems with logging on and problems with devices locking up were also the most frequently observed problems. Two-thirds of the observed schools encountered problems that took less than 10 minutes to resolve, while only one-third of the observed schools encountered problems that took 10 minutes or more to resolve. Overall, approximately half of the students reported that they encountered technology-related problems during their test. For students that did encounter problems with technology, the most frequently reported problem was with dragging or moving objects on the Mathematics PBA. As for the tools (e.g., highlighter, magnifier), of those students who used the tools, most reported they were easy to use. Entering math symbols and numbers into the equation editor, however, was reported as being difficult for some students. Efforts to address technology-related problems should be implemented prior to operational testing to help ensure greater adherence to *Standard 6.4*. Reports such as this are one way to document and report disruptions to test administration (*Standard 6.3*). Actions that PARCC is taking to address these concerns are provided in the Executive Summary and in the Summary and Recommendations sections under Claim 3.

Findings for Research Question 7b: Are there any interruptions during the test administration related to students asking questions? What do students ask?

The TA Surveys (CBT and PBT versions) asked TAs to describe any questions students asked about the test-taking instructions they read to them. This survey item directly addresses Research Question 7b while also addressing the claim that “Students respond to items as intended.” Confusion about the instructions and interruptions caused by students asking TAs clarification questions about those instructions are both factors that could threaten the veracity of this claim.

The most common themes identified in the TAs’ responses to the survey item asking them to describe the kinds of questions students asked about instructions were:

- What to do when there was an error with the computer?
- What were the students allowed to do when they finished the test?
- How to resume the test when they were logged out?
- What the instructions for specific questions were saying?
- How to use or find specific tools (e.g., highlighter, magnifier)?
- Why certain tools were not available?
- Whether or not students could continue onto the next session when finished; similarly, what to do when they had finished the current session (i.e., submit answers; log out)?

Furthermore, although not specific to questions about the test-taking instructions read by the TAs, many comments made by the TAs indicated that the instructions were too long or repetitive, causing some students to stop paying attention; this may have contributed to some of the questions students had regarding instructions. Of the 2,253 TAs who provided a response to the survey item asking them to describe the kinds of questions students asked about the test-taking instructions (CBT version), nearly half provided comments that were categorized into one of the above themes. Some examples of the types of comments provided by TAs were:

- *"The instructions were very lengthy - students tended to tune out."*
- *"The students did not understand stopping after the 50 minute session was up and giving directions for the students finished to end the test. This was confusing for them."*
- *"Students were not familiar with some of the tools. For example the icon used to create a fraction."*
- *"Students had many questions about the Error messages received during the testing."*

Themes that were specific to the paper-based administration were:

- Switching between the answer document and test document; students were unsure if they could write in one or both documents, where to show their work, and how to fill in responses using the provided response grid.
- Students in the math sections asked questions about using mixed numbers versus decimals, as well as when they could use a calculator.
- Students in the ELA sections asked questions about using a highlighter and how many of the passages they were supposed to reference in a constructed response answer.
- Students were confused about directions being read to them, as the page numbers and instructions did not match at times.

Of the 1,076 TAs who provided a response to the survey item asking them to describe the kinds of questions students asked about test-taking instructions on the paper-based version of the assessment, more than half (approximately 60%) provided a comment that was categorized into one of the above themes. Some examples of the types of comments specific to TAs administering paper-based versions of the assessments were:

- *. . . there was confusion, both while reading instructions and during the test, about the directions for the distribution of calculators during session 1. Also, the instructions did not have the students open their answer book, and there was confusion on both days when I said to begin because students had difficulty figuring out the answer book and did not already have it open to the first page on which they were to answer questions.*
- *What tools can I use and when? Where/how do I fill in the answer? Numbers? Bubbles? Both? Why do I leave my answer as an improper fraction? Do the bullets mean different parts of the question? What does justify mean?*

- *I tested students with disabilities and those who are English Language Learners, with IEP accommodations. Questions students asked were regarding test vocabulary they were not familiar with since this was the first time they took a test in this format: reference sheet; answer "document"; "stray marks"; "multiple" parts; fraction "bar"*
- *Can I use graphic organizers in the answer document? What Part A do they mean? (when referring to a 2 part questions) How do I mark 2 answers as correct in the answer document? Can I refer to all 3 of the articles I read in the constructed response? Why does it say only 2?*
- *When describing how to fill in the answer grid, students struggled to visualize what that would look like. A sample problem requiring this type of response would have been very helpful.*
- *Students were very confused on how to fill out the grids for the constructed response questions even after we looked at the examples.*
- *Students were very confused about how to write their answers in the grid. Some right justified, some left justified, ignoring the fact that the left-most space was only for a negative sign. Other students were confused about where to write the constructed responses.*
- *Students did not understand the (/) to represent the fraction bar. It was too confusing to tell them they could fil in the grid from left to right OR right to left. The sentences regarding using the grid for mixed numbers and improper fractions was not comprehensible.*

Finally, the CBT version of the TA Survey included an additional open-ended question that asked the TAs to, ". . . describe any questions students asked about technology-related problems."

The major themes identified in responses to this open-ended item on the CBT survey were:

- Students had issues logging on, getting logged off before they were finished, and questions about how to resume the test; students also had questions about what to do when there were internet connectivity issues.
- Students had questions about computer errors, such as the computer freezing, as well as questions about java errors.
- Students had questions about how to save answers or retrieve answers deleted by the test; for the most part students had to retype these answers.
- Students had questions about using/finding specific tools, or why tools were unavailable or malfunctioned.
- Some students who requested accommodations for the test (e.g., text read aloud) could not access these tools and the administrator was unable to perform this function for all students.

- Students had difficulty entering information into text boxes, and some students experienced a “lag” in typing that resulted in sentences or entire paragraphs becoming mixed up.

Of the 2,123 TAs who provided a response to the survey question asking them to describe the kinds of questions students asked about technology-related problems, nearly half provided a comment that was categorized into one of the above themes. Some examples of the types of comments TAs provided were:

- *Highlighter had the most questions of any tool. Pre-highlighted sections were very confusing to students as well. My booklet of teacher instructions did not cover this, and student test did not include directions on what the pre-highlighted sections were until they got to that question. Some students somehow accidentally highlighted all of their page - questions, text, etc. We were not able to find a way to get rid of the auto - all highlighting of a page. I saw two students who had this happen over all of the testing. How to indent (without using tab) was another question.*
- *They were VERY patient and would raise a hand when there was an issue they knew needed attention. They quickly learned how to work through the Java, pop-up blocker error messages, loss of connectivity, Early Warnings, logging on and not being at page test was supposed to be at and what to do when the reached the end of a section. With every error they would ask for assistance.*
- *Students had difficulty writing in the text boxes. It would often delete the entire paragraph that was written or add italized writing to the text box. Students also were having difficulty deleting items within their text box. The backspace key would not work on their keyboard or on the screen.*
- *Some computers needed to be restarted multiple times in order to allow students to log in properly. In some cases students were initially able to open other windows even when logged in. This took awhile to resolve so that the students could take the test.*

Finally, findings from the debriefing interviews indicate that 37 schools (61% of schools visited) reported that students asked questions during test administration. Those TAs indicated that the most common student questions were about: (a) connectivity issues or error messages, (b) how to use tools, (c) how to enter answers (particularly fractions, mixed numbers, and exponents), and (d) how to answer a question (i.e., navigation and the level of detail expected).

In summary, findings from the TA Surveys and the observation study indicate that students commonly asked TAs questions during test administration. From the observation study, we know that students were observed asking TAs questions during testing at over 60% of the schools visited. This suggests that some distraction might have been caused by students asking questions (*Standards 6.3* and *6.4).* Findings from the TA Surveys indicate student questions commonly pertained to technology-related issues (CBT only); for example, students asked questions about how to handle error messages or how to use the tools. The TAs reported that students also commonly asked questions about navigating the test, and they also commonly asked for additional clarification on the instructions they read for questions on the test. These latter two types of questions suggest that the clarity of instructions could be enhanced (*Standards 4.16* and *6.5*). Additional opportunities for practice on sample items might be one way to improve understanding (*Standards 4.16* and *6.5*). Actions that PARCC is taking to address these concerns are provided in the Executive Summary and in the Summary and Recommendations sections, most notably under Claims 3 and 4, although improved training of TAs (actions pertinent to Claim 1) and improved training resources for TAs (actions pertinent to Claim 2) should also help to address the concerns related to Research Question 7b.

Findings for Research Question 8: If any disruptions, interruptions, or other problems occurred, did the TAs deal with the issue appropriately and effectively?

Research Question 7 focused on interruptions during testing (which is relevant to the claim that students respond to items as intended). Research Question 8 focuses on how effectively/appropriately TAs handled those interruptions. Thus, Research Question 8 is most relevant to the claim that, "TAs are prepared to administer assessments as intended." For this claim to be true, TAs must have the knowledge and skills to handle interruptions, whether those knowledge and skills come from background experience and/or from training (Research Question 8a).

As discussed in the results for several of the previous research questions, problems related to technology were the most common source of interruptions. Findings from the observation study indicate that when technological difficulties occurred the TAs made appropriate attempts to resolve the issue by referring to their administration manuals, working with Technology Coordinators, and/or contacting the Help Desk. In no instance did the observers note that the TAs dealt with the technology problems inappropriately. There were reports, however, of some instances in which the technology problems were not resolved. The prevalence and the extent of the technology problems suggests that the scope of the problems exceeded the expectations for what a TA is expected to handle with regard to resolving basic technology-related problems within a testing session. The following comment from a TA on the TA Survey illustrates this:

- *. . . Day 1 - Students got some Java Error messages when trying to sign in. Our tech person had to call the district tech person and it took over an hour to correct the problem before kids could sign in. Then when it was time for 2nd test, we had lots of issues regarding the headphones. We discovered if a student was signed in, and the headphones weren't already set to a good sound level, when a student tried to adjust the headphones, the program immediately quit and logged the student out. Then I'd*

> *have to manually resume those students. Students found they needed to adjust the headphones to the right level before logging into your program . . . Day 2 - Session 3 - The BIG CRASH. We never got logged on. We tried Internet Explorer. We tried Chrome. Nothing worked. I could not even log on to the pearsonaccess website that morning. It would just hang. We restarted all computers and nothing changed. The kids that did get logged on, had the message that I had to resume them. But I couldn't, because we started getting the message that pearsonaccess was not even a website! So I could not resume anyone or do anything to help anyone. . . . For the couple of kids who got signed in, I gave them the seal code, but then it hung. We spent over an hour trying to log on and get the test going, but never had any success. We were instructed by our admin to just stop the frustration. So we aborted the field test.*

Aside from handling interruptions caused by technology-related problems, there were two sessions observed in the observation study where the observers noted that interruptions were caused by student misconduct. In one instance the observer indicated that the TA handled this interruption appropriately, and in the second instance the observer rated the TA as having "partially" handled the interruption. The observer notes indicated that there were "*some"* attempts to control the misbehaving student who was talking disrespectfully and being physical with other students. Aside from those two instances, there were no observations of TAs handling interruptions caused by students' misconduct.

The findings presented below under Research Question 8a shed light on whether TAs' preparedness for handling technology-related problems was informed by background experience and/or training.

Findings for Research Question 8a: Were the TAs' actions informed by background experience, by training, or a combination of the two?

The TA Survey (CBT version) asked the TAs to indicate whether they had ever administered a computer-based test to students (either at the state or district level). The results indicate that less than half of the 4,635 TAs (46%) who responded to the survey had ever administered a computer-based test to students at the district or state level. Consequently, the potential for background experience to inform TAs' handling of technology-related problems was relevant for less than half of the TAs.

The TA Survey (CBT version) also asked the TAs to indicate if they completed the PARCC online training modules on topics pertinent to computer-based testing. The results provided in Figure 31 indicate that just over half (58%) completed the online training module on "Computer-based Testing Test Administration." Less than one-third (30%) completed the online module on, "Accessibility Features and Accommodations with Computer-based Testing." Only about 10% or less completed any of the other online modules on technology-related topics. Moreover, of those who indicated they completed the online training, only about half agreed that the training prepared them to resolve basic problems related to technology (e.g., logging students in, exiting the test, etc.).

In summary, findings from the studies indicate that disruptions were most typically the result of technology-related problems. Findings from the observation study indicate that the TAs made appropriate attempts to resolve the problems by referring to their administration manuals, working with Technology Coordinators, and/or contacting the Help Desk. Nonetheless, in several instances technology-related problems were not resolved. Less than half of the TAs had ever administered a CBT at the district or state level, and only about half indicated that the training they received on Computer-based Testing Test Administration helped them to resolve basic technology-related problems; these findings suggest that for many TAs their actions to resolve technology-related problems were not informed by training or by background experience (*Standard 6.1*). Improved training and greater participation in training might be ways to help handle technology-related problems more effectively. Actions that PARCC is taking to address concerns related to TA training are provided in the Executive Summary and in the Summary and Recommendations sections under Claim 1. Documentation and reporting of any such disruptions (*Standard 6.3*) should also be part of TA training.

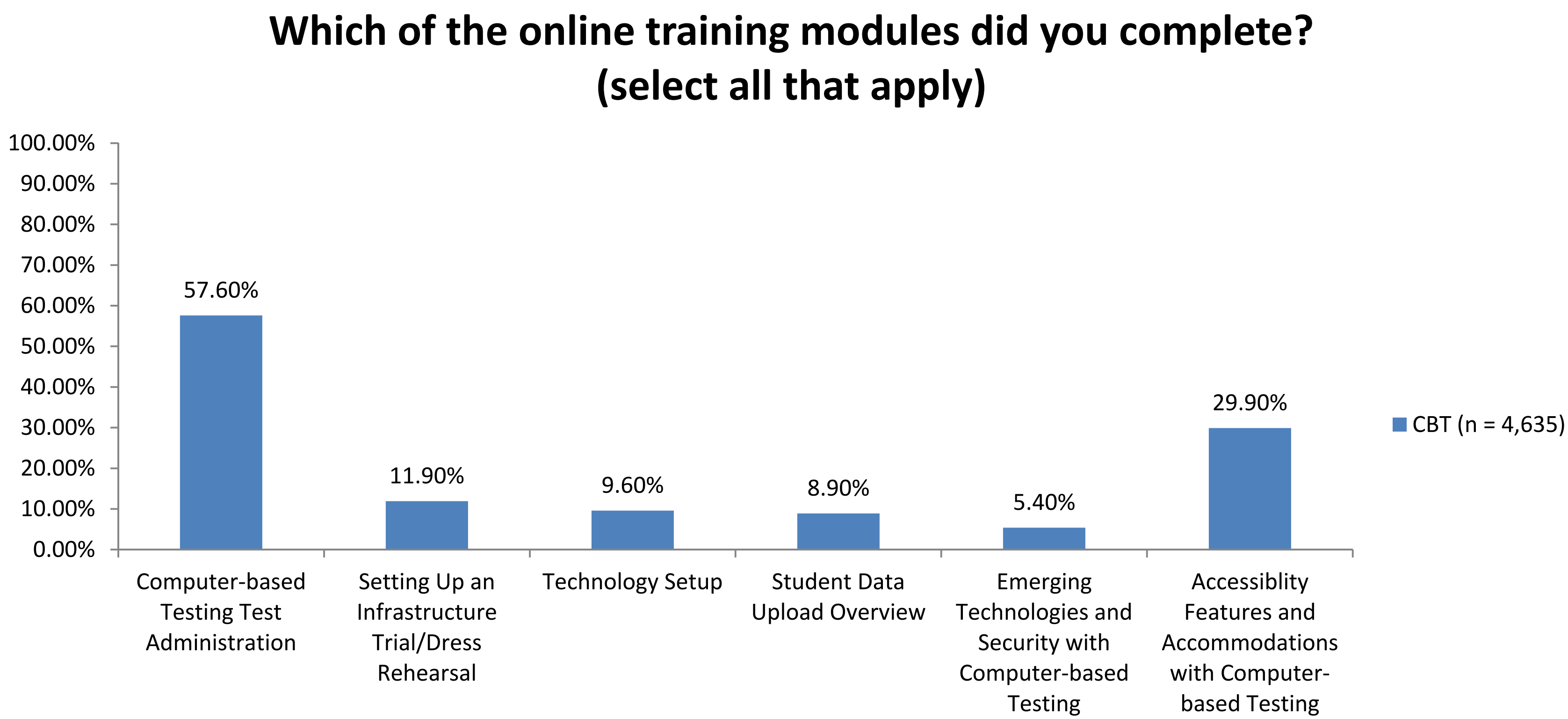

Figure 31. Percentage of all TAs responding to the survey who indicated they completed PARCC online training modules.
CBT = Computer/tablet-based administration.

Findings for Research Question 8b: Would a different approach to handling the problems that occurred during test administration been more effective?

From the observation study, observer notes or TA comments from 10 schools indicated concern that not all teachers have the computer savvy to test the students without assistance. This concern was based on the frequency of technology problems and the frequency of student questions. In 52 of the 61 schools, observers noted there was at least one additional person who supported the TA during testing, and across all of the observed sessions there was an average of 2.3 staff members administering or helping to administer the field test. In fact, the need to have technical staff on hand was expressed by TAs at 11 schools, who noted that extra staff was necessary to handle computer preparation and initial sign in support. Schools with the most positive experiences indicated that their district technology staff were very involved and even created some shortcuts that helped avoid some of the issues regarding Java® and pop-up blockers. These findings suggest that extra staff—perhaps extra TAs for handling student questions (i.e., non-technology-related questions) and extra TCs for handling technological difficulties—may be one approach to more effectively handle problems that arise during test administration. Furthermore, the actions that PARCC is taking to address technology-related problems from field test, which are provided under Claim 3 in the Executive Summary and in the Summary and Recommendations sections, will also help to address problems that arose with test administration during field test.

Findings for Research Question 9: Was security of test materials maintained at all times?

There is considerable overlap between Research Question 9 and Research Question 6, “Are there any apparent attempts to record or copy test materials including the test questions by students or others?” Findings that are pertinent to test security were discussed within the results section for Research Question 6. Consequently, relevant findings for Research Question 9 are reported in the results section for Research Question 6.

Findings for Research Question 10: Did the test administration create minimal disruption to the school and staff?

For the testing system to be effective, it must not be overly burdensome on the schools’ resources. If test administration becomes overly burdensome, then it might not be feasible for schools to have sufficient resources and supports to administer the assessments (claim 2). While none of the instruments used in the studies explicitly addressed whether test administration caused minimal disruptions, from the information gathered across the studies we can gain a sense of the extent to which test administration caused disruptions to the school and staff. First, we know from the results discussed for several of the prior research questions that technology-related problems, particularly issues with internet connectivity, were present. Second, we know from the results discussed for Research Question 8b that staff interviewed in the observation study indicated that extra staff was needed to handle computer preparation issues and student log-on issues. Another finding that emerged from the interviews during the observation study was that schools with very involved district technology staff were the schools that tended to report the most positive test administration experience. These findings suggest that disruptions to the school and staff were not minimal, and that considerable resources (e.g., strong involvement of district technology staff) were an important factor for successful test administration. Also, the number of staff administering or helping administer the field test averaged 2.3 per session, which would be a significant tap on resources when testing all students.

Additionally, and as initially described in the results for Research Question 1, during the course of the observation study, many comments received during the debriefing interview indicated that the training materials for test administration were overly burdensome. For example, comments from 19 schools indicated that the administration manuals were cumbersome to use and contained information that was not relevant for their role in testing. Typical comments were, “too many manuals, too long,” “would like a summary page or checklist of major steps I have to do,” “…would also like computer screen captures since I am a visual person,” “couldn’t easily find the information regarding the number of questions on each test session…and timing,” and “better to have chapter summaries.” This was also a common theme mentioned by TAs in their response to the open-ended question on the TA Survey about improvements PARCC should make to its online training. Example comments provided by TAs on the TA Survey were:

- *The webinar is way too long and repetitive. I recommend having the Test Managers provide instruction on the information necessary for test administrators. A LOT of time was spent after school and before school on preparing us for instruction. It seems like the training can be condensed into one session as long as the test administrators read the manual.*
- *There were many technological problems during the test. There should be a condensed version of resolutions to problems that may occur. Each school should have a mock run-through of the test so that each administrator knows what to do when a problem occurs. Too many problems, too much time! Paper and pencil would have been more time efficient.*
- *There is so much of a volume of materials to cover (online training/manuals/links) that it is difficult to keep up with updates and implementation. One recommendation would be to condense some of the information.*
- *Condense the information and have screen shots with instructions in the manual.*

- *The set up for Apple computers needs to be simplified. The Java conflicts were quite an ordeal to resolve in the weeks before students sat at computers. The number of "man-hours" was excessive.*
- *Pearson, our school district and the state all told us different things about setting up the test. One told us we could only use Mozilla, one only said Explorer, and one only said Chrome. Chrome worked but there were several steps to actually get it to work. The test coordinator (myself) had to individually go to each student computer to fix it before students logged in. This was cumbersome because I had to disable popups, refresh pages, and have students type in their information twice. Several times the computers logged out of the test and I had to have students restart. I got "test must be resumed by proctor" close to 100 times because of errors with the test. The test really needs to be re-worked and our state and district leaders need to be better trained on how to relay information to test coordinators. There was a lot of mis-communication setting up the test. We were not told that the district was doing proctor caching and had to actually have a district technology person come out to help us fix the test. We wasted a lot of days and student's class time because of this. In my opinion, there needs to be a separate Technology Training for Test Coordinators on how to get ready for the test. When I called Pearson (who I called on 5 separate occasions), I was told at least twice to read the manual. This is not an answer when you have four testing groups of thirty plus students waiting to test.*

Collectively, these findings suggest that test administration created disruptions that were more than "minimal." Streamlining the training and training materials, and ensuring that schools are supported by a strong district technology staff should help to alleviate some of the burden (It should be noted that the burden associated with the technology-related issues is only pertinent to schools where tests were administered on computers/tablets). Actions that PARCC is taking to address these concerns are provided in the Executive Summary and in the Summary and Recommendations sections under Claim 2.

Findings for Research Question 11a: Did the observers' responses to the Test Administration Observation Checklist adequately and accurately capture relevant aspects of the assessment session?

Overall, the observation checklist worked as intended. The intent of the checklist was to alert observers to each task that TAs should complete during test administration. One edit recommended for operational use is to clarify the task, "Handle testing irregularities." More guidance needs to be provided to observers on what constitutes "irregularities." From the observer notes, it is clear that some observers included problems with technology as "an irregularity," and others did not. This is evident by the high number of "Not Applicable" ratings assigned to this task. In the future, additional training should be provided on this task so that observers are calibrated in their ratings. Another recommendation for operational use is to delete the last task on the checklist, "Completes the Test Administrator Survey." This task was completed sometime after the end of test administration, and therefore was not observable during the typical test administration observation.

Two additional recommended edits are to add additional summary fields for observers to enter their overall reflections on: (a) the TAs' knowledge of tasks, and (b) the degree of student engagement. A final suggestion for the checklist would be to break some tasks into more detailed steps. For example, the task for monitoring student progress using the administration computer could target where the computer is located, how often the TA uses it, and if it is used only to reset students. Another possible task, dismiss students in accordance with school procedures, could target if students were dismissed at one time, or only those not needing additional time, or as they completed the session.

Finally, since it was not known exactly what to expect with the first administration of the PARCC field test, observers were encouraged to create detailed descriptions of the sessions they observed, including notes of unanticipated issues or events. For operational testing, a more succinct set of notes should be encouraged along with a labeling scheme for categorization purposes. Also, for operational testing, site observations at schools administering PBTs, which were not included in the field test Site Visits Study, will be included.

Findings for Research Question 11b: Did the test administrators' responses to the TA Surveys adequately and accurately capture relevant aspects of the assessment session?

Overall, the TA Surveys functioned as intended. The TA Surveys (CBT and PBT) provided useful information on: the TAs' training experience, the clarity of instructions, the pervasiveness of different types of technology-related problems (CBT only), the kinds of questions asked by students, the use of sample items/tutorials, among other topics. Recommendations for revisions to the content of the surveys are to: (a) include an item(s) on the extent to which test administration (including preparation for test administration) caused disruptions to the school and staff, (b) include an item(s) on the usefulness of the accessibility features and accommodations training, and (c) inquire as to whether accessibility and/or accommodation features were available for those students for whom they were requested. A final recommendation is to streamline the response scales on the surveys (e.g., all items rated on an agreement scale) in order to reduce the cognitive load required of persons responding to the survey and to simplify data analysis and reporting.

Findings for Research Question 11c: Did the students' responses to the Student Surveys adequately and accurately capture relevant aspects of the assessment session?

Overall, the Student Surveys captured relevant responses regarding important aspects of the assessment session. Responses captured in the surveys provided useful information on: students' understanding of instructions, technological issues students faced while completing the assessment, usability of tools, whether students had sufficient time to complete the assessment, as well as other areas of interest. One edit that is recommended to the content of the survey is to include an item(s) assessing students' request for and availability of accessibility features and accommodations. Another recommendation, specific to the paper-based administration, would be to include items assessing students' familiarity with the response grid used in PARCC (e.g., had students used this type of answer sheet before? were instructions on how to fill-in responses clear?), and the ease with which they could switch from the answer booklet to the test booklet (e.g., was it clear to students which document should be used to show work?).

Summary and Recommendations

The overall summary and recommendations, based on the findings for the research questions, are discussed in this section by each claim in the TOA under the Administration phase. Actions taken by PARCC to address concerns to test administration are also provided (PARCC, 2014).

Claim 1: TAs are Prepared to Administer the Assessments as Intended

In order for this claim to be true important assumptions that must be verified are: (a) TAs are trained to administer the assessments and (b) training is effective. Findings related to several of the research questions provide evidence for these assumptions and for the overall claim of preparedness.

The research questions that provide evidence related to this claim are:

- Research Question 2: To what degree do the TAs follow the protocols and instructions? (*addresses Standards 6.1 and 6.2*)
- Research Question 6: Are there any apparent attempts to record or copy test materials including the test questions by students or others? (*addresses Standards 6.6 and 6.7*)
- Research Question 8: If any disruptions, interruptions, or other problems occurred, did the test administrators deal with the issue appropriately and effectively? (*addresses Standards 6.1 and 6.3*)
    - Research Question 8a: Were the TAs' actions informed by training, by background experience, or a combination of the two? (*addresses Standard 6.1*)
    - Research Question 8b: Would a different approach have been more effective?

- Research Question 9: Was security of test materials maintained at all times? (*addresses Standards 6.6 and 6.7*)

The investigations of the research questions and their underlying assumptions indicate that nearly three-fourths of TAs completed at least one of the PARCC online training modules. Of those, about three-fourths completed the Computer-Based Test Administration module—that is, 58% of all TAs who responded to the TA Survey for the CBT administration. The next most frequently completed online module was the Accessibility Features and Accommodations with Computer-based Testing, with 41% completing this module. Very few TAs reported that they completed any of the other online modules (i.e., Setting up an Infrastructure Trial/Dress Rehearsal, Technology Setup, Student Data Upload, and Emerging Technologies and Security with CBT), although it should be noted that the training on Emerging Technologies and Security with CBT was not targeted for TAs.

Training was also provided by schools and districts, and in some rare instances by the state. Training provided by the school was the most frequent occurrence with nearly three-fourths of TAs administering PBTs indicating they received training from their school and over half of TAs administering CBTs indicating they received training from their school. Approximately one-third of TAs administering PBTs received training from their district, and nearly one half of TAs administering CBTs received training from their district. Overall, these participation rates indicate that the majority of TAs participated in some form of training; however, these findings suggest that a substantive number of TAs might not have received training, or may have received limited training (e.g., completed only one online module when more than one module was relevant for the TA).

Findings also reveal that less than half of the TAs had ever administered a computer-based test at the district or state level. Therefore, for the majority of TAs this suggests that their knowledge of computer-based test administration likely came from one or more of the trainings for PARCC. Although TAs were not asked to indicate whether they had ever taken a computer-based test in a proctored setting, it is possible that TAs might have assumed that they already knew enough about administering computer-based tests from prior experience taking computer-based tests in proctored settings.

In terms of the effectiveness of the TA training, findings from the TA Survey (CBT version) reveal that, of those who participated in online training, three-quarters agreed that it effectively informed them of the protocol to follow when administering assessments, and more than half agreed that the online training prepared them to resolve basic problems related to technology (e.g., logging students in, exiting the test, etc.). These findings indicate that many found the online training useful, although there is room for improvement, particularly for training on resolving basic technology-related issues. Findings across studies suggest that, in addition to better addressing internet connectivity issues, TAs could benefit from targeted training on technology topics such as, logging on and off TestNav, disabling pop-up blockers, use of headphones, and use of tools. In addition to providing more targeted and enhanced training on these topics, the TAs also recommended that training could be improved by providing additional practice with a “mock” test for both students and TAs, which would include practice accessing and navigating the TestNav system. Another recommendation was to provide more in-person training and to more clearly synthesize all the trainings and training material. Finally, given that survey results indicate that there were gaps in training, another important overarching goal for helping to improve the preparedness of TAs for administering assessments is ensuring greater participation in training.

Overall, findings from the observation study indicate that most TAs followed most of the protocols and instructions in the TA Manual during test administration. However, there were a few exceptions. First, in nearly a fourth of the observed sessions the TAs did not post the “Testing – Do Not Disturb” sign, although there was only one noted instance of an unauthorized visitor/teacher entering the room. Second, in over a third of the sessions the observers noted that TAs had <u>not</u> arranged computers so that there were partitions and/or sufficient space between computers. (This has implications for test security and thus score interpretation.) Third, in approximately half of the observed sessions TAs did <u>not</u> keep track of time using a timing box as instructed in the TA Manual. Qualitative evidence from the debriefing interviews and from comments from the TA Surveys indicates that TAs had difficulty interpreting the manual’s instructions for managing time, and, in particular, the guidance on additional time allowed. The confusion about managing time might partly explain why nearly a third of the observed TAs did not use the timing box. Finally, the most notable deviation from test administration instructions was that in nearly half of the observed sessions the TAs did <u>not</u> read the script verbatim. Observer notes indicate that the most common modifications to the script were: (a) skipping repetitive parts, (b) changing words (e.g., changing “session” to “part”), and providing additional guidance beyond what was in the script (e.g., for logging into TestNav, for using headphones). The test administration script is important to ensuring consistency across PARCC test administrations. Consequently, variations to the script are a potential threat to the validity of PARCC score interpretations. Based on these findings, targeted efforts should be made prior to operational testing to ensure that TAs take appropriate steps to protect test security; for example, by ensuring that there is appropriate space and/or partitions between test-takers’ computers/devices. Furthermore, training and instructions on timing tests, including instructions on additional time, should be clarified so that TAs are better able to manage time during the test to ensure that all students have the appropriate allotted time. Finally, additional training and/or edits to improve the clarity of the script read by the TAs should be conducted to ensure that TAs are consistent across sites.

In terms of disruptions to test-taking and TAs' handling of those disruptions (Research Question 8), problems with technology represented the most notable disruption. Findings from the observation study indicate that, overall, the TAs handled the technology problems to the best of their ability. For example, they consulted their TA Manual for assistance, they worked with their Technology Coordinators, and they contacted the Help Desk for assistance. Nonetheless, in some instances the technological issues were not minor, and in some cases the issues were not resolved despite the TAs' best efforts. In terms of what could have been done differently, TAs expressed the need for additional support from technical staff to help prepare for and deal with the technology issues. Schools that reported the most positive experiences were those that indicated they had a very strong district technology staff to assist them. Consequently, another recommendation to better prepare for test administration is to have more support from technology staff.

In summary, the evidence from these research studies for Claim 1 indicates that the majority of TAs participated in some form of training (e.g., on-line module(s), school-led training, district-led training). The majority also agreed that training was effective for informing them of the protocol to follow when administering the field test, and for preparing them to resolve basic problems related to technology. Furthermore, in the observation study, most TAs were observed following *most* of the protocols in the TA manual. This evidence represents a solid base on which to build for operational testing. There was also evidence, however, that indicates potential threats to the validity of the claim that "TAs are prepared to administer the assessments as intended" and the underlying assumptions that "TAs are trained to administer the assessments" and that "training is effective." There were substantive numbers of TAs who did not participate in the various trainings. For those who did participate in training, the findings indicate that there is room for improvement in the effectiveness of training, particularly with regard to training on resolving basic problems with technology. When technology problems arose, most TAs appropriately consulted their TA Manual, Technology Coordinators, and/or the Help Desk for assistance, but the technology problems occurred to an extent that exceeded the capacity of those resources to effectively resolve all problems in a timely manner. Furthermore, nearly half of the TAs observed in the observation study did not follow the script completely in the TA manual, which poses concerns for consistent test administration across sites. These threats to the claim that "TAs are prepared to administered the assessments as intended," undermine the validity of subsequent claims in the TOA related to scoring, reporting, and use of PARCC scores. Consequently, steps should be taken to address these threats by considering the recommendations for improving training and preparedness discussed above.

Actions by PARCC to Address Concerns Related to Claim 1

In light of the information gathered during field testing, PARCC is already taking several actions to address concerns and potential threats to the claim that "TAs are prepared to administer the assessments as intended." Actions that are being implemented by PARCC to improve the preparedness of TAs include:

- Providing TA training modules earlier in the school year to facilitate advance preparation.
- Splitting modules into task based roles so that Test Administrators and Test Coordinators can clearly and easily identify which tasks they are responsible for; manuals include separate symbols for TA tasks and TC tasks for clarity. [28]
- Splitting up training modules into chapters by topic with search fields to allow easier navigation and to facilitate locating information. Providing a summary of where to find key training information.
- Enhancing the guidance and documentation around the SystemCheck tool to ensure wider use and understanding.
- Revising tutorials to include the full array of tools, accessibility features, and item-computer interactions.
- Updating the Accessibility Features and Accommodations training module, and updating the PARCC Accessibility Features and Accommodations Manual.
- Expanding practice tests to include paper and to include both components (PBA and EOY in both content areas) so that TAs can become more familiar with the tests prior to administration.

These actions help to ameliorate concerns identified during the field test, and will help to ensure that TAs are better prepared to administer the PARCC assessments during operational testing.

Claim 2: TAs Have the Resources and Supports to Administer the Assessments

For this claim to be true important assumptions that must be met are: (a) resources and supports must be clear, sufficiently detailed, and easy to follow, and (b) resources and supports must not be overly burdensome for TAs to use and apply.

[28] The PARCC states have made several improvements to available modules based on field test feedback, including: Student Registration Import (September 19, 2014); PearsonAccess^{next} (October 9, 2014); Paper-based Testing for Test Coordinators (October 10, 2014); Paper-based Testing for Test Administrations (October 13, 2014); Introductions to Training (October 20, 2014); Accessibility Features and Accommodations (October 21, 2014).

The research questions that provide evidence for this claim and these assumptions are:

- Research Question 1: To what degree do the test administrators (TAs) find the instructions clear, sufficiently detailed, and easy to follow? (*addresses Standard 4.15*)
- Research Question 10: Did the test administration create minimal disruption to the school and staff?

The investigations of the research questions and their underlying assumptions indicate that more than two-thirds of TAs agreed that the policies and procedures in the TA Manual were easy for them to understand. Slightly fewer agreed that the instructions (including the scripts for administering the assessments) were easy to implement (63% and 55%, respectively for CBT and PBT). Even though the majority of TAs indicated that the TA Manuals were easy to understand and implement, a substantive number (approximately 30% – 45% across CBT and PBT) *disagreed* that the TA Manuals were easy to understand and implement. Feedback provided by the TAs indicates that there were some inconsistencies between what appeared in TAs' scripts and what appeared on students' screens or booklets (e.g., script indicates that information is located in one place, but information appears in a different place on students' screens/booklets, screens have a 'Continue' icon, but script instructs students to 'Stop' before hitting continue). Such disconnects contributed to some confusion in navigating through the tests. The TAs also indicated that the instructions for submitting answers and completing tests (CBT version) were not easy to understand. Furthermore, TAs indicated that the TA Manual was confusing because large parts of the manual were not relevant to the particular grade being tested. This required the TAs to skip various sections of the lengthy manual to find the sections that were relevant to the grade being tested; TAs reported that having to skip around made it easy to get lost in the script. The TAs also specifically mentioned that the instructions for timing the test, including the instructions for additional time allowed, were unclear. Another specific point of confusion for TAs was the use of the terms "sections" and "sessions," which were used interchangeably and inconsistently. Some TAs also reported confusion about the read aloud accessibility feature/accommodation (text-to-speech vs. human reader) described in the Accessibility and Accommodations Manual. Finally, some points of confusion that were specific to the paper-based administration were: (a) no page numbers in the student instruction books (students did not know which page to turn to), and (b) confusion about the instructions for when calculator use was allowed and not allowed (was allowed for some part(s) within a given section, but not all parts in that section, which made it difficult for TAs to monitor). Some of these issues with the TA Manual and the script might help to explain why deviations from the script were observed in the observation study. These sources of confusion should be rectified in order to help reduce confusion, and thereby help ensure consistent implementation of the protocols and instructions across test administrations.

Findings from the research studies also indicate that the “volume of materials” (e.g., online training, manuals, and various communications and updates), and the time required to synthesize and digest all that information was overly burdensome. This might also partly explain why there were issues during test administration; if TAs were overloaded and overwhelmed by the plethora of materials and information, they may not have been able to digest, comprehend, and implement all of the information for a successful test administration. A common recommendation was to condense and synthesize the training and the training materials into more a digestible amount and format. TAs recommended that there should be grade-specific scripts and that there should be a summary or checklist of major steps and key information.

In addition to evidence indicating that the training materials and information were overly burdensome, findings also indicate that the amount of time and effort required of school and district technology staff to ensure technology requirements were in place was “excessive” (many of the TAs who participated in the studies served dual roles of TAs and TCs). Moreover, even with “excessive” time and effort spent preparing the devices, technological problems during test administration were still present during administration. Nearly 90% of TAs reported some technology issue. This evidence indicates that testing created disruptions that were more than “minimal.”

In summary, the evidence collected from the studies indicates that there are threats to the validity of the claim that “TAs Have the Resources and Supports to Administer the Assessments.” Those threats stem from the moderate to weak support for the underlying assumptions that: (a) resources and supports (defined as training materials in these research studies) are clear and easy to implement, and (b) resources and supports are not overly burdensome for TAs to use and apply. These threats undermine the validity of subsequent claims in the TOA related to scoring, reporting, and use of PARCC scores. Consequently, steps should be taken to address these threats by considering the recommendations for improving the training materials discussed here.

Actions by PARCC to Address Concerns Related to Claim 2

In light of the information gathered from field testing, PARCC is already taking several actions to address concerns and potential threats to the claim that “TAs have the resources and supports to administer the assessments.” The “resources” and “supports” (beyond the trainings discussed under Claim 1) that were the focus of these research studies were the TA Manual protocols and script. Actions that are being implemented by PARCC to improve the TA Manual are:

- Shortening the TA Manual by reducing redundancies so that there is not as much information to sort through.
- Working with grade level experts to ensure administration scripts are grade appropriate, as scripts are being split into grade bands within the TA manual to facilitate their use.
- Updating the TA manual to include simple and direct checklists of tasks to complete before, during and after testing.
- Updating the TA manual to include more explicit directions, including graphics and icons to increase user understanding.
- Changing the terminology for testing sessions to clarify terms for testing.
- Clarifying instructions for calculator use to make it easier for TAs to monitor calculator use; for CBT, changes are being made to the computer-based interface to make it easier to see if the student is in a calculator section; for PBT, a calculator icon will be added to the pages in the test booklet to make it easier for TAs to monitor.
- Updating instructions in the TA manual so there are no disconnects in directions for the “Submit” function and the “Exit & Save” function.
- Simplifying the testing time policies described in the TA manual so that it is easier for TAs to understand how to manage testing time.
- Sending the TA manual to PARCC and state representatives for review to ensure that procedures and directions are simple and clear.
- Updating the Accessibility Features and Accommodations Manual.

The above actions, coupled with actions to streamline and simplify resources, help to ameliorate concerns identified during field testing with the PARCC resources and supports.

Claim 3: Technology Improves and Facilitates the Assessment Experience

For this claim to be true an important assumption that must be met is that the technology must work as intended. If the technology does not work as intended—for example, if there are functionality problems and/or delays in its application, then the veracity of this claim is threatened.

The evidence for this claim comes directly from Research Question 7a:

- Are there any hardware or software related problems during the test administration? *(addresses Standards 6.3 and 6.4)*

Findings from the research studies indicate that many TAs reported that they encountered one or more problems related to technology during the assessment administration. Students encountered problems with the technology at a much lower rate. Approximately half of the students indicated that they encountered technology-related problems during their test.

Reports of technology-related problems might have been lower for students than for TAs because students were asked about problems that occurred during their own individual test, whereas TAs were asked about problems across all students in their administration session(s).

The TAs reported that they most frequently encountered problems with logging into the assessment. The next most frequently encountered problems reported by TAs were with devices that stopped working ("shutting down"), devices working slowly, and losing internet connection, respectively. Students, on the other hand, reported higher occurrences of devices working slowly than of devices "stopping" (i.e., shutting down) entirely. Some students also reported difficulties with dragging or moving objects on the screen and difficulties making changes to answers. Difficulty making changes to answers was reported at a higher frequency for the Mathematics tests than for the ELA tests. Some students also reported difficulty entering math symbols and numbers into the equation editor on the mathematics assessments.

Converging evidence of technological difficulties came from the observation study in which many of the schools visited were identified as having problems with technology. In terms of the severity of the technological difficulties, findings indicate that problems categorized as "minor" (i.e., requiring less than 10 minutes to resolve) occurred at two-thirds of the observed schools, and problems categorized as "severe" (i.e., requiring 10 minutes or more to resolve) occurred at one-third of the observed schools. The most frequently observed technological problems were with logging students into the assessment and with devices shutting down.

In summary, findings from the research studies provide converging evidence that technological problems were an issue. Consequently, the evidence does not widely support the validity of the claim that "technology improves and facilitates the assessment experience." Because the evidence collected indicates a lack of support for this claim, this undermines the validity of subsequent claims related to scoring, reporting, and use of scores. One positive finding that did emerge from the research studies, however, is that there did appear to be a slight reduction in the occurrence of the technological problems from the time in which the initial PBAs were administered to the subsequent administration of the EOY assessments (though the PBAs may have included more innovative technological enhancements than the EOY assessments). This suggests that improvements were made over time, and that problems can be addressed and reconciled for future administrations. Feedback provided from the TA Survey and debriefing interviews indicates that one way to help deal with technological related issues is to have strong support from district technology staff. Enhancements to technology-related training for TAs, additional practice opportunities (see discussion of recommendations under Claim 1), and fine-tuning the PARCC SystemCheck tool to improve identification of technical difficulties prior to testing are additional ways to help address technology-related problems. Another positive finding from the Student Surveys was that, of those students who reported using the highlighter tool and the magnifying tool, most indicated that they were easy to use.

Actions by PARCC to Address Concerns Related to Claim 3

In light of the information gathered from field testing, PARCC is already taking several actions to address concerns and potential threats to the claim that "Technology improves and facilitates the assessment experience." Although local districts are responsible for their own technology (e.g., devices, internet connectivity, etc.), the PARCC consortium is working to provide districts and schools with additional supports to improve the local technology experience. Actions that are being implemented by PARCC to address technology-related issues include:

- Improving exiting procedures in the test delivery system so that students do not get locked out of tests prematurely.
- Conducting an extensive verification and validation process check of the delivery system prior to the operational assessments to confirm that the system can support the thousands of simultaneous test-takers without interruptions and without loss of student answers.
- Working with a vendor to conduct a large-scale "dress rehearsal" to identify issues with the highlighter tool and other tools (e.g., magnifier and drag-and-drop) and develop solutions to further improve functionality before operational testing.
- Reviewing and improving information shared with school districts and schools about the technology requirements and about how to set up devices to reduce blockage of videos due to filter settings on testing devices.
- Providing more time for the infrastructure trial by making it available to schools earlier.
- Enhancing guidance and documentation around the SystemCheck tool to ensure wider use and understanding of the tool. The SystemCheck tool allows users to validate that their testing workstations meet the minimum requirements needed to run TestNav8 for the assessments and evaluate bandwidth capacity for internet and proctor-caching connections.
- Updating the training modules available to guide users in conducting an infrastructure trial and proctor caching to ensure that the modules are more comprehensive and provide clearer step-by-step instructions.
- Providing a new technology preparedness training module to help organizations understand, manage, and make decisions in preparing school technology to be used for online testing.
- Launching an updated interface for PearsonAccess (PearsonAccess^{next}) to make it more user-friendly.
- Improving the equation editor in the Mathematics assessments so that it is easier for students to use.

- Providing practice tests to allow students and teachers to become more familiar with the equation editor and other tools.
- Increasing the knowledge of Call Center staff so that they are better equipped to help TAs resolve technology-related problems.
- Increasing the number of representatives staffed at the Call Center.
- Creating a "Quick Start Checklist" to have a cohesive step-by-step guide to start up.
- Adding a live chat feature to the Customer Support Center to allow additional avenue for responses.
- Linking the call-in process to PearsonAccess^{next} user profiles to limit time spent identifying callers.
- Bringing in an independent vendor to test the platform and identify performance issues needing improvement.
- Conducting "load testing" and other tests to pinpoint performance issues and solutions.
- Improving information to the field on minimum technology specifications and how to set up devices.
- Developing clear, consistent, and comprehensive communication to be sent to states and districts regarding technology preparedness tools, resources, timelines, and support.

These actions help to ameliorate concerns identified during the field test, and will help to ensure that technology improves and facilitates the assessment experience.

Claim 4: Students Respond to Items as Intended

Finally, for this claim to be true, several assumptions must be verified. First, for students to respond to items as intended, they must understand the directions read by the test administrator (i.e., the script). Second, students must also understand the directions they read for the questions on the test. If the students do not understand the directions read by the TA and/or if they are confused by the directions they read on the test, then they may not respond to the items as intended. Third, to respond to items as intended, students need to have some engagement with the assessment. If they are not engaged or if they have a low level of engagement, then they might not sufficiently attend to items so as to respond to them as intended. Several factors might negatively impact student engagement, such as distractions caused by: (a) unauthorized visitors, (b) disruptive student behavior, and (c) technological problems, to name a few.

The research questions that provide evidence for this claim and these assumptions are:

- Research Question 3: Do the students appear to understand the instructions provided to them? (*addresses Standards 4.16 and 6.5*)

- Research Question 4: To what degree are students engaged in taking the test? (*addresses Standards 4.16, 6.3, 6.4, and 6.5*)
- Research Question 5: Is there any disruptive student behavior during the session? (*addresses Standard 6.4*)
- Research Question 7: Are there any interruptions during the session? (*addresses Standards 6.3 and 6.4*)
    - o Research Question 7a: Are there any hardware or software related problems during the test administration?
    - o Research Question 7b: What type of questions, if any, do students ask during the test administration? (*also relevant to Standards 4.16 and 6.5*)

Findings from the Student Surveys indicate that the majority of students (78% or more across the test types and administration modes) report that they understood the directions (i.e., script) read by their TA. This evidence helps to verify the assumption that students understand the directions. However, there was also converging evidence from the observation study and from the TA Surveys that the script read by the TA was too lengthy, and that, as a result, some students quit listening/paying attention to the directions read by the TAs. If students stopped paying attention to the TAs' script—that is, they were not engaged—then, they might not have fully understood the directions, which is a threat to the validity of the claim that students respond to items as intended. One recommendation to address this threat is to shorten the length of the TA scripts. A recommendation that surfaced from the research studies was to shorten the scripts by removing repetitive content, particularly when TAs are administering back-to-back sessions.

Next, findings from the Student Surveys indicate that the majority of students had some difficulty in understanding the directions they read for the questions on the test. This was particularly true for the Mathematics tests with only about 15% of students indicating that it was hard to understand the directions for the questions on the tests "almost never." For ELA tests, about a third of the students indicated that it was hard to understand the directions "almost never." These findings reveal that the majority of students had difficulty understanding at least some of the directions for questions on the test. Indeed, when students asked their TAs questions, findings from the TA Surveys indicate that students often asked questions, such as, "What is this question saying?" If students are confused about what the test items are asking them to do, then they might not be responding to the items as intended. One recommendation that surfaced from the research studies to help ameliorate this concern was to give TAs and students more exposure to practice items.

In terms of student engagement, findings from the research studies reveal that the TAs effectively kept distractions such as, outside visitors and disruptive student behaviors to a minimum. However, even though disruptive student behavior did not appear to be much of an issue, there were some reports from TAs that students finished the test early and became "fidgety" and distracting to the students who were still testing. One recommendation was to allow students to read a book as soon as they have completed their test.

The biggest distraction, and thus impediment to student engagement, appears to have been the technology-related problems, which oftentimes caused delays in testing and/or resulted in the loss of student data. As a consequence of the technology problems, some students reported that they skipped items that were not functioning correctly or that they rushed to finish the test because of the delays caused by the technology problems. If students are rushing through the test to finish on time and/or skipping items, then student engagement is negatively impacted, which means students might not be responding to items as intended. Earlier recommendations discussed above to provide TAs with more targeted training on handling technology-related problems and providing schools with more support from technology staff should also help alleviate concerns with student engagement stemming from technology-related issues.

Overall, findings from the research studies indicate that there are threats to the validity of the claim that students respond to items as intended. On a positive note, there were some reports from TAs and students that, aside from the technology problems, they liked the interactive nature of the computer/tablet-based tests. This suggests that if technology problems are resolved, student engagement should increase.

Actions by PARCC to Address Concerns Related to Claim 4

In light of the information gathered from field testing, PARCC is already taking several actions to address concerns and potential threats to the claim that "Students respond to items as intended." Many of the actions already identified under Claims 1, 2, and 3 will help to ensure that students respond to items as intended. Additional actions not already addressed above that PARCC is taking to help ensure that students respond to items as intended are:

- Expanding tutorials to include the full array of tools, accessibility features, and item-computer interactions.[29]
- Revising tutorials to make them more grade-appropriate.
- Expanding practice tests to include paper and to include both components (PBA and EOY in both content areas) so that students can become more familiar with the tests prior to administration.

[29] The planned release dates for the expanded student tutorials for CBT and PBT are: High school tutorials: November 2014 (available at parcc.pearson.com/tutorial); Grade 3 – 8 tutorials: January 2015 (available at parcc.pearson.com/tutorial). Online practice tests for the mathematics EOY assessment and the ELA PBA assessment are currently available.

- Updating the test scripts in the manual to contain more grade-appropriate language, which should help to improve students' attention to the scripts and understanding of the information conveyed in the scripts.
- Revising general directions on the tests, especially the mathematics tests, to make them clearer.

These actions combined with the actions described under Claims 1, 2 and 3 will help to address threats to the claim that students respond to items as intended.

Conclusion

The findings presented in this report do not provide an exhaustive investigation of the validity evidence for the PARCC test administration. Consequently, the evidence presented here should not be taken as the final word on the PARCC field test administration. Nonetheless, the findings presented in this report do represent the foundation of the validity argument for the PARCC field test administration. While there were some pockets of positive findings (e.g., some positive comments about the interactive nature of the CBT, reports that the tools were easy to use, and TAs following the protocol, in most instances, as instructed) there is evidence indicating a lack of support for the claims in the administration phase in the TOA. Because lack of support for earlier goals may undermine the validity of subsequent goals, the evidence reported here represents concerns for the validity of PARCC test score interpretations from future operational assessments for their intended uses if these issues persist in future administrations. The field test investigations described in this report were useful and helpful endeavors for identifying threats to valid score interpretations that arose during field test administration. The actions already being implemented by the PARCC consortium will help to ensure that those threats are reconciled prior to operational testing. The planned Test Administration Study for operational testing (i.e., TA Survey, Student Survey and Site Observations) will help to verify whether these corrective actions have been effective. This validity argument should be updated as new evidence is collected.

References

American Educational Research Association (AERA), American Psychological Association (APA), & National Council on Measurement in Education (NCME). (2014). *Standards for educational and psychological testing*. Washington, DC: AERA.

Kane, M.T. (2006). Current Concerns in Validity Theory. *Journal of Educational Measurement*, 38, 319 – 342.

Partnership for Assessment of Readiness for College and Careers (PARCC). (January 23, 2015). *PARCC Field Test Lessons Learned Report.*

Sinclair, A., & Thacker, A. (October 2, 2013). *Findings from item try-out surveys: Proctor and student perspectives on the PARCC ELA assessment* (HumRRO Report 2013 No. 070). Alexandria, VA: Human Resources Research Organization.

Thacker, A., Sinclair, A., Wise, L., & Becker, S. (April 10, 2014). *PARCC validity studies including predictive and longitudinal studies memorandum* (HumRRO Report 2014 No. 020). Alexandria, VA: Human Resources Research Organization.

Appendix A – Observation Checklist for Test Administration Site Visits

PARCC Field Test PBA and EOY Computer-Based Assessment Observation Checklist			
Date:			
School:		Status Codes: 1= Met 2 = Partially Met 3 = Did Not Met 4 = Not Observed 5 = Not Applicable	**Session# & Time:** (ex: 0900, 1530)
TA/TC:			**Subject:**
City:			**Grade:**
State:			**Observer:**

Step	Task	Status	Comments/Notes specific to line item
	Pre-Assessment Activities		
1	Prepare student computers for testing. (close browsers and programs, launch TestNav)		
2	Prepare Test Administrator computer.		
3	Prepare testing room. (every other seat or partitioned, room configured for security/privacy)		
4	Post "Testing - Do Not Disturb" sign on outside door(s).		
5	Ensure prohibited materials are not visible. (posters, maps, number lines, word lists, formulas)		
6	TA confirm correct Student Authorization Tickets and seal codes for this session.		
7	Draw a timing box on the board as provided in script. (see examples on tab or last page of observation form)		
8	Allow authorized visitors only, such as PARCC staff, state/local/school assessment monitors. (List all visitors)		
Notes:			
	Administer Assessment (complete for both regular and accommodation sessions)		
9	Seat students at a computer. Materials not allowed are cell phones, other electronics, or reference books.		
10	Fill in Seal Code and Start/Stop/Remaining times in timing box when script advises.		
11	Provide students with the following items:		
a	*Student Authorization Ticket.*		
b	*Scratch paper-2 pages (blank, lined, or graph paper) and pencil. Students can request more. Students print name in upper right-hand corner of paper.*		
c	*Hand-held calculators (TestNav supplied or approved):* *• Grades 3-5 - students with calculator accommodation only* *• Grades 6 to HS - for calculator portion of test only*		
d	*Tracing paper, reflection tools, straight edge, and compass are allowed for grade 8 students and those taking Geometry and Integrated Math only.*		
e	*Headphones: Required for PBA ELA test sessions but not EOY. Additionally, students with accommodations may use headphones.* *NOTE: Student can use headphones as noise buffer, in which case the TA must ensure they are not plugged in. If TA does not verify, rate as "Partially Met" and provide a comment.*		
12	Read script verbatim. (can repeat, but not modify)		
Notes:			

13	Keep track of time during the test session (see tables on tab or last page of checklist) by updating the timing box and providing a verbal prompt of time remaining as noted in the script.		
14	Ensure students log in and have access to the test.		
15	Monitor student progress using administration computer.		
16	Monitor students by circulating around the room.		
17	Answer student questions following script guidance. (note questions)		
18	Provide up to 50% additional time if needed. (note how many students and how much extra time was allowed) (rate 5-N/A if accommodation session)		
19	Provide a group 3 minute break if necessary (computer screens must be turned off or apply visual block to monitor). Students must not communicate during breaks. Individual restroom breaks are permitted.		
20	Maintain test security if test is interrupted. (no interruption, rate 5-N/A)		
21	Handle testing irregularities. (e.g. student misconduct; cheating; using electronic devices; fire drills or safety threat; loss of Internet connectivity)		
22	Allow students finishing the test early to check their answers, sit quietly, or read for pleasure. (MD, NM, and TN: students can also be dismissed)		
Notes:			
Accommodations (Special Education or English Learner)			
23	Ensure students receiving the same accommodations are grouped together.		
24	Provide the number of students in accommodation session.		
25	Indicate if the students receiving the accommodation(s) are Spec Ed or EL.		
26	List the accommodations being provided.		
Observers: use accommodation job aid while observing session, note discrepancies.			
Post-Assessment Activities			
27	Students log off of the session.		
28	Collect Student Authorization Ticket and any test materials. (including all scratch paper)		
29	Dismiss students in accordance with school procedures.		
30	Return testing materials to the Test Coordinator.		
31	Completes the test administrator survey. (we may or may not observe)		
Additional Comments/Notes:			

Appendix B – Debriefing Protocol for Test Administration Site Visits

Test Coordinator and/or Administer Debriefing Protocol

Observer Note: Be sure to provide a note for those statements below that are about previous sessions.

1) How do you feel the testing went today?

1a) Follow up: If responds positive or negative, ask in what ways. (If problems or issues occurred, ask about them specifically.).

2) If students asked questions during the assessment; can you recall what the students asked? (skip if there were no question)

3) If you viewed the training modules, did you find them helpful?

4) Were the test admin manuals you were provided beneficial in preparing for testing?

5) Was the training you received beneficial in preparing for testing?

5a) Follow up: Describe how training or test administration manuals could be improved or what was missing that would have helped.

6) Were sufficient materials and support provided in preparing the computers for testing? (If TA does not know, ask Tech Coordinator if possible)

6a) Follow up: Describe how could they be improved or what was missing that would have helped.

7) Are there any additional comments you would like to provide regarding the test administration, testing materials, training materials, or support?

8) Accommodation Only: Prior to giving the accommodation (e.g. read aloud, human scribe, interpreter, etc.), what kind of training did you receive?

Appendix C – Test Administrator Survey for Computer/Tablet-based Administration

PARCC 2014 Field Test

Thank you for administering the PARCC Field Test. Now, we want to ask you some questions about the assessment(s) you just administered. We will use your answers to help improve the test administration process.

***Please indicate the mode of assessment administration:**

- ○ Computer-based (or tablet) administration
- ○ Paper-and-pencil administration

Page 1

PARCC 2014 Field Test

Computer-based Administration (or Tablet)

(Background)

1. Please identify the location where you administered the assessment:

- Arizona
- Arkansas
- Colorado
- District of Columbia
- Florida
- Illinois
- Louisiana
- Maryland
- Massachusetts
- Mississippi
- New Jersey
- New Mexico
- New York
- Ohio
- Rhode Island
- Tennessee

***2. Please enter the name of the LEA/District in which you administered the assessment.**

LEA/District Code:

District Name:

***3. Please enter the name of the school in which you administered the assessment**

School Code:

School Name:

Page 2

PARCC 2014 Field Test

4a. Please identify the grade level(s)/course(s) in which you administered the assessment (s) (select all that apply).
Abbreviation Definitions:
ELA/L PBA = English Language Art/Literacy Performance-Based Assessment
ELA/L EOY = English Language Art/Literacy End of Year

	ELA/L PBA	ELA/L EOY
Not Applicable - I did not administer an ELA/L Assessment	☐	☐
Grade 3	☐	☐
Grade 4	☐	☐
Grade 5	☐	☐
Grade 6	☐	☐
Grade 7	☐	☐
Grade 8	☐	☐
Grade 9	☐	☐
Grade 10	☐	☐
Grade 11	☐	☐

Page 3

PARCC 2014 Field Test

4b. Please identify the grade level(s)/course(s) in which you administered the assessment (s) (select all that apply).
Abbreviation Definitions:
Math PBA = Math Performance-Based Assessment
Math EOY = Math End of Year

	Math PBA	Math EOY
Not Applicable - I did not administer a Math Assessment	☐	☐
Grade 3	☐	☐
Grade 4	☐	☐
Grade 5	☐	☐
Grade 6	☐	☐
Grade 7	☐	☐
Grade 8	☐	☐
Algebra 1	☐	☐
Geometry	☐	☐
Algebra 2	☐	☐
Integrated Math 1	☐	☐
Integrated Math 2	☐	☐
Integrated Math 3	☐	☐

(Test Administrator's Training Experience)

1. Have you ever administered a computer-based test to students before (either at the state or district level)?

- ○ Yes
- ○ No

2. Did you complete any of the online PARCC training modules (as covered in the online training found here https://parcc.tms.pearson.com/)?

- ○ Yes
- ○ No

PARCC 2014 Field Test

Test Administrator's Training Experience

2a. Please indicate which of the online training models you completed (select all that apply)

- ☐ Accessibility Features and Accommodations with Computer-Based Testing
- ☐ Paper-Based Testing Test Administration
- ☐ Computer-Based Testing Test Administration
- ☐ Setting Up An Infrastructure Trial/Dress Rehearsal
- ☐ Technology Setup
- ☐ Student Data Upload Overview
- ☐ Emerging Technologies and Security with Computer-Based Testing

2b. The PARCC online training(s) effectively informed me of the protocol to follow when administering the assessment.

- ○ Not Applicable
- ○ Strongly Disagree
- ○ Disagree
- ○ Agree
- ○ Strongly Agree

2c. The PARCC online training(s) prepared me to resolve basic problems related to technology (e.g., logging students in, exiting the test, etc.)

- ○ Not Applicable
- ○ Strongly Disagree
- ○ Disagree
- ○ Agree
- ○ Strongly Agree

Page 5

PARCC 2014 Field Test

2d. Do you have any specific recommendations on how PARCC can improve its online training?

Page 6

PARCC 2014 Field Test

Test Administrator's Training Experience

3. Did you receive any other training, aside from the online PARRC training modules? (select all that apply)?

- ☐ Yes, I received training from my state.
- ☐ Yes, I received training from my district.
- ☐ Yes, I received training from my school.
- ☐ No, I did not receive any training from my state, district or school.

(Test Administration Experience)

Please rate your level of agreement with each of the following statements (1-4).

1. The policies and procedures within the Test Administrator Manual were easy for me to understand.

○ Strongly Disagree ○ Disagree ○ Agree ○ Strongly Agree

2. The instructions (including scripts for administering the assessment) within the Test Administrator Manual were easy for me to implement.

○ Strongly Disagree ○ Disagree ○ Agree ○ Strongly Agree

3. Students appeared to understand the instructions I read to them during test administration.

○ Strongly Disagree ○ Disagree ○ Agree ○ Strongly Agree

4. The instructions I read to the students covered all of the information necessary to take the test.

○ Strongly Disagree ○ Disagree ○ Agree ○ Strongly Agree

5. Please use the space below to describe any questions students asked about the test-taking instructions you read to them.

Page 7

PARCC 2014 Field Test

6. Please identify the types of technology-related problems that occurred during test administration (select all that apply). If that problem occurred, indicate how it was resolved.

	Indicate whether this problem occurred during administration	Resolved problem on my own	Resolved problem with assistance	Problem was not resolved
Students had difficulty logging into the assessment.	☐	☐	☐	☐
Device(s) stopped working.	☐	☐	☐	☐
Device(s) worked slowly.	☐	☐	☐	☐
Lost internet connectivity during administration.	☐	☐	☐	☐
No technology-related problems happened during the test.	☐	☐	☐	☐

7. Please use the space below to describe any questions students asked about technology-related problems.

(Test Environment)

1. Were there any problems in the physical environment during the test session that might have negatively affected student performance?

- ○ Yes
- ○ No

Page 8

PARCC 2014 Field Test

(Test Environment)

1a. Please indicate the nature of the problem in the physical environment. (select all that apply)

- [ ] Computers/devices were not arranged in an appropriate way to facilitate student work
- [ ] Lighting was insufficient
- [ ] Other (please use the space below to identify 'other' issue)

Other (please specify)

Page 9

PARCC 2014 Field Test

(PARCC's Timing Policy)

(PARCC's Timing Policy)

1. Indicate the proportion of students who needed the Additional Time Allowed.

- None
- Less than a third of students
- Approximately half of students
- More than half of students

PARCC 2014 Field Test

(PARCC's Timing Policy)

1a. Please indicate how much additional time was used by the majority of these students.

- Less than 10 minutes
- Between 10-20 minutes
- More than 20 minutes

PARCC 2014 Field Test

(Accessibility Features and Accommodations)

(Accessibility Features and Accommodations)

1. Are you aware there is an approved PARCC Accessibility Features and Accommodations Manual?

- Yes
- No

Page 12

PARCC 2014 Field Test

(Accessibility Features and Accommodations)

1a. Did you read the “Accessibility Features and Accommodations Manual” prior to administration?

- Yes
- No

Page 13

PARCC 2014 Field Test

(Accessibility Features and Accommodations)

2. Are you aware there is approved PARCC guidance on "Computer-Based Accessibility Features and Embedded Accommodations"?

- Yes
- No

PARCC 2014 Field Test

(Accessibility Features and Accommodations)

2a. Did you read the "Computer-Based Accessibility Features and Embedded Accommodations Available for PARCC Field Test"?

- Yes
- No

PARCC 2014 Field Test

(Accessibility Features and Accommodations)

3. Indicate whether you administered any of the following accessibility features or accommodations to your students during the Field Test administration? (select all that apply):

- ☐ I did not administer any accessibility features or accommodations to students
- ☐ Clarify directions
- ☐ Repeat directions
- ☐ Redirect a student to the test
- ☐ Human reader for the Mathematics Assessment
- ☐ Human reader for the English language arts/literacy assessment
- ☐ Scribe - English language arts/literacy assessment
- ☐ Scribe - Mathematics Assessment

4. If you served as a human reader (read text aloud) to a student and/or served as a scribe, please indicate if you read the following documents (select all that apply):

- ☐ Not Applicable
- ☐ "Appendex B: Test Administration Protocol for the Read-Aloud Accommodation for English Language Arts/Literacy Assessments and for Accessibility Feature for Mathematics"
- ☐ "Appendix C: Protocol for the Use of the Scribe Accommodation"
- ☐ "Appendix I: Audio and Human Reader Guidelines for the ELA/Literacy Assessments"
- ☐ "Appendix J: Audio and Human Reader Guidelines for the Mathematics Assessments"

5. Did you receive training on administering accessibility features/accommodations from your school or district?

- ○ Yes
- ○ No

Page 16

PARCC 2014 Field Test

6. Do you have any recommendations on improving training and information available on PARCC's accessibility features and accommodations?

7. If you administered an accommodation and you are interested in providing additional feedback to PARCC, please provide your email address and PARCC will follow-up with you: (e.g., jsmith@emailaddress.com)

(Sample Items/Tutorials)

1. Did the students in your session(s) practice with PARCC sample items prior to administration?

- Yes
- No
- Not sure/Don't know

2. Did the students in your session(s) complete the PARCC tutorial prior to administration?

- Yes
- No
- Not sure/Don't know

Page 17

PARCC 2014 Field Test

(After Completion of the Assessment(s)

The Test Coordinator Manual allows for local and/or state decision on what students are allowed to do after they have completed testing.

In accordance with your state or local policy, please indicate which of the following options was given to students after the completion of testing.

- Students sat quietly until the testing session had ended.
- Students were dismissed after they completed the testing.
- Students quietly used a recreational book or other allowable material until the testing session had ended.

(Final Feedback)

Please use the space below to provide any other recommendations (not already provided in the questions above) that may help PARCC improve its administration policies and procedures (e.g., administration instructions, security policies/procedures, and/or the role of the Test Administrator).

Page 18

PARCC 2014 Field Test

Thank You

Thank you for taking the Spring 2014 PARCC Field Test Survey. Select "Done" to submit your responses or "Prev" to return to the survey to edit your responses.

Page 31

Appendix D – Test Administrator Survey for Paper-based Administration

PARCC 2014 Field Test

Thank you for administering the PARCC Field Test. Now, we want to ask you some questions about the assessment(s) you just administered. We will use your answers to help improve the test administration process.

***Please indicate the mode of assessment administration:**

- Computer-based (or tablet) administration
- Paper-and-pencil administration

Page 1

PARCC 2014 Field Test

Paper-and-Pencil-based Administration

1. Please identify the location where you administered the assessment:

- Arizona
- Arkansas
- Colorado
- District of Columbia
- Florida
- Illinois
- Louisiana
- Maryland
- Massachusetts
- Mississippi
- New Jersey
- New Mexico
- New York
- Ohio
- Rhode Island
- Tennessee

***2. Please enter the name of the LEA/District in which you administered the assessment.**

LEA/District Code:

District Name:

***3. Please enter the name of the school in which you administered the assessment**

School Code:

School Name:

Page 19

PARCC 2014 Field Test

4. Please identify the grade level(s)/course(s) in which you administered the assessment(s) (select all that apply).

Abbreviation Definitions:

ELA/L PBA = English Language Art/Literacy Performance-Based Assessment

ELA/L EOY = English Language Art/Literacy End of Year

	ELA/L PBA	ELA/L EOY
Not Applicable - I did not administer an ELA/L Assessment	☐	☐
Grade 3	☐	☐
Grade 4	☐	☐
Grade 5	☐	☐
Grade 6	☐	☐
Grade 7	☐	☐
Grade 8	☐	☐
Grade 9	☐	☐
Grade 10	☐	☐
Grade 11	☐	☐

Page 20

PARCC 2014 Field Test

5. Please identify the grade level(s)/course(s) in which you administered the assessment(s) (select all that apply).
Abbreviation Definitions:
Math PBA = Math Performance-Based Assessment
Math EOY = Math End of Year

	Math PBA	Math EOY
Not Applicable - I did not administer Math Assessments	☐	☐
Grade 3	☐	☐
Grade 4	☐	☐
Grade 5	☐	☐
Grade 6	☐	☐
Grade 7	☐	☐
Grade 8	☐	☐
Algebra 1	☐	☐
Geometry	☐	☐
Algebra 2	☐	☐
Integrated Math 1	☐	☐
Integrated Math 2	☐	☐
Integrated Math 3	☐	☐

(Test Administrator's Training Experience)

1. Did you receive any training on administering the assessment(s) from your state, school or district? (select all that apply)

☐ Yes, I received training from my state.

☐ Yes, I received training from my district.

☐ Yes, I received training from my school.

☐ No, I did not receive any training from my state, district or school.

(Test Administration Experience)
Please rate your level of agreement with each of the following statements (1-4).
1. The policies and procedures within the Test Administrator Manual were easy for me to understand.

○ Strongly Disagree ○ Disagree ○ Agree ○ Strongly Agree

Page 21

PARCC 2014 Field Test

2. The instructions (including scripts for administering the assessment) within the Test Administrator Manual were easy for me to implement.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

3. Students appeared to understand the instructions I read to them during test administration.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

4. The instructions I read to the students covered all of the information necessary to take the test.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

5. Please use the space below to describe any questions students asked about the test-taking instructions you read to them.

(Test Environment)

1. Were there any problems in the physical environment during the test session that might have negatively affected student performance?

- Yes
- No

Page 22

PARCC 2014 Field Test

(Test Environment)

1a. Please indicate the nature of the problem in the physical environment. (select all that apply)

☐ Lighting was insufficient

☐ Other (please use the space below to identify 'other' issue)

Other (please specify)

Page 23

PARCC 2014 Field Test

(PARCC's Timing Policy)

(PARCC's Timing Policy)

1. Indicate the proportion of students who needed the Additional Time Allowed.

- None
- Less than a third of students
- Approximately half of students
- More than half of students

Page 24

PARCC 2014 Field Test

(PARCC's Timing Policy)

1a. Please indicate how much additional time was used by the majority of these students.

- Less than 10 minutes
- Between 10-20 minutes
- More than 20 minutes

Page 25

PARCC 2014 Field Test

(Accessibility Features and Accommodations)

(Accessibility Features and Accommodations)
1. Are you aware there is an approved PARCC Accessibility Features and Accommodations Manual?

- Yes
- No

PARCC 2014 Field Test

(Accessibility Features and Accommodations)

1a. Did you read the "Accessibility Features and Accommodations Manual" prior to administration?

- ○ Yes
- ○ No

Page 27

PARCC 2014 Field Test

(Accessibility Features and Accommodations)

2. Indicate whether you administered any of the following accessibility features or accommodations to your students during the Field Test administration? (please select all that apply):

- ☐ I did not administer any accessibility features or accommodations to students
- ☐ Clarify directions
- ☐ Repeat directions
- ☐ Redirect a student to the test
- ☐ Human reader for the Mathematics Assessment
- ☐ Human reader for the English language arts/literacy assessment
- ☐ Scribe - English language arts/literacy assessment
- ☐ Scribe - Mathematics Assessment

3. If you served as a human reader (read text aloud) to a student and/or served as a scribe, please indicate if you read the following documents (please select all that apply):

- ☐ Not Applicable
- ☐ "Appendix B: Test Administration Protocol for the Read-Aloud Accommodation for English Language Arts/Literacy Assessments and for Accessibility Feature for Mathematics"
- ☐ "Appendix C: Protocol for the Use of the Scribe Accommodation"
- ☐ "Appendix I: Audio and Human Reader Guidelines for the ELA/Literacy Assessments"
- ☐ "Appendix J: Audio and Human Reader Guidelines for the Mathematics Assessments"

4. Did you receive training on administering accessibility features/accommodations from your school or district?

- ○ Yes
- ○ No

PARCC 2014 Field Test

5. Do you have any recommendations on improving training and information available on PARCC's accessibility features and accommodations?

6. If you administered an accommodation and you are interested in providing additional feedback to PARCC, please provide your email address and PARCC will follow-up with you (e.g., jsmith@emailaddress.com):

(Sample Items/Tutorials)

1. Did the students in your session(s) have an opportunity to practice with PARCC sample items prior to administration?

- Yes
- No
- Not sure/Don't know

2. Did the students in your session(s) have an opportunity to complete the PARCC tutorial prior to administration?

- Yes
- No
- Not sure/Don't know

Page 29

PARCC 2014 Field Test

(After Completion of the Assessment(s))

The Test Coordinator Manual allows for local and/or state decision on what students are allowed to do after they have completed testing.

In accordance with your state or local policy, please indicate which of the following options was given to students after the completion of testing.

- Students sat quietly until the testing session had ended.
- Students were dismissed after they completed the testing.
- Students quietly used a recreational book or other allowable material until the testing session had ended.

(Final Feedback)
Please use the space below to provide any other recommendations (not already provided in the questions above) that may help PARCC improve its administration policies and procedures (e.g., administration instructions, security policies/procedures, and/or the role of the Test Administrator).

Page 30

PARCC 2014 Field Test

Thank You

Thank you for taking the Spring 2014 PARCC Field Test Survey. Select "Done" to submit your responses or "Prev" to return to the survey to edit your responses.

Page 31

Appendix E – Student Survey Items (and Code Book) for Computer/Tablet-based PARCC Mathematics Field Test

Now that you have finished the PARCC field test, we would like to know about your experience. We will use your responses to help make a better testing experience for students in the future.

Directions

Please answer the questions below as best that you can. If you do not understand a question, please ask your teacher or test administrator for help.

1. Did you understand all of the directions read by the person who gave you the test?
   Variable Name = CBT_Math_Understand_Instr

   Yes **Value = 1**

   No **Value = 2**

2. How often was it hard to understand the directions for the questions on this test?
   Variable Name = CBT_Math_Difficult_Instr

   Almost Always **Value = 1**

   Most of the time **Value = 2**

   Some of the time **Value = 3**

   Almost Never **Value = 4**

3. How many questions asked you about things you have <u>not</u> learned in school this year?
   Variable Name = CBT_Math_Qs_Not_Learned

   All of them **Value = 1**

   Most of them **Value = 2**

   Few of them **Value = 3**

   None of them **Value = 4**

4. How difficult was this test?
   Variable Name = CBT_Math_DifTest

   It was easier than my school work **Value = 1**

   It was about the same as my school work **Value = 2**

   It was harder than my school work **Value = 3**

5. Did you have enough time to finish this test?
   Variable Name = CBT_Math_Time_Finish

I finished very early	**Value = 1**
I finished on time	**Value = 2**
I had to rush to finish	**Value = 3**
I did not finish	**Value = 4**

6. How often do you use a computer or tablet at home?
   Variable Name = CBT_Math_Home_Tech

Every day	**Value = 1**
A few times a week	**Value = 2**
A couple of times a month or less	**Value = 3**
I don't have a computer or a tablet at home	**Value = 4**

7. How often do you use a computer or tablet in school?
   Variable Name = CBT_Math_School_Tech

Every day	**Value = 1**
A few times a week	**Value = 2**
A couple of times a month or less	**Value = 3**
I have never used a computer or tablet in school	**Value = 4**

8. When writing a story or essay, how often do you use a computer or tablet?
   Variable Name = CBT_Math_Tech_Writing

All of the time	**Value = 1**
Most of the time	**Value = 2**
Some of the time	**Value = 3**
Never	**Value = 4**

9. Would you rather take this test on paper OR on a computer or tablet?
   Variable Name = CBT_Math_Test_Pref

   On paper **Value = 1**

   On a computer or tablet **Value = 2**

10. What did you use to take this test?
    Variable Name = CBT_Math_TechType

    Desktop computer **Value = 1**

    Laptop computer **Value = 2**

    Tablet with a keyboard **Value = 3**

    Tablet without a keyboard **Value = 4**

11. How many times did you practice on a computer or tablet to get ready for this test?
    Variable Name = CBT_Math_TechPractice

    Never **Value = 1**

    Once **Value = 2**

    More than once **Value = 3**

12. Was it easy to use the highlighter
    Variable Name = CBT_Math_Highlight

    Yes, it was easy **Value = 1**

    No, it was hard **Value = 2**

    I did not use the highlighter **Value = 3**

13. Was it easy to type your answers?
    Variable Name = CBT_Math_Type

    Yes, it was easy **Value = 1**

    No, it was hard **Value = 2**

    I did not type any answers **Value = 3**

14. Was it easy to make pictures or words bigger or smaller?
    Variable Name = CBT_Math_Change_Size

    Yes, it was easy **Value = 1**

    No, it was hard **Value = 2**

    I did not change the size of pictures or words **Value = 3**

15. Was it easy to enter math symbols and numbers for your answers?
    Variable Name = CBT_Math_Enter_SymNum

    Yes, it was easy **Value = 1**

    No, it was hard **Value = 2**

    I did not enter math symbols or numbers **Value = 3**

16. Was it easy to use the calculator?
    Variable Name = CBT_Math_Calc

    Yes, it was easy **Value = 1**

    No, it was hard **Value = 2**

    I did not use the calculator **Value = 3**

17. Did any of the problems listed below happen during your test? (Select all that apply)

    The computer stopped working **CBT_Math_Comp_Stop** **Value = 1**

    The computer worked slowly **CBT_Math_Comp_Slow** **Value = 2**

    I had a hard time dragging or moving things on the screen **CBT_Math_Move_Objects** **Value = 3**

    I had a hard time making changes to my answers **CBT_Math_Difficult_Change_Ans** **Value = 4**

    No problems happened during the test **CBT_Math_No_Probs** **Value = 5**

18. Please use the space below to tell us about anything that was confusing or unclear about the test. We are not asking whether a question on the test was hard, but we would like to know if there was anything about the test that didn't make sense. **CBT_Math_Feedback_txt**

Appendix F – Student Survey Items (and Code Book) for Computer/Tablet-based PARCC ELA Field Test

Now that you have finished the PARCC field test, we would like to know about your experience. We will use your responses to help make a better testing experience for students in the future.

Directions

Please answer the questions below as best that you can. If you do not understand a question, please ask your teacher or test administrator for help.

1. Did you understand all of the directions read by the person who gave you the test?
   Variable Name = CBT_ELA_Understand_Instr

   Yes **Value = 1**

   No **Value = 2**

2. How often was it hard to understand the directions for the questions on this test?
   Variable Name = CBT_ELA_Difficult_Instr

   Almost Always **Value = 1**

   Most of the time **Value = 2**

   Some of the time **Value = 3**

   Almost Never **Value = 4**

3. How many questions asked you about things you have not learned in school this year?
   Variable Name = CBT_ELA_Qs_Not_Learned

   All of them **Value = 1**

   Most of them **Value = 2**

   Few of them **Value = 3**

   None of them **Value = 4**

4. How difficult was this test?
   Variable Name = CBT_ELA_DifTest

   It was easier than my school work **Value = 1**

   It was about the same as my school work **Value = 2**

   It was harder than my school work **Value = 3**

5. Did you have enough time to finish this test?
Variable Name = CBT_ELA_Time_Finish

I finished very early	**Value = 1**
I finished on time	**Value = 2**
I had to rush to finish	**Value = 3**
I did not finish	**Value = 4**

6. How often do you use a computer or tablet at home?
Variable Name = CBT_ELA_Home_Tech

Every day	**Value = 1**
A few times a week	**Value = 2**
A couple of times a month or less	**Value = 3**
I don't have a computer or a tablet at home	**Value = 4**

7. How often do you use a computer or tablet in school?
Variable Name = CBT_ELA_School_Tech

Every day	**Value = 1**
A few times a week	**Value = 2**
A couple of times a month or less	**Value = 3**
I have never used a computer or tablet in school	**Value = 4**

8. When writing a story or essay, how often do you use a computer or tablet?
Variable Name = CBT_ELA_Tech_Writing

All of the time	**Value = 1**
Most of the time	**Value = 2**
Some of the time	**Value = 3**
Never	**Value = 4**

9. Would you rather take this test on paper OR on a computer or tablet?
Variable Name = CBT_ELA_Test_Pref

On paper	**Value = 1**
On a computer or tablet	**Value = 2**

10. What did you use to take this test?
Variable Name = CBT_ELA_TechType

Desktop computer	**Value = 1**
Laptop computer	**Value = 2**
Tablet with a keyboard	**Value = 3**
Tablet without a keyboard	**Value = 4**

11. How many times did you practice on a computer or tablet to get ready for this test?
Variable Name = CBT_ELA_TechPractice

Never	**Value = 1**
Once	**Value = 2**
More than once	**Value = 3**

12. Was it easy to use the highlighter
Variable Name = CBT_ELA_Highlight

Yes, it was easy	**Value = 1**
No, it was hard	**Value = 2**
I did not use the highlighter	**Value = 3**

13. Was it easy to type your answers?
Variable Name = CBT_ELA_Type

Yes, it was easy	**Value = 1**
No, it was hard	**Value = 2**
I did not type any answers	**Value = 3**

14. Was it easy to make pictures or words bigger or smaller?
Variable Name = CBT_ELA_Change_Size

Yes, it was easy	**Value = 1**
No, it was hard	**Value = 2**
I did not change the size of pictures or words	**Value = 3**

15. Was it easy to move back and forth between passages or stories?
 Variable Name = CBT_ELA_Change_Pass

   Yes, it was easy **Value = 1**

   No, it was hard **Value = 2**

   I did not move between stories or passages **Value = 3**

16. Was it easy to find information in the passages or stories when answering questions?
 Variable Name = CBT_ELA_Find_Info

   Yes, it was easy **Value = 1**

   No, it was hard **Value = 2**

   I did not move between stories or passages **Value = 3**

17. Did any of the problems listed below happen during your test? (Select all that apply)

   The computer stopped working **CBT_ELA_Comp_Stop** **Value = 1**

   The computer worked slowly **CBT_ELA_Comp_Slow** **Value = 2**

   I had a hard time dragging or moving things on the screen
   CBT_ELA_Move_Objects **Value = 3**

   I had a hard time making changes to my answers **CBT_ELA_Change_Ans** **Value = 4**

   No problems happened during the test **CBT_ELA_No_Probs** **Value = 5**

18. Please use the space below to tell us about anything that was confusing or unclear about the test. We are not asking whether a question on the test was hard, but we would like to know if there was anything about the test that didn't make sense. **CBT_ELA_Feedback_txt**

Appendix G – Student Survey Items (and Code Book) for Paper-based PARCC Math Field Test

Now that you have finished the PARCC field test, we would like to know about your experience. We will use your responses to help make a better testing experience for students in the future.

Directions

Please answer the questions below as best that you can. If you do not understand a question, please ask your teacher or test administrator for help.

1. Did you understand all of the directions read by the person who gave you the test?
   Variable Name = PBT_Math_Understand_Instr

   Yes **Value = 1**

   No **Value = 2**

2. How often was it hard to understand the directions for the questions on this test?
   Variable Name = PBT_Math_Difficult_Instr

   Almost Always **Value = 1**

   Most of the time **Value = 2**

   Some of the time **Value = 3**

   Almost Never **Value = 4**

3. How many questions asked you about things you have not learned in school this year?
   Variable Name = PBT_Math_Qs_Not_Learned

   All of them **Value = 1**

   Most of them **Value = 2**

   Few of them **Value = 3**

   None of them **Value = 4**

4. How difficult was this test?
   Variable Name = PBT_Math_DifTest

   It was easier than my school work **Value = 1**

   It was about the same as my school work **Value = 2**

   It was harder than my school work **Value = 3**

5. Did you have enough time to finish this test?
   Variable Name = PBT_Math_Time_Finish

   I finished very early **Value = 1**

   I finished on time **Value = 2**

   I had to rush to finish **Value = 3**

   I did not finish **Value = 4**

6. How often do you use a computer or tablet at home?
   Variable Name = PBT_Math_Home_Tech

   Every day **Value = 1**

   A few times a week **Value = 2**

   A couple of times a month or less **Value = 3**

   I don't have a computer or a tablet at home **Value = 4**

7. How often do you use a computer or tablet in school?
   Variable Name = PBT_Math_School_Tech

   Every day **Value = 1**

   A few times a week **Value = 2**

   A couple of times a month or less **Value = 3**

   I have never used a computer or tablet in school **Value = 4**

8. When writing a story or essay, how often do you use a computer or tablet?
   Variable Name = PBT_Math_Tech_Writing

   All of the time **Value = 1**

   Most of the time **Value = 2**

   Some of the time **Value = 3**

   Never **Value = 4**

9. Would you rather take this test on paper OR on a computer or tablet?
   Variable Name = PBT_Math_Test_Pref

   On paper **Value = 1**

   On a computer or tablet **Value = 2**

Appendix H – Student Survey Items (and Code Book) for Paper-based PARCC ELA Field Test

Now that you have finished the PARCC field test, we would like to know about your experience. We will use your responses to help make a better testing experience for students in the future.

Directions

Please answer the questions below as best that you can. If you do not understand a question, please ask your teacher or test administrator for help.

1. Did you understand all of the directions read by the person who gave you the test?
   Variable Name = PBT_ELA_Understand_Instr

   Yes **Value = 1**

   No **Value = 2**

2. How often was it hard to understand the directions for the questions on this test?
   Variable Name = PBT_ELA_Difficult_Instr

   Almost Always **Value = 1**

   Most of the time **Value = 2**

   Some of the time **Value = 3**

   Almost Never **Value = 4**

3. How many questions asked you about things you have not learned in school this year?
   Variable Name = PBT_ELA_Qs_Not_Learned

   All of them **Value = 1**

   Most of them **Value = 2**

   Few of them **Value = 3**

   None of them **Value = 4**

4. How difficult was this test?
   Variable Name = PBT_ELA_DifTest

   It was easier than my school work **Value = 1**

   It was about the same as my school work **Value = 2**

   It was harder than my school work **Value = 3**

5. Did you have enough time to finish this test?
Variable Name = PBT_ELA_Time_Finish

I finished very early	**Value = 1**
I finished on time	**Value = 2**
I had to rush to finish	**Value = 3**
I did not finish	**Value = 4**

6. How often do you use a computer or tablet at home?
Variable Name = PBT_ELA_Home_Tech

Every day	**Value = 1**
A few times a week	**Value = 2**
A couple of times a month or less	**Value = 3**
I don't have a computer or a tablet at home	**Value = 4**

7. How often do you use a computer or tablet in school?
Variable Name = PBT_ELA_School_Tech

Every day	**Value = 1**
A few times a week	**Value = 2**
A couple of times a month or less	**Value = 3**
I have never used a computer or tablet in school	**Value = 4**

8. When writing a story or essay, how often do you use a computer or tablet?
Variable Name = PBT_ELA_Tech_Writing

All of the time	**Value = 1**
Most of the time	**Value = 2**
Some of the time	**Value = 3**
Never	**Value = 4**

9. Would you rather take this test on paper OR on a computer or tablet?
Variable Name = PBT_ELA_Test_Pref

On paper	**Value = 1**
On a computer or tablet	**Value = 2**

10. Was it easy to flip back and forth between pages to find the story or passage that belonged to a question?
Variable Name = PBT_ELA_Change_Pass

Yes, it was easy	**Value = 1**
No, it was hard	**Value = 2**
I did not flip back and forth between pages to find a passage	**Value = 3**

Appendix I – Item-level Results from Test Administrator Survey: Computer/Tablet-based Administration

Administration Information by State

Table 1. TA Survey: Q1. Please indicate the mode of assessment administration:

	Computer-based (or tablet) Administration		Paper-and-pencil Administration	
State	n	%	n	%
Arizona (N = 493)	295	59.8	198	40.2
Arkansas (N = 471)	314	67.0	157	33.0
Colorado (N = 223)	152	68.2	71	31.8
District of Columbia (D.C.; N = 35)	31	89.0	4	11.0
Florida (N = 8)	7	87.5	1	12.5
Illinois (N = 1024)	737	72.0	287	28.0
Louisiana (N = 311)	304	98.0	7	2.0
Maryland (N = 1171)	710	60.6	461	39.4
Massachusetts (N = 776)	601	77.4	175	22.6
Mississippi (N = 148)	94	63.5	54	36.5
New Jersey (N = 788)	785	99.6	3	0.4
New Mexico (N = 48)	48	100.0	0	0.0
New York (N = 57)	54	94.7	3	5.3
Ohio (N = 393)	240	61.1	153	38.9
Rhode Island (N = 183)	128	69.9	55	30.1
Tennessee (N = 183)	128	69.9	55	30.1
All States (N = 6322)	4635[a]	73.3	1687[b]	26.7

Note. Percentages are based on the total number of valid responses for each state. Number of missing for computer-based administration = 7. Number of missing for paper-and-pencil administration = 3.

[a] Includes the 7 cases that did not indicate their state.

[b] Includes the 3 cases that did not indicate their state.

Background Information

Table 2. TA Survey: Q4a-b. Please identify the grade level(s)/course(s) in which you administered the assessment(s) (select all that apply)[a].

Not Applicable

	ELA/L Performance-based Assessment		ELA/L End-of-Year Assessment		Math Performance-based Assessment		Math End-of-Year Assessment	
State	n	%	n	%	n	%	n	%
Arizona	57	19.3	47	15.9	49	16.6	43	14.6
Arkansas	65	20.7	65	20.7	86	27.4	59	18.8
Colorado	28	18.4	27	17.8	33	21.7	24	15.8
D.C.	8	25.8	6	19.4	8	25.8	8	25.8
Florida	1	14.3	1	14.3	1	14.3	1	14.3
Illinois	163	22.1	155	21.0	195	26.5	163	22.1
Louisiana	62	20.4	56	18.4	67	22.0	37	12.2
Maryland	124	17.5	112	15.8	193	27.2	100	14.1
Massachusetts	113	18.8	103	17.1	120	20.0	81	13.5
Mississippi	27	28.7	13	13.8	19	20.2	21	22.3
New Jersey	148	18.9	123	15.7	210	26.8	134	17.1
New Mexico	12	25.0	10	20.8	7	14.6	6	12.5
New York	14	25.9	11	20.4	10	18.5	11	20.4
Ohio	34	14.2	52	21.7	52	21.7	43	17.9
Rhode Island	28	21.9	29	22.7	27	21.1	20	15.6
Tennessee	23	18.0	25	19.5	31	24.2	23	18.0
All States	907	19.6	835	18.0	1111	24.0	774	16.7

Note. [a] Percentages reported for “select all that apply” items should be interpreted with caution, as it is not possible to differentiate “missing” (i.e., skipped) vs. “not selected” responses.

Table 3. TA Survey: Q4a. Please identify the grade level(s)/course(s) in which you administered the assessment(s) (select all that apply [a]).

ELA/L Performance-Based Assessment

	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 8		Grade 9		Grade 10		Grade 11	
State	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Arizona (n = 238)	16	6.7	20	8.4	15	6.3	26	10.9	20	8.4	23	9.7	6	2.5	15	6.3	15	6.3
Arkansas (n = 249)	41	16.5	20	8.0	22	8.8	17	6.8	17	6.8	10	4.0	12	4.8	12	4.8	9	3.6
Colorado (n = 124)	20	16.1	30	24.2	17	13.7	6	4.8	10	8.1	7	5.6	5	4.0	4	3.2	2	1.6
D.C. (n = 23)	2	8.7	2	8.7	0	0.0	3	13.0	3	13.0	2	8.7	0	0.0	0	0.0	0	0.0
Florida (n = 6)	0	0.0	2	33.3	0	0.0	1	16.7	1	16.7	0	0.0	0	0.0	0	0.0	0	0.0
Illinois (n = 574)	64	11.1	46	8.0	77	13.4	52	9.1	37	6.4	47	8.2	31	5.4	37	6.4	27	4.7
Louisiana (n = 242)	30	12.4	26	10.7	25	10.3	27	11.2	19	7.9	9	3.7	8	3.3	15	6.2	13	5.4
Maryland (n = 586)	135	23.0	111	18.9	3	0.5	33	5.6	71	12.1	8	1.4	52	8.9	11	1.9	70	11.9
Massachusetts (n = 488)	53	10.9	47	9.6	41	8.4	51	10.5	55	11.3	37	7.6	34	7.0	4	0.8	27	5.5
Mississippi (n = 67)	0	0.0	4	6.0	2	3.0	6	9.0	0	0.0	1	1.5	10	14.9	5	7.5	7	10.4
New Jersey (n = 637)	56	8.8	61	9.6	68	10.7	31	4.9	54	8.5	45	7.1	41	6.4	36	5.7	38	6.0
New Mexico (n = 36)	2	5.6	0	0.0	1	2.8	3	8.3	0	0.0	4	11.1	1	2.8	0	0.0	1	2.8
New York (n = 40)	2	5.0	0	0.0	1	2.5	2	5.0	3	7.5	2	5.0	2	5.0	0	0.0	1	2.5
Ohio (n = 206)	12	5.8	18	8.7	28	13.6	11	5.3	13	6.3	18	8.7	12	5.8	10	4.9	5	2.4
Rhode Island (n = 100)	16	16.0	4	4.0	17	17.0	7	7.0	9	9.0	4	4.0	3	3.0	0	0.0	6	6.0
Tennessee (n = 105)	7	6.7	19	18.1	10	9.5	14	13.3	14	13.3	18	17.1	3	2.9	7	6.7	6	5.7
All States (n = 3728)	456	12.2	411	11.0	328	8.8	292	7.8	326	8.7	236	6.3	220	5.9	156	4.2	227	6.1

Note. Individuals who selected N/A for this item (see Table 2) have been excluded from analyses.
[a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Table 4. TA Survey: Q4a. Please identify the grade level(s)/course(s) in which you administered the assessment(s) (select all that apply[a]).

ELA/L End-of-Year Assessment

	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 8		Grade 9		Grade 10		Grade 11	
State	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Arizona (n = 248)	11	4.4	15	6.0	15	6.0	20	8.1	13	5.2	7	2.8	8	3.2	5	2.0	7	2.8
Arkansas (n = 249)	16	6.4	11	4.4	14	5.6	13	5.2	11	4.4	4	1.6	12	4.8	15	6.0	8	3.2
Colorado (n = 125)	7	5.6	9	7.2	4	3.2	4	3.2	5	4.0	2	1.6	1	0.8	1	0.8	2	1.6
D.C. (n = 25)	4	16.0	2	8.0	5	20.0	1	4.0	1	4.0	1	4.0	0	0.0	0	0.0	0	0.0
Florida (n = 6)	0	0.0	0	0.0	0	0.0	1	16.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Illinois (n = 582)	27	4.6	23	4.0	22	3.8	29	5.0	25	4.3	22	3.8	19	3.3	26	4.5	11	1.9
Louisiana (n = 248)	6	2.4	5	2.0	7	2.8	4	1.6	3	1.2	4	1.6	4	1.6	1	0.4	1	0.4
Maryland (n = 598)	24	4.0	31	5.2	5	0.8	8	1.3	18	3.0	3	0.5	12	2.0	3	0.5	11	1.8
Massachusetts (n = 498)	20	4.0	24	4.8	19	3.8	12	2.4	18	3.6	17	3.4	9	1.8	7	1.4	8	1.6
Mississippi (n = 81)	0	0.0	6	7.4	1	1.2	3	3.7	0	0.0	2	2.5	14	17.3	14	17.3	0	0.0
New Jersey (n = 662)	16	2.4	15	2.3	20	3.0	19	2.9	15	2.3	8	1.2	12	1.8	19	2.9	13	2.0
New Mexico (n = 38)	2	5.3	1	2.6	2	5.3	2	5.3	4	10.5	0	0.0	2	5.3	5	13.2	2	5.3
New York (n = 43)	7	16.3	0	0.0	4	9.3	6	14.0	1	2.3	1	2.3	1	2.3	1	2.3	1	2.3
Ohio (n = 188)	3	1.6	4	2.1	16	8.5	5	2.7	7	3.7	10	5.3	7	3.7	4	2.1	7	3.7
Rhode Island (n = 99)	4	4.0	1	1.0	7	7.1	3	3.0	1	1.0	0	0.0	1	1.0	2	2.0	1	1.0
Tennessee (n = 103)	3	2.9	2	1.9	3	2.9	2	1.9	4	3.9	4	3.9	1	1.0	3	2.9	0	0.0
All States (n = 3800)	150	3.9	149	3.9	144	3.8	132	3.5	126	3.3	85	2.2	103	2.7	106	2.8	72	1.9

Note. Individuals who selected N/A for this item (see Table 2) have been excluded from analyses.

[a] Percentages reported for “select all that apply” items should be interpreted with caution, as it is not possible to differentiate “missing” (i.e., skipped) vs. “not selected” responses.

Table 5. TA Survey: Q4b. Please identify the grade level(s)/course(s) in which you administered the assessment(s) (select all that apply[a]).

Math Performance-Based Assessment

	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 8		ALG 1		GEO		ALG 2		INT 1		INT 2		INT 3	
State	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Arizona (n = 246)	17	6.9	20	8.1	13	5.3	16	6.5	19	7.7	21	8.5	11	4.5	5	2.0	4	1.6	0	0.0	0	0.0	0	0.0
Arkansas (n = 228)	6	2.6	28	12.3	18	7.9	13	5.7	7	3.1	12	5.3	5	2.2	12	5.3	12	5.3	0	0.0	0	0.0	0	0.0
Colorado (n = 119)	10	8.4	13	10.9	6	5.0	9	7.6	7	5.9	4	3.4	0	0.0	10	8.4	5	4.2	2	1.7	2	1.7	2	1.7
D.C. (n = 23)	1	4.3	1	4.3	0	0.0	0	0.0	1	4.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Florida (n = 6)	1	16.7	4	66.7	0	0.0	0	0.0	1	16.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Illinois (n = 542)	45	8.3	54	10.0	32	5.9	31	5.7	26	4.8	37	6.8	36	6.6	27	5.0	27	5.0	6	1.1	1	0.2	1	0.2
Louisiana (n = 237)	23	9.7	27	11.4	21	8.9	15	6.3	11	4.6	10	4.2	8	3.4	6	2.5	13	5.5	0	0.0	0	0.0	0	0.0
Maryland (n = 517)	59	11.4	81	15.7	2	0.4	72	13.9	59	11.4	6	1.2	4	0.8	47	9.1	25	4.8	1	0.2	1	0.2	1	0.2
Massachusetts (n = 481)	41	8.5	58	12.1	32	6.7	33	6.9	29	6.0	25	5.2	15	3.1	11	2.3	21	4.4	14	2.9	1	0.2	21	4.4
Mississippi (n = 75)	4	5.3	19	25.3	7	9.3	9	12.0	0	0.0	3	4.0	0	0.0	1	1.3	1	1.3	0	0.0	0	0.0	0	0.0
New Jersey (n = 575)	39	6.8	36	6.3	18	3.1	20	3.5	30	5.2	28	4.9	29	5.0	34	5.9	26	4.5	2	0.3	2	0.3	2	0.3
New Mexico (n = 41)	3	7.3	2	4.9	1	2.4	1	2.4	2	4.9	1	2.4	2	4.9	0	0.0	0	0.0	0	0.0	1	2.4	0	0.0
New York (n = 44)	2	4.5	2	4.5	2	4.5	1	2.3	2	4.5	0	0.0	1	2.3	4	9.1	3	6.8	0	0.0	0	0.0	0	0.0
Ohio (n = 188)	10	5.3	11	5.9	14	7.4	12	6.4	10	5.3	12	6.4	8	4.3	3	1.6	10	5.3	11	5.9	4	2.1	5	2.7
Rhode Island (n = 101)	12	11.9	3	3.0	3	3.0	9	8.9	13	12.9	4	4.0	2	2.0	7	6.9	5	5.0	0	0.0	1	1.0	0	0.0
Tennessee (n = 97)	13	13.4	4	4.1	14	14.4	12	12.4	15	15.5	8	8.2	4	4.1	2	2.1	5	5.2	0	0.0	0	0.0	0	0.0
All States (n = 3524)	286	8.1	363	10.3	183	5.2	254	7.2	232	6.6	171	4.9	125	3.5	169	4.8	158	4.5	36	1.0	13	0.4	32	0.9

Note. Individuals who selected N/A for this item (see Table 2) have been excluded from analyses.

[a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Table 6. TA Survey: Q4b. Please identify the grade level(s)/course(s) in which you administered the assessment(s) (select all that apply [a]).

Math End-of-Year Assessment

	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 8		ALG 1		GEO		ALG 2		INT 1		INT 2		INT 3	
State	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Arizona (n = 252)	14	5.6	9	3.6	20	7.9	6	2.4	12	4.8	14	5.6	4	1.6	8	3.2	6	2.4	0	0.0	0	0.0	0	0.0
Arkansas (n = 255)	10	3.9	18	7.1	12	4.7	8	3.1	2	0.8	11	4.3	17	6.7	9	3.5	8	3.1	0	0.0	0	0.0	0	0.0
Colorado (n = 128)	4	3.1	4	3.1	4	3.1	3	2.3	7	5.5	1	0.8	0	0.0	4	3.1	0	0.0	0	0.0	0	0.0	0	0.0
D.C. (n = 23)	1	4.3	3	13.0	0	0.0	5	21.7	0	0.0	0	0.0	1	4.3	1	4.3	0	0.0	4	17.4	0	0.0	0	0.0
Florida (n = 6)	0	0.0	1	16.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Illinois (n = 574)	34	5.9	44	7.7	22	3.8	21	3.7	24	4.2	10	1.7	14	2.4	22	3.8	13	2.3	4	0.7	1	0.2	2	0.3
Louisiana (n = 267)	8	3.0	12	4.5	5	1.9	6	2.2	6	2.2	8	3.0	2	0.7	5	1.9	4	1.5	0	0.0	0	0.0	0	0.0
Maryland (n = 610)	23	3.8	25	4.1	2	0.3	17	2.8	18	3.0	6	1.0	2	0.3	9	1.5	7	1.1	1	0.2	1	0.2	1	0.2
Massachusetts (n = 520)	24	4.6	25	4.8	29	5.6	23	4.4	19	3.7	15	2.9	12	2.3	4	0.8	12	2.3	1	0.2	0	0.0	2	0.4
Mississippi (n = 73)	0	0.0	2	2.7	0	0.0	1	1.4	0	0.0	4	5.5	1	1.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
New Jersey (n = 651)	21	3.2	15	2.3	15	2.3	15	2.3	29	4.5	17	2.6	31	4.8	7	1.1	11	1.7	0	0.0	0	0.0	0	0.0
New Mexico (n = 42)	2	4.8	1	2.4	3	7.1	0	0.0	4	9.5	1	2.4	4	9.5	0	0.0	0	0.0	1	2.4	0	0.0	0	0.0
New York (n = 43)	2	4.7	6	14.0	2	4.7	0	0.0	2	4.7	0	0.0	7	16.3	0	0.0	5	11.6	0	0.0	0	0.0	0	0.0
Ohio (n = 197)	10	5.1	3	1.5	10	5.1	3	1.5	3	1.5	2	1.0	12	6.1	2	1.0	8	4.1	1	0.5	1	0.5	1	0.5
Rhode Island (n = 108)	9	8.3	0	0.0	4	3.7	2	1.9	3	2.8	0	0.0	6	5.6	5	4.6	5	4.6	0	0.0	0	0.0	0	0.0
Tennessee (n = 105)	1	1.0	0	0.0	2	1.9	2	1.9	1	1.0	3	2.9	2	1.9	0	0.0	4	3.8	0	0.0	0	0.0	0	0.0
All States (n = 3861)	163	4.2	168	4.4	130	3.4	112	2.9	130	3.4	92	2.4	115	3.0	76	2.0	83	2.1	12	0.3	3	0.1	6	0.2

Note. Individuals who selected N/A for this item (see Table 2) have been excluded from analyses.

[a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Test Administrator's Training Experience

Table 7. TA Survey: Q1. Have you ever administered a computer-based test to students before (either at the state or district level)?

	Yes		No	
State	n	%	n	%
Arizona	152	52.2	139	47.8
Arkansas	117	37.5	195	62.5
Colorado	100	66.7	50	33.3
D.C.	16	51.6	15	48.4
Florida	3	42.9	4	57.1
Illinois	429	58.4	305	41.6
Louisiana	158	52.5	143	47.5
Maryland	474	66.9	235	33.1
Massachusetts	124	20.7	475	79.3
Mississippi	38	40.9	55	59.1
New Jersey	186	23.7	599	76.3
New Mexico	36	75.0	12	25.0
New York	27	50.0	27	50.0
Ohio	99	41.4	140	58.6
Rhode Island	68	53.1	60	46.9
Tennessee	100	78.1	28	21.9
All States	2129	46.1	2486	53.9

Note. Numbers and percentages are based on the total number of valid responses (missing = 20).

Table 8. TA Survey: Q2. Did you complete any of the online PARCC training modules (as covered in the online training found here https://parcc.tms.pearson.com/)?

	Yes		No	
State	n	%	n	%
Arizona	215	73.6	77	26.4
Arkansas	271	86.6	42	13.4
Colorado	109	71.7	43	28.3
D.C.	21	67.7	10	32.3
Florida	5	71.4	2	28.6
Illinois	521	71.3	210	28.7
Louisiana	231	76.2	72	23.8
Maryland	422	59.7	285	40.3
Massachusetts	452	75.8	144	24.2
Mississippi	71	76.3	22	23.7
New Jersey	643	82.2	139	17.7
New Mexico	35	72.9	13	27.1
New York	41	75.9	13	24.1
Ohio	172	72.3	66	27.7
Rhode Island	106	82.8	22	17.2
Tennessee	75	58.6	53	41.4
All States	3396	73.7	1213	26.3

Note. Numbers and percentages are based on the total number of valid responses (missing = 26).

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Table 9. TA Survey: Q2a. Please indicate which of the online training models you completed (select all that apply[a]).

	Accessibility Features and Accommodations with Computer-Based Testing		Paper-based Test Administration		Computer-based Testing Test Administration		Setting Up an Infrastructure Trial/Dress Rehearsal		Technology Setup		Student Data Upload Overview		Emerging Technologies and Security with Computer-based Testing	
State	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Arizona (n = 218)	85	39.0	9	4.1	158	72.5	47	21.6	34	15.6	39	17.9	19	8.7
Arkansas (n = 272)	118	43.4	10	3.7	234	86.0	54	19.9	32	11.8	31	11.4	26	9.6
Colorado (n = 109)	54	49.5	5	4.6	88	80.7	9	8.3	20	18.3	21	19.3	12	11.0
D.C. (n = 21)	10	47.6	2	9.5	20	95.2	2	9.5	6	28.6	5	23.8	2	9.5
Florida (n = 5)	1	20.0	0	0.0	0	0.0	1	20.0	0	0.0	0	0.0	0	0.0
Illinois (n = 527)	192	36.4	27	5.1	414	78.6	66	12.5	69	13.1	59	11.2	32	6.1
Louisiana (n = 232)	101	43.5	8	3.4	189	81.5	29	12.5	35	15.1	26	11.2	22	9.5
Maryland (n = 425)	177	41.6	7	1.6	293	68.9	65	15.3	40	9.4	24	5.6	16	3.8
Massachusetts (n = 457)	194	42.5	8	1.8	369	80.7	61	13.3	56	12.3	48	10.5	38	8.3
Mississippi (n = 72)	18	25.0	4	5.6	58	80.6	7	9.7	7	9.7	5	6.9	2	2.8
New Jersey (n = 646)	250	38.7	21	3.3	503	77.9	144	22.3	87	13.5	85	13.2	50	7.7
New Mexico (n = 35)	12	34.3	0	0.0	23	65.7	9	25.7	6	17.1	7	20.0	5	14.3
New York (n = 41)	14	34.1	2	4.9	32	78.0	12	29.3	10	24.4	11	26.8	3	7.3
Ohio (n = 174)	77	44.3	7	4.0	138	79.3	29	16.7	28	16.1	31	17.8	12	6.9
Rhode Island (n = 106)	53	50.0	1	0.9	80	75.5	11	10.4	7	6.6	13	12.3	6	5.7
Tennessee (n = 75)	25	33.3	2	2.7	61	81.3	4	5.3	7	9.3	6	8.0	6	8.0
All States (n = 3422)	1385	40.5	113	3.3	2670	78.0	551	16.1	445	13.0	414	12.1	252	7.4

Note. Individuals who selected ‘No’ for item 2 (see Table 8) have been excluded from analyses. Individuals with missing responses to item 2 (see note in Table 8) who responded to item 2a were included.

[a] Percentages reported for “select all that apply” items should be interpreted with caution, as it is not possible to differentiate “missing” (i.e., skipped) vs. “not selected” responses.

Table 10. TA Survey: Q2b. The PARCC online training(s) effectively informed me of the protocol to follow when administering the assessment.

	Not Applicable		Strongly Disagree		Disagree		Agree		Strongly Agree		Mean	SD
State	n	%	n	%	n	%	n	%	n	%		
Arizona	16	7.8	12	5.8	38	18.4	124	60.2	16	7.8	2.76	0.69
Arkansas	11	4.1	10	3.7	39	14.6	190	71.2	17	6.4	2.84	0.59
Colorado	6	5.8	6	5.8	16	15.4	73	70.2	3	2.9	2.74	0.61
D.C.	2	10.5	0	0.0	2	10.5	15	78.9	0	0.0	2.88	0.33
Florida	0	0.0	0	0.0	1	20.0	4	80.0	0	0.0	2.80	0.45
Illinois	27	5.3	20	3.9	79	15.6	357	70.4	24	4.7	2.80	0.59
Louisiana	10	4.4	11	4.9	27	12.0	151	67.1	26	11.6	2.89	0.66
Maryland	45	11.3	22	5.5	51	12.8	259	65.1	21	5.3	2.79	0.64
Massachusetts	22	5.0	23	5.2	98	22.1	286	64.6	14	3.2	2.69	0.62
Mississippi	5	7.0	4	5.6	14	19.7	42	59.2	6	8.5	2.76	0.70
New Jersey	28	4.4	46	7.3	135	21.4	389	61.7	32	5.1	2.68	0.69
New Mexico	4	12.1	0	0.0	8	24.2	21	63.6	0	0.0	2.72	0.45
New York	2	4.9	1	2.4	6	14.6	28	68.3	4	9.8	2.90	0.60
Ohio	12	7.1	15	8.8	36	21.2	98	57.6	9	5.3	2.64	0.73
Rhode Island	5	5.0	5	5.0	24	23.8	59	58.4	8	7.9	2.73	0.69
Tennessee	3	4.3	7	10.0	11	15.7	44	62.9	5	7.1	2.70	0.76
All States	199	6.0	183	5.6	586	17.8	2144	65.0	185	5.6	2.75	0.65

Note. Numbers and percentages are based on the total number of valid responses (missing = 125). Individuals who selected 'No' for item 2 (see Table 8) have been excluded from analyses. Individuals with missing responses to item 2 (see note in Table 8) who responded to item 2b were included. Means and standard deviations were computed based on a 4-point scale (where Strongly Disagree = 1 and Strongly Agree = 4) with NA recoded as missing.

Table 11. TA Survey: Q2c. The PARCC online training(s) prepared me to resolve basic problems related to technology (e.g., logging students in, exiting the test, etc.).

	Not Applicable		Strongly Disagree		Disagree		Agree		Strongly Agree		Mean	SD
State	n	%	n	%	n	%	n	%	n	%		
Arizona	23	11.2	24	11.7	59	28.6	91	44.2	9	4.4	2.46	0.78
Arkansas	16	6.0	23	8.6	91	34.1	130	48.7	7	2.6	2.48	0.70
Colorado	9	8.6	17	16.2	34	32.4	41	39.0	4	3.8	2.33	0.82
D.C.	2	10.5	2	10.5	3	15.8	12	63.2	0	0.0	2.59	0.71
Florida	1	20.0	1	20.0	1	20.0	1	20.0	1	20.0	2.50	1.29
Illinois	55	10.9	64	12.7	148	29.4	227	45.0	10	2.0	2.41	0.76
Louisiana	18	8.0	18	8.0	47	21.0	126	56.3	15	6.7	2.67	0.74
Maryland	51	12.8	53	13.4	98	24.7	183	46.1	12	3.0	2.45	0.79
Massachusetts	32	7.3	64	14.5	131	29.8	206	46.8	7	1.6	2.38	0.77
Mississippi	6	8.6	4	5.7	20	28.6	34	48.6	6	8.6	2.66	0.74
New Jersey	40	6.4	97	15.4	205	32.6	270	42.9	17	2.7	2.35	0.78
New Mexico	5	14.7	5	14.7	11	32.4	13	38.2	0	0.0	2.28	0.75
New York	2	4.9	6	14.6	10	24.4	22	53.7	1	2.4	2.46	0.79
Ohio	19	11.1	39	22.8	39	22.8	71	41.5	3	1.8	2.25	0.86
Rhode Island	7	7.1	18	18.2	39	39.4	33	33.3	2	2.0	2.21	0.78
Tennessee	4	5.8	15	21.7	12	17.4	34	49.3	4	5.8	2.42	0.92
All States	290	8.8	452	13.8	949	28.9	1498	45.6	98	3.0	2.41	0.78

Note. Numbers and percentages are based on the total number of valid responses (missing = 135). Individuals who selected ‘No’ for item 2 (see Table 8) have been excluded from analyses. Individuals with missing responses to item 2 (see note in Table 8) who responded to item 2c were included. Means and standard deviations were computed based on a 4-point scale (where Strongly Disagree = 1 and Strongly Agree = 4) with NA recoded as missing.

Table 12. TA Survey: Q3. Did you receive any other training, aside from the online PARCC training modules?(select all that apply[a]):

	No, I did not receive any other training.	
State	n	%
Arizona	72	24.4
Arkansas	38	12.1
Colorado	12	7.9
D.C.	6	19.4
Florida	2	28.6
Illinois	215	29.2
Louisiana	28	9.2
Maryland	82	11.5
Massachusetts	150	25.0
Mississippi	16	17.0
New Jersey	106	13.5
New Mexico	13	27.1
New York	23	42.6
Ohio	74	30.8
Rhode Island	32	25.0
Tennessee	30	23.4
All States	899	19.4

Note. [a] Percentages reported for “select all that apply” items should be interpreted with caution, as it is not possible to differentiate “missing” (i.e., skipped) vs. “not selected” responses.

Table 13. TA Survey: Q3. Did you receive any other training, aside from the online PARCC training modules?(select all that apply [a]):

	Training from State		Training from District		Training from School	
State	n	%	n	%	n	%
Arizona (n = 223)	11	4.9	111	49.8	105	47.1
Arkansas (n = 276)	26	9.4	157	56.9	134	48.6
Colorado (n = 140)	18	12.9	72	51.4	64	45.7
D.C. (n = 25)	0	0.0	4	16.0	17	68.0
Florida (n = 5)	0	0.0	1	20.0	4	80.0
Illinois (n = 522)	28	5.4	295	56.5	225	43.1
Louisiana (n = 276)	31	11.2	89	32.2	187	67.8
Maryland (n = 628)	4	0.6	296	47.1	379	60.4
Massachusetts (n = 451)	32	7.1	160	35.5	298	66.1
Mississippi (n = 78)	2	2.6	22	28.2	59	75.6
New Jersey (n = 679)	24	3.5	372	54.8	366	53.9
New Mexico (n = 35)	2	5.7	20	57.1	14	40.0
New York (n = 31)	5	16.1	11	35.5	15	48.4
Ohio (n = 166)	12	7.2	94	56.6	61	36.7
Rhode Island (n = 96)	21	21.9	30	31.3	58	60.4
Tennessee (n = 98)	4	4.1	36	36.7	59	60.2
All States (n = 3736)	220	5.9	1773	47.5	2049	54.8

Note. Individuals who selected 'No other training' for this item (see Table 12) have been excluded from analyses.
[a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Test Administration Experience

Table 14. TA Survey: Q1. The policies and procedures within the Test Administrator Manual were easy for me to understand.

	Strongly Disagree		Disagree		Agree		Strongly Agree	
State	n	%	n	%	n	%	n	%
Arizona	8	2.9	57	20.5	195	70.1	18	6.5
Arkansas	24	8.1	71	23.9	186	63.6	13	4.4
Colorado	7	4.7	46	30.9	92	61.7	4	2.7
D.C.	0	0.0	2	7.4	23	85.2	2	7.4
Florida	0	0.0	2	28.6	2	28.6	3	42.9
Illinois	29	4.1	164	23.1	478	67.4	38	5.4
Louisiana	14	4.9	43	15.1	195	68.7	32	11.3
Maryland	54	7.9	135	19.7	449	65.5	47	6.9
Massachusetts	18	3.2	143	25.2	382	67.3	25	4.4
Mississippi	6	6.8	16	18.2	59	67.0	7	8.0
New Jersey	45	6.1	202	27.3	459	61.9	35	4.7
New Mexico	2	4.4	10	22.2	32	71.1	1	2.2
New York	1	2.0	15	30.0	32	64.0	2	4.0
Ohio	15	6.5	56	24.3	145	63.0	14	6.1
Rhode Island	5	4.0	41	32.8	74	59.2	5	4.0
Tennessee	9	7.3	28	22.8	74	60.2	12	9.8
All States	238	5.4	1034	23.4	2882	65.3	258	5.8

Note. Numbers and percentages are based on the total number of valid responses (missing = 223).

Table 15. TA Survey: Q2. The instructions (including scripts for administering the assessment) within the Test Administrator Manual were easy for me to implement.

	Strongly Disagree		Disagree		Agree		Strongly Agree	
State	n	%	n	%	n	%	n	%
Arizona	10	3.6	72	25.8	169	60.6	28	10.0
Arkansas	32	10.8	96	32.3	160	53.9	9	3.0
Colorado	24	16.3	50	34.0	71	48.3	2	1.4
D.C.	0	0.0	7	25.9	19	70.4	1	3.7
Florida	1	14.3	3	42.9	2	28.6	1	14.3
Illinois	61	8.7	188	26.7	415	58.9	40	5.7
Louisiana	21	7.4	63	22.2	162	57.0	38	13.4
Maryland	71	10.3	198	28.8	372	54.1	46	6.7
Massachusetts	28	4.9	138	24.3	370	65.1	32	5.6
Mississippi	6	6.7	19	21.3	55	61.8	9	10.1
New Jersey	63	8.5	246	33.1	399	53.7	35	4.7
New Mexico	3	6.5	16	34.8	26	56.5	1	2.2
New York	2	4.2	11	22.9	32	66.7	3	6.3
Ohio	21	9.1	61	26.5	135	58.7	13	5.7
Rhode Island	20	16.0	44	35.2	56	44.8	5	4.0
Tennessee	11	8.9	30	24.4	71	57.7	11	8.9
All States	375	8.5	1245	28.2	2516	57.1	274	6.2

Note. Numbers and percentages are based on the total number of valid responses (missing = 225).

Table 16. TA Survey: Q3. Students appeared to understand the instructions I read to them during test administration.

	Strongly Disagree		Disagree		Agree		Strongly Agree	
State	n	%	n	%	n	%	n	%
Arizona	14	5.0	61	21.8	186	66.4	19	6.8
Arkansas	18	6.1	78	26.4	188	63.5	12	4.1
Colorado	14	9.5	37	25.2	93	63.3	3	2.0
D.C.	3	11.5	7	26.9	15	57.7	1	3.8
Florida	0	0.0	2	28.6	4	57.1	1	14.3
Illinois	43	6.1	138	19.6	486	68.9	38	5.4
Louisiana	7	2.5	54	18.9	183	64.2	41	14.4
Maryland	32	4.7	136	19.8	472	68.6	48	7.0
Massachusetts	23	4.1	115	20.4	403	71.3	24	4.2
Mississippi	5	5.6	18	20.2	57	64.0	9	10.1
New Jersey	47	6.3	149	20.1	511	68.9	35	4.7
New Mexico	3	6.5	8	17.4	34	73.9	1	2.2
New York	0	0.0	14	28.6	31	63.3	4	8.2
Ohio	26	11.3	51	22.1	143	61.9	11	4.8
Rhode Island	13	10.4	27	21.6	81	64.8	4	3.2
Tennessee	7	5.7	24	19.5	79	64.2	13	10.6
All States	256	5.8	921	20.9	2968	67.3	265	6.0

Note. Numbers and percentages are based on the total number of valid responses (missing = 225).

Table 17. TA Survey: Q4. The instructions I read to the students covered all of the information necessary to take the test.

	Strongly Disagree		Disagree		Agree		Strongly Agree	
State	n	%	n	%	n	%	n	%
Arizona	9	3.2	60	21.7	187	67.5	21	7.6
Arkansas	22	7.4	103	34.7	162	54.5	10	3.4
Colorado	10	6.8	42	28.8	90	61.6	4	2.7
D.C.	3	11.5	5	19.2	16	61.5	2	7.7
Florida	0	0.0	2	28.6	4	57.1	1	14.3
Illinois	54	7.7	179	25.4	446	63.4	25	3.6
Louisiana	14	5.0	65	23.3	170	60.9	30	10.8
Maryland	41	6.0	211	30.8	386	56.4	46	6.7
Massachusetts	35	6.2	179	31.5	333	58.6	21	3.7
Mississippi	10	11.4	23	26.1	46	52.3	9	10.2
New Jersey	46	6.2	246	33.3	417	56.5	29	3.9
New Mexico	2	4.3	17	37.0	26	56.5	1	2.2
New York	3	6.3	16	33.3	27	56.3	2	4.2
Ohio	23	10.0	51	22.3	144	62.9	11	4.8
Rhode Island	4	3.2	39	31.2	78	62.4	4	3.2
Tennessee	7	5.7	35	28.5	73	59.3	8	6.5
All States	285	6.5	1274	29.0	3607	59.4	225	5.1

Note. Numbers and percentages are based on the total number of valid responses (missing = 244).

Table 18. TA Survey: Q1-4 Scale Means for Test Administration Experience

State	Mean	Standard Deviation
Arizona	2.78	0.51
Arkansas	2.58	0.57
Colorado	2.54	0.53
D.C.	2.73	0.49
Florida	2.82	0.67
Illinois	2.68	0.54
Louisiana	2.83	0.61
Maryland	2.68	0.58
Massachusetts	2.70	0.49
Mississippi	2.73	0.64
New Jersey	2.63	0.53
New Mexico	2.63	0.44
New York	2.71	0.48
Ohio	2.63	0.59
Rhode Island	2.57	0.51
Tennessee	2.72	0.51
All States	2.67	0.55

Note. Mean scale scores computed by taking the mean of items 1-4, which were rated on a 4-point agreement scale where 1 = Strongly Disagree and 4 = Strongly Agree. Overall internal consistency reliability estimate is $\alpha = .82$.

Table 19. TA Survey: Q6. Please identify the types of technology-related problems that occurred during test administration (select all that apply [a]). If a problem occurred, indicate how it was resolved.

No technology-related problems happened during the test.

State	Selected n	Selected %
Arizona	41	13.9
Arkansas	45	14.3
Colorado	16	10.5
D.C.	4	12.9
Florida	2	28.6
Illinois	91	12.3
Louisiana	45	14.8
Maryland	90	12.7
Massachusetts	74	12.3
Mississippi	13	13.8
New Jersey	111	14.1
New Mexico	4	8.3
New York	7	13.0
Ohio	27	11.3
Rhode Island	12	9.4
Tennessee	7	5.5
All States	589	12.8

Note. Numbers and percentages are collapsed across items with variable names CBT_NoProb_Occur to CBT_NoProb_NotRes.
[a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Table 20. TA Survey: Q6. Please identify the types of technology-related problems that occurred during test administration (select all that apply [a]). If a problem occurred, indicate how it was resolved.

Students had difficulty logging into the assessment.

	Problem Occurred During Administration		Resolved Problem on My Own		Resolved Problem with Assistance		Problem was not Resolved	
State	n	%	n	%	n	%	n	%
Arizona (n = 254)	137	53.9	62	24.4	136	53.5	17	6.7
Arkansas (n = 269)	123	45.7	63	23.4	128	47.6	13	4.8
Colorado (n = 136)	83	61.0	47	34.6	75	55.1	8	5.9
D.C. (n = 27)	15	55.6	6	22.2	15	55.6	1	3.7
Florida (n = 5)	3	60.0	1	20.0	3	60.0	0	0.0
Illinois (n = 646)	360	55.7	158	24.5	366	56.7	34	5.3
Louisiana (n = 259)	112	43.2	53	20.5	120	46.3	10	3.9
Maryland (n = 620)	340	54.8	163	26.3	319	51.5	15	2.4
Massachusetts (n = 527)	286	54.3	126	23.9	310	58.8	14	2.7
Mississippi (n = 81)	34	42.0	12	14.8	44	54.3	4	4.9
New Jersey (n = 674)	323	47.9	131	19.4	343	50.9	15	2.2
New Mexico (n = 44)	25	56.8	11	25.0	25	56.8	5	11.4
New York (n = 47)	21	44.7	12	25.5	13	27.7	6	12.8
Ohio (n = 213)	122	57.3	60	28.2	111	52.1	13	6.1
Rhode Island (n = 116)	70	60.3	25	21.6	80	69.0	2	1.7
Tennessee (n = 121)	69	57.0	35	28.9	63	52.1	5	4.1
All States (n = 4046)	2127	52.6	965	23.9	2155	53.3	162	4.0

(continued)

Table 20 cont. TA Survey: Q6. Please identify the types of technology-related problems that occurred during test administration (select all that apply [a]). If a problem occurred, indicate how it was resolved.

Device(s) stopped working.

	Problem Occurred During Administration		Resolved Problem on My Own		Resolved Problem with Assistance		Problem was not Resolved	
State	n	%	n	%	n	%	n	%
Arizona (n = 254)	114	44.9	57	22.4	105	41.3	21	8.3
Arkansas (n = 269)	99	36.8	41	15.2	85	31.6	15	5.6
Colorado (n = 136)	65	47.8	40	29.4	46	33.8	18	13.2
D.C. (n = 27)	11	40.7	6	22.2	8	29.6	2	7.4
Florida (n = 5)	4	80.0	1	20.0	3	60.0	0	0.0
Illinois (n = 646)	254	39.3	108	16.7	238	36.8	55	8.5
Louisiana (n = 259)	109	42.1	37	14.3	100	38.6	23	8.9
Maryland (n = 620)	316	51.0	126	20.3	249	40.2	50	8.1
Massachusetts (n = 527)	217	41.2	76	14.4	221	41.9	39	7.4
Mississippi (n = 81)	36	44.4	14	17.3	37	45.7	8	9.9
New Jersey (n = 674)	270	40.1	88	13.1	274	40.7	52	7.7
New Mexico (n = 44)	23	52.3	9	20.5	18	40.9	6	13.6
New York (n = 47)	22	46.8	6	12.8	20	42.6	3	6.4
Ohio (n = 213)	103	48.4	39	18.3	83	39.0	26	12.2
Rhode Island (n = 116)	63	54.3	20	17.2	63	54.3	7	6.0
Tennessee (n = 121)	58	47.9	30	24.8	47	38.8	9	7.4
All States (n = 4046)	1769	43.7	698	17.3	1601	39.6	335	8.3

Device(s) worked slowly.

	Problem Occurred During Administration		Resolved Problem on My Own		Resolved Problem with Assistance		Problem was not Resolved	
State	n	%	n	%	n	%	n	%
Arizona (n = 254)	85	33.5	41	16.1	53	20.9	26	10.2
Arkansas (n = 269)	73	27.1	27	10.0	46	17.1	15	5.6
Colorado (n = 136)	47	34.6	17	12.5	23	16.9	26	19.1
D.C. (n = 27)	10	37.0	10	37.0	2	7.4	2	7.4
Florida (n = 5)	3	60.0	1	20.0	2	40.0	1	20.0
Illinois (n = 646)	201	31.1	83	12.8	130	20.1	76	11.8
Louisiana (n = 259)	72	27.8	23	8.9	40	15.4	31	12.0
Maryland (n = 620)	268	43.2	118	19.0	136	21.9	87	14.0
Massachusetts (n = 527)	162	30.7	54	10.2	97	18.4	61	11.6
Mississippi (n = 81)	20	24.7	7	8.6	11	13.6	8	9.9
New Jersey (n = 674)	192	28.5	66	9.8	137	20.3	55	8.2
New Mexico (n = 44)	20	45.5	5	11.4	8	18.2	9	20.5
New York (n = 47)	19	40.4	4	8.5	4	8.5	10	21.3
Ohio (n = 213)	77	36.2	23	10.8	44	20.7	38	17.8
Rhode Island (n = 116)	41	35.3	19	16.4	26	22.4	6	5.2
Tennessee (n = 121)	52	43.0	17	14.0	29	24.0	15	12.4
All States (n = 4046)	1347	33.3	515	12.7	792	19.6	467	11.5

(continued)

Table 20 cont. TA Survey: Q6. Please identify the types of technology-related problems that occurred during test administration (select all that apply [a]). If a problem occurred, indicate how it was resolved.

Lost internet connection during administration.

	Problem Occurred During Administration		Resolved Problem on My Own		Resolved Problem with Assistance		Problem was not Resolved	
State	n	%	n	%	n	%	n	%
Arizona (n = 254)	56	22.0	19	7.5	48	18.9	16	6.3
Arkansas (n = 269)	38	14.1	15	5.6	37	13.8	2	0.7
Colorado (n = 136)	34	25.0	15	11.0	25	18.4	6	4.4
D.C. (n = 27)	3	11.1	2	7.4	3	11.1	0	0.0
Florida (n = 5)	1	20.0	0	0.0	1	20.0	0	0.0
Illinois (n = 646)	134	20.7	51	7.9	115	17.8	24	3.7
Louisiana (n = 259)	58	22.4	31	12.0	36	13.9	12	4.6
Maryland (n = 620)	138	22.3	51	8.2	107	17.3	17	2.7
Massachusetts (n = 527)	83	15.7	36	6.8	76	14.4	14	2.7
Mississippi (n = 81)	15	18.5	8	9.9	12	14.8	3	3.7
New Jersey (n = 674)	104	15.4	40	5.9	121	18.0	16	2.4
New Mexico (n = 44)	12	27.3	5	11.4	8	18.2	6	13.6
New York (n = 47)	12	25.5	2	4.3	8	17.0	4	8.5
Ohio (n = 213)	42	19.7	15	7.0	39	18.3	12	5.6
Rhode Island (n = 116)	31	26.7	8	6.9	34	29.3	4	3.4
Tennessee (n = 121)	29	24.0	11	9.1	26	21.5	6	5.0
All States	792	19.6	309	7.6	698	17.3	142	3.5

Note. Individuals who selected N/A for this item set (see Table 19) have been excluded from analyses.
[a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Test Environment

Table 21. TA Survey: Q1. Were there any problems in the physical environment during the test session that might have negatively affected student performance?

	Yes		No	
State	n	%	n	%
Arizona	54	19.1	229	80.9
Arkansas	16	5.3	288	94.7
Colorado	16	10.9	131	89.1
D.C.	2	7.4	25	92.6
Florida	0	0.0	7	100.0
Illinois	104	14.7	604	85.3
Louisiana	23	8.0	263	92.0
Maryland	74	10.8	613	89.2
Massachusetts	80	14.0	493	86.0
Mississippi	12	13.5	77	86.5
New Jersey	97	13.0	651	87.0
New Mexico	5	10.9	41	89.1
New York	9	17.3	43	82.7
Ohio	41	17.6	192	82.4
Rhode Island	22	17.6	103	82.4
Tennessee	11	8.9	112	91.1
All States	569	12.8	3875	87.2

Note. Numbers and percentages are based on the total number of valid responses (missing = 191).

Table 22. TA Survey: Q1a. Please indicate the nature of the problem in the physical environment.(select all that apply[a])

	Computer Problems		Lighting Problems		Other	
State	n	%	n	%	n	%
Arizona (n = 66)	21	31.8	5	7.6	35	53.0
Arkansas (n = 26)	4	15.4	0	0.0	10	38.5
Colorado (n = 21)	8	38.1	0	0.0	8	38.1
D.C. (n = 6)	0	0.0	0	0.0	1	16.7
Florida (n = 0)	-	-	-	-	-	-
Illinois (n = 133)	42	31.6	1	0.8	69	51.9
Louisiana (n = 41)	4	9.8	0	0.0	17	41.5
Maryland (n = 97)	26	26.8	2	2.1	45	46.4
Massachusetts (n = 108)	38	35.2	3	2.8	45	41.7
Mississippi (n = 17)	2	11.8	0	0.0	10	58.8
New Jersey (n = 134)	41	30.6	2	1.5	56	41.8
New Mexico (n = 7)	1	14.3	0	0.0	5	71.4
New York (n = 11)	7	63.6	1	9.1	3	27.3
Ohio (n = 48)	20	41.7	1	2.1	28	58.3
Rhode Island (n = 25)	12	48.0	2	8.0	11	44.0
Tennessee (n = 16)	5	31.3	1	6.3	5	31.3
All States	232	30.5	18	2.4	349	45.9

Note. Individuals who selected 'No' for item 1 (see Table 21) have been excluded from analyses. Individuals with missing responses to item 1 (see note in Table 21) who responded to item 1a were included in analyses.

[a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

PARCC's Timing Policy

Table 23. TA Survey: Q1. Indicate the proportion of students who needed the Additional Time Allowed.

	None		Less than ⅓		Approximately ½		More than ½	
State	n	%	n	%	n	%	n	%
Arizona	75	26.8	133	47.5	43	15.4	29	10.4
Arkansas	129	42.6	138	45.5	25	8.3	11	3.6
Colorado	42	29.2	73	50.7	19	13.2	10	6.9
D.C.	7	26.9	7	26.9	9	34.6	3	11.5
Florida	2	28.6	4	57.1	0	0.0	1	14.3
Illinois	220	31.5	343	49.1	84	12.0	52	7.4
Louisiana	91	32.2	139	49.1	23	8.1	30	10.6
Maryland	260	38.3	312	46.0	64	9.4	42	6.2
Massachusetts	156	27.3	264	46.2	79	13.8	72	12.6
Mississippi	41	45.6	34	37.8	11	12.2	4	4.4
New Jersey	261	35.3	334	45.2	72	9.7	72	9.7
New Mexico	15	32.6	23	50.0	5	10.9	3	6.5
New York	12	22.6	30	56.6	5	9.4	6	11.3
Ohio	108	46.2	89	38.0	20	8.5	17	7.3
Rhode Island	40	32.8	60	49.2	15	12.3	7	5.7
Tennessee	44	36.1	59	48.4	8	6.6	11	9.0
All States	1506	34.2	2044	46.4	482	10.9	371	8.4

Note. Numbers and percentages are based on the total number of valid responses (missing = 232).

Table 24. TA Survey: Q1a. Please indicate how much additional time was used by the majority of these students.

	Less than 10 minutes		Between 10 – 20 minutes		More than 20 minutes	
State	n	%	n	%	n	%
Arizona	38	18.9	112	55.7	51	25.4
Arkansas	51	29.3	102	58.6	21	12.1
Colorado	28	27.7	60	59.4	13	12.9
D.C.	0	0.0	10	52.6	9	47.4
Florida	0	0.0	4	80.0	1	20.0
Illinois	108	22.5	273	57.0	98	20.5
Louisiana	29	15.3	106	55.8	55	28.9
Maryland	134	32.2	213	51.2	69	16.6
Massachusetts	68	16.6	217	52.9	125	30.5
Mississippi	8	17.0	27	57.4	12	25.5
New Jersey	121	26.0	246	52.8	99	21.2
New Mexico	4	12.9	20	64.5	7	22.6
New York	8	20.0	17	42.5	15	37.5
Ohio	29	23.0	59	46.8	38	30.2
Rhode Island	20	24.4	47	57.3	15	18.3
Tennessee	23	29.5	45	57.7	10	12.8
All States	670	23.4	1559	54.4	639	22.3

Note. Numbers and percentages are based on the total number of valid responses (missing = 261). Individuals who selected 'None' for item 1 (see Table 23) have been excluded from analyses. Individuals with missing responses to item 1 (see note Table 23) who responded to item 1a were included in analyses.

Accessibility Features and Accommodations

Table 25. TA Survey: Q1. Are you aware that there is an approved PARCC Accessibility Features and Accommodations Manual?

	Yes		No	
State	n	%	n	%
Arizona	183	66.3	93	33.7
Arkansas	218	72.2	84	27.8
Colorado	99	68.8	45	31.3
D.C.	19	70.4	8	29.6
Florida	3	42.9	4	57.1
Illinois	487	69.4	215	30.6
Louisiana	184	64.3	102	35.7
Maryland	486	71.8	191	28.2
Massachusetts	385	67.9	182	32.1
Mississippi	57	64.8	31	35.2
New Jersey	494	67.2	241	32.8
New Mexico	31	67.4	15	32.6
New York	31	59.6	21	40.4
Ohio	159	67.9	75	32.1
Rhode Island	106	86.2	17	13.8
Tennessee	91	74.6	31	25.4
All States	3037	69.1	1357	30.9

Note. Numbers and percentages are based on the total number of valid responses (missing = 241).

Table 26. TA Survey: Q1a. Did you read the "Accessibility Features and Accommodations Manual" prior to administration?

	Yes		No	
State	n	%	n	%
Arizona	124	67.0	61	33.0
Arkansas	142	64.8	77	35.2
Colorado	71	71.7	28	28.3
D.C.	13	68.4	6	31.6
Florida	3	100.0	0	0.0
Illinois	328	68.2	153	31.8
Louisiana	146	80.2	36	19.8
Maryland	337	69.2	150	30.8
Massachusetts	268	69.8	116	30.2
Mississippi	36	62.1	22	37.9
New Jersey	347	70.2	147	29.8
New Mexico	20	64.5	11	35.5
New York	24	75.0	8	25.0
Ohio	115	73.2	42	26.8
Rhode Island	80	76.9	24	23.1
Tennessee	60	65.9	31	34.1
All States	2117	69.9	913	30.1

Note. Numbers and percentages are based on the total number of valid responses (missing = 248). Individuals who selected 'No' for item 1 (see Table 25) have been excluded from analyses. Individuals with missing responses to item 1 (see note in Table 25) who responded to item 1a were included in analyses.

Table 27. TA Survey: Q2. Are you aware there is approved PARCC guidance on "Computer-Based Accessibility Features and Embedded Accommodations"?

	Yes		No	
State	n	%	n	%
Arizona	153	55.2	124	44.8
Arkansas	187	62.1	114	37.9
Colorado	91	63.2	53	36.8
D.C.	14	51.9	13	48.1
Florida	3	42.9	4	57.1
Illinois	391	56.3	304	43.7
Louisiana	179	63.5	103	36.5
Maryland	427	63.4	247	36.6
Massachusetts	325	58.2	233	41.8
Mississippi	44	50.0	44	50.0
New Jersey	382	52.4	347	47.6
New Mexico	21	45.7	25	54.3
New York	26	51.0	25	49.0
Ohio	128	55.4	103	44.6
Rhode Island	88	73.3	32	26.7
Tennessee	77	62.6	46	37.4
All States	2540	58.3	1819	41.7

Note. Numbers and percentages are based on the total number of valid responses (missing = 276).

Table 28. TA Survey: Q2a. Did you read the "Computer-Based Accessibility Features and Embedded Accommodations Available for PARCC Field Test"?

	Yes		No	
State	n	%	n	%
Arizona	102	68.5	47	31.5
Arkansas	129	69.7	56	30.3
Colorado	69	77.5	20	22.5
D.C.	12	92.3	1	7.7
Florida	3	100.0	0	0.0
Illinois	271	68.8	123	31.2
Louisiana	148	81.8	33	18.2
Maryland	321	76.2	100	23.8
Massachusetts	230	69.9	99	30.1
Mississippi	29	64.4	16	35.6
New Jersey	256	68.1	120	31.9
New Mexico	15	71.4	6	28.6
New York	20	76.9	6	23.1
Ohio	91	74.0	32	26.0
Rhode Island	70	77.8	20	22.2
Tennessee	52	69.3	23	30.7
All States	1821	72.1	703	27.9

Note. Numbers and percentages are based on the total number of valid responses (missing = 292). Individuals who selected 'No' for item 2 (see Table 27) have been excluded from analyses. Individuals with missing responses to item 2 (see note in Table 27) that responded to item 2a were included in analyses.

Table 29. TA Survey: Q3. Indicate whether you administered any of the following accessibility features or accommodations to your students during the Field Test Administration (select all that apply [a]).

	Not Applicable	
State	n	%
Arizona	135	45.8
Arkansas	163	51.9
Colorado	82	53.9
D.C.	11	35.5
Florida	2	28.6
Illinois	367	49.8
Louisiana	155	51.0
Maryland	323	45.5
Massachusetts	298	49.6
Mississippi	48	51.1
New Jersey	423	53.9
New Mexico	30	62.5
New York	27	50.0
Ohio	121	50.4
Rhode Island	77	60.2
Tennessee	71	55.5
All States	2335	50.4

Note. [a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Table 30. TA Survey: Q3. Indicate whether you administered any of the following accessibility features or accommodations to your students during the Field Test Administration (select all that apply[a]).

	Clarify Directions		Repeat Directions		Redirect a Student		Human Reader Math		Human Reader English		Scribe English		Scribe Math	
State	n	%	n	%	n	%	n	n	%	n	%	n	%	n
Arizona (n = 160)	82	51.2	76	47.5	78	48.8	18	11.3	2	1.3	2	1.3	1	0.6
Arkansas (n = 151)	53	35.1	72	47.7	52	34.4	17	11.3	12	7.9	0	0.0	0	0.0
Colorado (n = 70)	37	52.9	36	51.4	35	50.0	4	5.7	3	4.3	2	2.9	1	1.4
D.C. (n = 20)	8	40.0	12	60.0	9	45.0	4	20.0	0	0.0	0	0.0	0	0.0
Florida (n = 5)	2	40.0	1	20.0	0	0.0	0	0.0	1	20.0	1	20.0	0	0.0
Illinois (n = 370)	192	51.9	177	47.8	173	46.8	46	12.4	19	5.1	16	4.3	12	3.2
Louisiana (n = 149)	55	36.9	87	58.4	57	38.3	23	15.4	29	19.5	5	3.4	2	1.3
Maryland (n = 387)	109	28.2	162	41.9	134	34.6	75	19.4	96	24.8	72	18.6	34	8.8
Massachusetts (n = 303)	178	58.7	137	45.2	140	46.2	42	13.9	13	4.3	14	4.6	10	3.3
Mississippi (n = 46)	9	19.6	14	30.4	19	41.3	8	17.4	6	13.0	0	0.0	0	0.0
New Jersey (n = 362)	194	53.6	191	52.8	138	38.1	31	8.6	33	9.1	9	2.5	3	0.8
New Mexico (n = 18)	5	27.8	9	50.0	6	33.3	2	11.1	1	5.6	1	5.6	0	0.0
New York (n = 27)	14	51.9	16	59.3	14	51.9	7	25.9	2	7.4	0	0.0	1	3.7
Ohio (n = 119)	60	50.4	57	47.9	47	39.5	17	14.3	15	12.6	3	2.5	5	4.2
Rhode Island (n = 51)	30	58.8	22	43.1	20	39.2	7	13.7	4	7.8	2	3.9	3	5.9
Tennessee (n = 57)	20	35.1	14	24.6	14	24.6	7	12.3	5	8.8	0	0.0	0	0.0
All States (n = 2300)	1049	45.6	1086	47.2	940	40.9	308	13.4	242	10.5	127	5.5	72	3.1

Note. Individuals who selected N/A for this item (see Table 29) have been excluded from analyses.

[a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Table 31. TA Survey: Q4. If you served as a human reader (read text aloud) to a student and/or served as a scribe, please indicate if you read the following documents (select all that apply[a]):

	Not Applicable	
State	n	%
Arizona	199	67.5
Arkansas	232	73.9
Colorado	115	75.7
D.C.	15	48.4
Florida	4	57.1
Illinois	522	70.8
Louisiana	208	68.4
Maryland	456	64.2
Massachusetts	414	68.9
Mississippi	65	69.1
New Jersey	542	69.0
New Mexico	40	83.3
New York	38	70.4
Ohio	164	68.3
Rhode Island	94	73.4
Tennessee	100	78.1
All States	3212	69.3

Note. [a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Table 32. TA Survey: Q4. If you served as a human reader (read text aloud) to a student and/or served as a scribe, please indicate if you read the following documents (select all that apply[a]):

	Appendix B		Appendix C		Appendix I		Appendix J	
State	n	%	n	%	n	%	n	%
Arizona (n = 160)	16	16.7	0	0.0	0	0.0	9	9.4
Arkansas (n = 151)	20	24.4	1	1.2	7	8.5	6	7.3
Colorado (n = 70)	3	8.1	2	5.4	1	2.7	1	2.7
D.C. (n = 20)	1	6.3	0	0.0	1	6.3	1	6.3
Florida (n = 5)	0	0.0	0	0.0	0	0.0	0	0.0
Illinois (n = 370)	28	13.0	13	6.0	6	2.8	18	8.4
Louisiana (n = 149)	29	30.2	8	8.3	13	13.5	8	8.3
Maryland (n = 387)	72	28.3	65	25.6	57	22.4	35	13.8
Massachusetts (n = 303)	34	18.2	14	7.5	11	5.9	24	12.8
Mississippi (n = 46)	4	13.8	0	0.0	1	3.4	4	13.8
New Jersey (n = 362)	41	16.9	7	2.9	10	4.1	9	3.7
New Mexico (n = 18)	1	12.5	1	12.5	1	12.5	1	12.5
New York (n = 27)	3	18.8	0	0.0	0	0.0	4	25.0
Ohio (n = 119)	19	25.0	12	15.8	7	9.2	10	13.2
Rhode Island (n = 51)	6	17.6	0	0.0	3	8.8	2	5.9
Tennessee (n = 57)	5	17.9	3	10.7	3	10.7	3	10.7
All States (n = 1423)	283	19.9	126	8.9	122	8.6	135	9.5

Note. Individuals who selected N/A for this item (see Table 31) have been excluded from analyses.
[a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Table 33. TA Survey: Q5. Did you receive training on administering accessibility features/accommodations from your school or district?

	Yes		No	
State	n	%	n	%
Arizona	88	34.0	171	66.0
Arkansas	158	56.2	123	43.8
Colorado	52	39.1	81	60.9
D.C.	12	48.0	13	52.0
Florida	2	50.0	2	50.0
Illinois	175	26.3	491	73.7
Louisiana	155	55.8	123	44.2
Maryland	384	59.2	265	40.8
Massachusetts	180	33.1	363	66.9
Mississippi	34	40.0	51	60.0
New Jersey	276	39.2	428	60.8
New Mexico	10	22.2	35	77.8
New York	11	22.0	39	78.0
Ohio	70	32.9	143	67.1
Rhode Island	36	30.5	82	69.5
Tennessee	35	30.7	79	69.3
All States	1681	40.3	2492	59.7

Note. Numbers and percentages are based on the total number of valid responses (missing = 462).

Sample Items/Tutorials

Table 34. TA Survey: Q1. Did the students in your session(s) practice with PARCC sample items prior to administration?

	Yes		No		Not Sure/Don't Know	
State	n	%	n	%	n	%
Arizona	206	78.0	40	15.2	18	6.8
Arkansas	242	83.7	28	9.7	19	6.6
Colorado	102	74.5	25	18.2	10	7.3
D.C.	18	72.0	4	16.0	3	12.0
Florida	4	100	0	0.0	0	0.0
Illinois	534	78.8	88	13.0	56	8.3
Louisiana	203	72.2	41	14.6	37	13.2
Maryland	500	76.2	84	12.8	72	11.0
Massachusetts	430	78.8	57	10.4	59	10.8
Mississippi	54	62.1	16	18.4	17	19.5
New Jersey	589	81.4	64	8.8	71	9.8
New Mexico	35	77.8	8	17.8	2	4.4
New York	36	73.5	10	20.4	3	6.1
Ohio	150	67.6	52	23.4	20	9.0
Rhode Island	102	85.7	12	10.1	5	4.2
Tennessee	71	62.3	31	27.2	12	10.5
All States	3281	77.3	561	13.2	404	9.5

Note. Numbers and percentages are based on the total number of valid responses (missing = 389).

Table 35. TA Survey: Q2. Did the students in your session(s) complete the PARCC tutorial prior to administration?

	Yes		No		Not Sure/Don't Know	
State	n	%	n	%	n	%
Arizona	208	78.8	34	12.9	22	8.3
Arkansas	259	88.7	15	5.1	18	6.2
Colorado	61	43.9	42	30.2	36	25.9
D.C.	13	52.0	7	28.0	5	20.0
Florida	3	75.0	0	0.0	1	25.0
Illinois	485	71.5	109	16.1	84	12.4
Louisiana	214	75.9	36	12.8	32	11.3
Maryland	457	69.6	86	13.1	114	17.4
Massachusetts	419	77.2	59	10.9	65	12.0
Mississippi	59	68.6	11	12.8	16	18.6
New Jersey	593	82.0	53	7.3	77	10.7
New Mexico	30	66.7	14	31.1	1	2.2
New York	35	70.0	8	16.0	7	14.0
Ohio	150	68.2	47	21.4	23	10.5
Rhode Island	96	80.7	13	10.9	10	8.4
Tennessee	61	53.0	38	33.0	16	13.9
All States	3146	74.1	574	13.5	528	12.4

Note. Numbers and percentages are based on the total number of valid responses (missing = 387).

Table 36. TA Survey: Q3. In accordance with your state or local policy, please indicate which of the following options was given to students after the completion of testing.

	Sit Quietly		Dismissed		Quiet Recreational Material	
State	n	%	n	%	n	%
Arizona	80	30.4	30	11.4	153	58.2
Arkansas	166	56.8	28	9.6	98	33.6
Colorado	58	41.7	7	5.0	74	53.2
D.C.	6	25.0	2	8.3	16	66.7
Florida	3	75.0	0	0.0	1	25.0
Illinois	157	23.2	34	5.0	485	71.7
Louisiana	97	34.9	21	7.6	160	57.6
Maryland	383	58.4	85	13.0	188	28.7
Massachusetts	128	23.4	82	15.0	336	61.5
Mississippi	57	66.3	4	4.7	25	29.1
New Jersey	336	46.7	76	10.6	308	42.8
New Mexico	16	35.6	3	6.7	26	57.8
New York	12	23.5	10	19.6	29	56.9
Ohio	74	34.1	35	16.1	108	49.8
Rhode Island	32	27.1	8	6.8	78	66.1
Tennessee	54	47.0	10	8.7	51	44.3
All States	1661	39.2	436	10.3	2138	50.5

Note. Numbers and percentages are based on the total number of valid responses (missing = 400).

Process for Cleaning Up Data for PARCC TA Survey

- Initial dataset had 8736 respondents, which included responses from Test Administrators who administered the computer/tablet-based test (CBT) and Test Administrators who administered the paper-based test (PBT).

Clean-up Steps

1) Sorted data by start date and deleted cases that began before the initial launch of the survey (3/24/14), as well as cases that included words such as ‘test’, ‘delete’, or ‘dummy’ in the text box items.
    - n = 8729
        - CBT respondents = 6478
        - PBT respondents = 2251

2) Checked for duplicate cases within the dataset; none were found.
    - n = 8729

3) Individuals who only responded to the first five background items (1-4b) and no other substantive survey content were removed.
    - n = 8583
        - CBT respondents = 6362
        - PBT respondents = 2221

4) Further examined survey content items for each assessment type (CBT and PBT) to identify participants who failed to respond to any substantive content on the survey. So as not to exclude any meaningful responses, a conservative guideline was applied for removing cases; only individuals with 2 or fewer responses (not including background items) were removed.
    - n = 6322
        - CBT respondents = 4635
        - PBT respondents = 1687

5) Checked for pattern responding. Computed the number of times individuals used a particular response option (i.e., response 1, response 2, etc.) to help determine whether respondent provided thoughtful responses or was simply selecting the first response option for every item on the survey, for example. No evidence of pattern responding was found. Consequently, no cases were removed at this step.
    - n = 6322
        - CBT respondents = 4635
        - PBT respondents = 1687

Appendix J – Item-level Results from Test Administrator Survey: Paper-based Administration

Administration Information by State

Table 1. TA Survey: Q1. Please indicate the mode of assessment administration:

	Computer-based (or tablet) Administration		Paper-and-pencil Administration	
State	n	%	n	%
Arizona (N = 493)	295	59.8	198	40.2
Arkansas (N = 471)	314	67.0	157	33.0
Colorado (N = 223)	152	68.2	71	31.8
District of Columbia (D.C.; N = 35)	31	89.0	4	11.0
Florida (N = 8)	7	87.5	1	12.5
Illinois (N = 1024)	737	72.0	287	28.0
Louisiana (N = 311)	304	98.0	7	2.0
Maryland (N = 1171)	710	60.6	461	39.4
Massachusetts (N = 776)	601	77.4	175	22.6
Mississippi (N = 148)	94	63.5	54	36.5
New Jersey (N = 788)	785	99.6	3	0.4
New Mexico (N = 48)	48	100.0	0	0.0
New York (N = 57)	54	94.7	3	5.3
Ohio (N = 393)	240	61.1	153	38.9
Rhode Island (N = 183)	128	69.9	55	30.1
Tennessee (N = 183)	128	69.9	55	30.1
All States (N = 6322)	4635[a]	73.3	1687[b]	26.7

Note. Percentages are based on the total number of valid responses for each state. Number of missing for computer-based administration = 7. Number of missing for paper-and-pencil administration = 3.

[a] Includes the 7 cases that did not indicate their state.

[b] Includes the 3 cases that did not indicate their state.

Table 2. TA Survey: Q4-5. Please identify the grade level(s)/course(s) in which you administered the assessment(s) (select all that apply [a]).

Not Applicable

	ELA/L Performance-based Assessment		ELA/L End-of-Year Assessment		Math Performance-based Assessment		Math End-of-Year Assessment	
State	n	%	n	%	n	%	n	%
Arizona	35	17.7	33	16.7	31	15.7	26	13.1
Arkansas	45	28.7	32	20.4	36	22.9	30	19.1
Colorado	9	12.7	6	8.5	17	23.9	11	15.5
D.C.	4	100.0	2	50.0	3	75.0	2	50.0
Florida	0	0.0	0	0.0	1	100.0	0	0.0
Illinois	69	24.0	64	22.3	66	23.0	48	16.7
Louisiana	2	28.6	2	28.6	1	14.3	0	0.0
Maryland	125	27.1	90	19.5	99	21.5	75	16.3
Massachusetts	57	32.6	55	31.4	25	14.3	20	11.4
Mississippi	20	37.0	14	25.9	6	11.1	4	7.4
New Jersey	1	33.3	0	0.0	2	66.7	1	33.3
New York	0	0.0	0	0.0	1	33.3	0	0.0
Ohio	45	29.4	37	24.2	19	12.4	24	15.7
Rhode Island	14	25.5	14	25.5	8	14.5	8	14.5
Tennessee	16	29.1	10	18.2	11	20.0	8	14.5
All States	442	26.2	359	21.3	327	19.4	257	15.2

Note. [a] Percentages reported for “select all that apply” items should be interpreted with caution, as it is not possible to differentiate “missing” (i.e., skipped) vs. “not selected” responses.

Table 3. TA Survey: Q4. Please identify the grade level(s)/course(s) in which you administered the assessment(s) (select all that apply [a]).

ELA/L Performance-Based Assessment

	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 8		Grade 9		Grade 10		Grade 11	
State	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Arizona (n = 163)	9	5.5	8	4.9	13	8.0	9	5.5	11	6.7	8	4.9	3	1.8	12	7.4	1	0.6
Arkansas (n = 112)	10	8.9	9	8.0	5	4.5	1	0.9	7	6.3	8	7.1	0	0.0	2	1.8	4	3.6
Colorado (n = 62)	14	22.6	10	16.1	8	12.9	2	3.2	0	0.0	2	3.2	3	4.8	3	4.8	3	4.8
D.C. (n = 0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Florida (n = 1)	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Illinois (n = 218)	14	6.4	26	11.9	20	9.2	15	6.9	21	9.6	19	8.7	8	3.7	8	3.7	8	3.7
Louisiana (n = 5)	0	0.0	0	0.0	0	0.0	1	20.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Maryland (n = 336)	48	14.3	53	15.8	0	0.0	15	4.5	34	10.1	0	0.0	26	7.7	6	1.8	43	12.8
Massachusetts (n = 118)	7	5.9	5	4.2	6	5.1	3	2.5	13	11.0	3	2.5	3	2.5	2	1.7	2	1.7
Mississippi (n = 34)	0	0.0	7	20.6	1	2.9	5	14.7	1	2.9	1	2.9	2	5.9	6	17.6	1	2.9
New Jersey (n = 2)	0	0.0	0	0.0	0	0.0	0	0.0	1	50.0	0	0.0	0	0.0	0	0.0	0	0.0
New York (n = 3)	0	0.0	0	0.0	1	33.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Ohio (n = 108)	8	7.4	0	0.0	2	1.9	5	4.6	5	4.6	4	3.7	12	11.1	11	10.2	12	11.1
Rhode Island (n = 41)	2	4.9	4	9.8	8	19.5	1	2.4	3	7.3	1	2.4	2	4.9	0	0.0	0	0.0
Tennessee (n = 39)	3	7.7	1	2.6	4	10.3	2	5.1	6	15.4	5	12.8	2	5.1	0	0.0	0	0.0
All States (n = 1245)	117	9.4	123	9.9	68	5.5	60	4.8	102	8.2	51	4.1	61	4.9	50	4.0	74	5.9

Note. Individuals who selected N/A for this item (see Table 2) have been excluded from analyses.

[a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Table 4. TA Survey: Q4. Please identify the grade level(s)/course(s) in which you administered the assessment(s) (select all that apply [a]).

ELA/L End-of-Year Assessment

	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 8		Grade 9		Grade 10		Grade 11	
State	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Arizona (n = 165)	10	6.1	10	6.1	5	3.0	8	4.8	5	3.0	1	0.6	1	0.6	1	0.6	1	0.6
Arkansas (n = 125)	7	5.6	9	7.2	6	4.8	2	1.6	2	1.3	7	5.6	1	0.8	3	2.4	9	7.2
Colorado (n = 65)	4	6.2	0	0.0	1	1.5	0	0.0	2	3.1	1	1.5	3	4.6	0	0.0	0	0.0
D.C. (n = 2)	0	0.0	2	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Florida (n = 1)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Illinois (n = 223)	7	3.1	8	3.6	10	4.5	3	1.3	2	0.9	4	1.8	3	1.3	6	2.7	3	1.3
Louisiana (n = 5)	0	0.0	2	40.0	0	0.0	1	20.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Maryland (n = 371)	15	4.0	15	4.0	1	0.3	1	0.3	13	3.5	1	0.3	5	1.3	2	0.5	9	2.4
Massachusetts (n = 120)	3	2.5	4	3.3	2	1.7	4	3.3	2	1.7	3	2.5	0	0.0	1	0.8	0	0.0
Mississippi (n = 40)	0	0.0	0	0.0	0	0.0	2	5.0	0	0.0	2	5.0	1	2.5	3	7.5	0	0.0
New Jersey (n = 3)	0	0.0	1	33.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
New York (n = 3)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Ohio (n = 116)	5	4.3	2	1.7	2	1.7	1	0.9	1	0.9	1	0.9	2	1.7	2	1.7	3	2.6
Rhode Island (n = 41)	2	4.9	0	0.0	4	9.8	3	7.3	2	4.9	0	0.0	2	4.9	0	0.0	0	0.0
Tennessee (n = 45)	4	8.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	2.2
All States (n = 1328)	57	4.3	53	4.0	31	2.3	25	1.9	29	2.2	20	1.5	18	1.4	18	1.4	26	2.0

Note. Individuals who selected N/A for this item (see Table 2) have been excluded from analyses.

[a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Table 5. TA Survey: Q5. Please identify the grade level(s)/course(s) in which you administered the assessment(s) (select all that apply [a]).

Math Performance-Based Assessment

	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 8		ALG 1		GEO		ALG 2		INT 1		INT 2		INT 3	
State	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Arizona (n = 167)	11	6.6	19	11.4	18	10.8	5	3.0	12	7.2	4	2.4	6	3.6	1	0.6	0	0.0	0	0.0	0	0.0	0	0.0
Arkansas (n = 121)	10	8.3	14	11.6	11	9.1	4	3.3	6	5.0	6	5.0	3	2.5	2	1.7	2	1.7	0	0.0	0	0.0	0	0.0
Colorado (n = 54)	7	13.0	5	9.3	2	3.7	1	1.9	3	5.6	4	7.4	2	3.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
D.C. (n = 1)	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Florida (n = 0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Illinois (n = 221)	19	8.6	11	5.0	20	9.0	14	6.3	16	7.2	14	6.3	11	5.0	10	4.5	11	5.0	2	0.9	0	0.0	0	0.0
Louisiana (n = 6)	0	0.0	0	0.0	0	0.0	1	16.7	0	0.0	0	0.0	1	16.7	1	16.7	1	16.7	0	0.0	0	0.0	0	0.0
Maryland (n = 362)	44	12.2	82	22.7	0	0.0	47	13.0	44	12.2	0	0.0	1	0.3	11	3.0	10	2.8	0	0.0	0	0.0	0	0.0
Massachusetts (n = 150)	9	6.0	11	7.3	6	4.0	17	11.3	11	7.3	6	4.0	2	1.3	2	1.3	0	0.0	0	0.0	0	0.0	3	2.0
Mississippi (n = 48)	6	12.5	5	10.4	2	4.2	4	8.3	1	2.1	0	0.0	0	0.0	0	0.0	3	6.3	0	0.0	0	0.0	0	0.0
New Jersey (n = 1)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
New York (n = 2)	0	0.0	0	0.0	0	0.0	0	0.0	1	50.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Ohio (n = 134)	5	3.7	7	5.2	6	4.5	7	5.2	18	13.4	13	9.7	6	4.5	5	3.7	7	5.2	9	6.7	6	4.5	2	1.5
Rhode Island (n = 47)	1	2.1	5	10.6	5	10.6	4	8.5	1	2.1	2	4.3	1	2.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Tennessee (n = 44)	3	6.8	7	15.9	1	2.3	6	13.6	4	9.1	4	9.1	0	0.0	2	4.5	0	0.0	0	0.0	0	0.0	0	0.0
All States (n = 1360)	117	8.6	166	12.2	71	5.2	110	8.1	117	8.6	53	3.9	33	2.4	34	2.5	34	2.5	11	0.8	6	0.4	5	0.4

Note. Individuals who selected N/A for this item (see Table 2) have been excluded from analyses.

[a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Table 6. TA Survey: Q5. Please identify the grade level(s)/course(s) in which you administered the assessment(s) (select all that apply [a]).

Math End-of-Year Assessment

	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 8		ALG 1		GEO		ALG 2		INT 1		INT 2		INT 3	
State	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Arizona (n = 172)	11	6.4	23	13.4	12	7.0	11	6.4	9	5.2	2	1.2	3	1.7	0	0.0	1	0.6	0	0.0	0	0.0	0	0.0
Arkansas (n = 127)	5	3.9	4	3.1	4	3.1	4	3.1	12	9.4	9	7.1	2	1.6	3	2.4	0	0.0	0	0.0	0	0.0	0	0.0
Colorado (n = 60)	3	5.0	4	6.7	0	0.0	2	3.3	0	0.0	1	1.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
D.C. (n = 2)	1	50.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Florida (n = 1)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Illinois (n = 239)	10	4.2	4	1.7	14	5.9	5	2.1	4	1.7	3	1.3	11	4.6	12	5.0	13	5.4	0	0.0	0	0.0	0	0.0
Louisiana (n = 7)	0	0.0	4	57.1	0	0.0	2	28.6	0	0.0	1	14.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Maryland (n = 371)	15	3.9	31	8.0	0	0.0	10	2.6	11	2.8	0	0.0	0	0.0	9	2.3	2	0.5	0	0.0	0	0.0	0	0.0
Massachusetts (n = 155)	14	9.0	9	5.8	10	6.5	18	11.6	11	7.1	5	3.2	1	0.6	4	2.6	4	2.6	1	0.6	0	0.0	1	0.6
Mississippi (n = 50)	2	4.0	1	2.0	4	8.0	2	4.0	3	6.0	1	2.0	2	4.0	0	0.0	3	6.0	0	0.0	0	0.0	0	0.0
New Jersey (n = 2)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
New York (n = 3)	0	0.0	0	0.0	1	33.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Ohio (n = 129)	7	5.4	5	3.9	1	0.8	4	3.1	7	5.4	4	3.1	1	0.8	4	3.1	3	2.3	0	0.0	0	0.0	2	1.6
Rhode Island (n = 44)	3	6.4	0	0.0	5	10.6	2	4.3	4	8.5	1	2.1	1	2.1	5	10.6	2	4.3	0	0.0	0	0.0	0	0.0
Tennessee (n = 47)	2	4.3	4	8.5	0	0.0	2	4.3	0	0.0	1	2.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
All States (n = 1430)	73	5.1	89	6.2	51	3.6	62	4.3	61	4.3	28	2.0	21	1.5	37	2.6	28	2.0	1	0.1	0	0.0	3	0.2

Note. Individuals who selected N/A for this item (see Table 2) have been excluded from analyses.

[a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Test Administrator's Training Experience

Table 7. TA Survey: Q1. Did you receive any training on administering the assessments from your state, school or district?(select all that apply[a]):

	No, I did not receive training from my state, district or school	
State	n	%
Arizona	27	13.6
Arkansas	4	2.5
Colorado	6	8.5
D.C.	0	0.0
Florida	0	0.0
Illinois	80	27.9
Louisiana	1	14.3
Maryland	12	2.6
Massachusetts	28	16.0
Mississippi	1	1.9
New Jersey	0	0.0
New York	1	33.3
Ohio	33	21.6
Rhode Island	12	21.8
Tennessee	10	18.2
All States	215	12.7

Note. [a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Table 8. TA Survey: Q1. Did you receive training from your state, school or district?(select all that apply[a]):

	Training from State		Training from District		Training from School	
State	n	%	n	%	n	%
Arizona (n = 171)	2	1.2	64	37.4	113	66.1
Arkansas (n = 153)	5	3.3	48	31.4	121	79.1
Colorado (n = 65)	4	6.2	24	36.9	41	63.1
D.C. (n = 4)	0	0.0	0	0.0	3	75.0
Florida (n = 1)	0	0.0	0	0.0	1	100.0
Illinois (n = 207)	8	3.9	105	50.7	124	59.9
Louisiana (n = 6)	1	16.7	1	16.7	3	50.0
Maryland (n = 449)	9	2.0	142	31.6	337	75.1
Massachusetts (n = 147)	8	5.4	25	17.0	121	82.3
Mississippi (n = 53)	1	1.9	10	18.9	51	96.2
New Jersey (n = 3)	0	0.0	1	33.3	2	66.7
New York (n = 2)	0	0.0	0	0.0	1	50.0
Ohio (n = 120)	6	5.0	38	31.7	93	77.5
Rhode Island (n = 43)	10	23.3	14	32.6	29	67.4
Tennessee (n = 45)	2	4.4	10	22.2	42	93.3
All States	56	3.8	483	32.8	1084	73.6

Note. Individuals who selected 'None' for this item (see Table 7) have been excluded from analyses.
[a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Test Administration Experience

Table 9. TA Survey: Q1. The policies and procedures within the Test Administrator Manual were easy for me to understand.

	Strongly Disagree		Disagree		Agree		Strongly Agree	
State	n	%	n	%	n	%	n	%
Arizona	14	7.1	67	34.2	108	55.1	7	3.6
Arkansas	14	9.0	36	23.2	96	61.9	9	5.8
Colorado	5	7.1	24	34.3	39	55.7	2	2.9
D.C.	0	0.0	0	0.0	3	75.0	1	25.0
Florida	0	0.0	0	0.0	1	100.0	0	0.0
Illinois	12	4.2	75	26.1	182	63.4	18	6.3
Louisiana	1	14.3	2	28.6	3	42.9	1	14.3
Maryland	30	6.6	113	24.9	260	57.4	50	11.0
Massachusetts	7	4.0	51	29.1	105	60.0	12	6.9
Mississippi	5	9.4	19	35.8	23	43.4	6	11.3
New Jersey	2	66.7	0	0.0	1	33.3	0	0.0
New York	0	0.0	0	0.0	2	66.7	1	33.3
Ohio	7	4.6	31	20.4	102	67.1	12	7.9
Rhode Island	2	3.7	13	24.1	34	63.0	5	9.3
Tennessee	2	3.6	16	29.1	31	56.4	6	10.9
All States	101	6.0	447	26.8	993	59.4	130	7.8

Note. Numbers and percentages are based on the total number of valid responses (missing = 16).

Table 10. TA Survey: Q2. The instructions (including scripts for administering the assessment) within the Test Administrator Manual were easy for me to implement.

	Strongly Disagree		Disagree		Agree		Strongly Agree	
State	n	%	n	%	n	%	n	%
Arizona	26	13.4	82	42.3	75	38.7	11	5.7
Arkansas	30	19.5	53	34.4	65	42.2	6	3.9
Colorado	12	16.9	19	26.8	38	53.5	2	2.8
D.C.	0	0.0	0	0.0	3	75.0	1	25.0
Florida	0	0.0	0	0.0	1	100.0	0	0.0
Illinois	19	6.6	113	39.5	136	47.6	18	6.3
Louisiana	2	28.6	2	28.6	3	42.9	0	0.0
Maryland	39	8.6	146	32.2	226	49.8	43	9.5
Massachusetts	10	5.7	58	33.3	96	55.2	10	5.7
Mississippi	7	13.0	18	33.3	23	42.6	6	11.1
New Jersey	2	66.7	0	0.0	1	33.3	0	0.0
New York	1	33.3	0	0.0	1	33.3	1	33.3
Ohio	12	7.9	56	36.8	74	48.7	10	6.6
Rhode Island	5	9.4	16	30.2	29	54.7	3	5.7
Tennessee	3	5.5	16	29.1	32	58.2	4	7.3
All States	169	10.1	579	34.7	805	48.3	115	6.9

Note. Numbers and percentages are based on the total number of valid responses (missing = 19).

Table 11. TA Survey: Q3. Students appeared to understand the instructions I read to them during test administration.

	Strongly Disagree		Disagree		Agree		Strongly Agree	
State	n	%	n	%	n	%	n	%
Arizona	47	24.4	89	46.1	50	25.9	7	3.6
Arkansas	29	19.0	54	35.3	61	39.9	9	5.9
Colorado	18	25.4	27	38.0	23	32.4	3	4.2
D.C.	0	0.0	1	25.0	3	75.0	0	0.0
Florida	0	0.0	0	0.0	1	100.0	0	0.0
Illinois	38	13.4	88	31.0	138	48.6	20	7.0
Louisiana	1	14.3	3	42.9	3	42.9	0	0.0
Maryland	66	14.7	125	27.8	223	49.7	35	7.8
Massachusetts	20	11.6	62	35.8	86	49.7	5	2.9
Mississippi	14	25.9	19	35.2	17	31.5	4	7.4
New Jersey	1	33.3	0	0.0	2	66.7	0	0.0
New York	1	33.3	0	0.0	1	33.3	1	33.3
Ohio	23	15.1	49	32.2	68	44.7	12	7.9
Rhode Island	8	15.1	15	28.3	29	54.7	1	1.9
Tennessee	9	16.4	21	38.2	23	41.8	2	3.6
All States	275	16.6	555	33.5	729	44.0	99	6.0

Note. Numbers and percentages are based on the total number of valid responses (missing = 29).

Table 12. TA Survey: Q4. The instructions I read to the students covered all of the information necessary to take the test.

	Strongly Disagree		Disagree		Agree		Strongly Agree	
State	n	%	n	%	n	%	n	%
Arizona	36	18.5	93	47.7	59	30.3	7	3.6
Arkansas	28	18.2	46	29.9	72	46.8	8	5.2
Colorado	14	19.7	20	28.2	35	49.3	2	2.8
D.C.	0	0.0	2	50.0	2	50.0	0	0.0
Florida	0	0.0	0	0.0	1	100.0	0	0.0
Illinois	34	11.9	93	32.6	140	49.1	18	6.3
Louisiana	2	28.6	3	42.9	1	14.3	1	14.3
Maryland	45	10.1	143	32.0	221	49.4	38	8.5
Massachusetts	16	9.2	59	33.9	95	54.6	4	2.3
Mississippi	10	18.5	17	31.5	23	42.6	4	7.4
New Jersey	2	66.7	0	0.0	1	33.3	0	0.0
New York	0	0.0	1	33.3	1	33.3	1	33.3
Ohio	12	7.9	40	26.3	88	57.9	12	7.9
Rhode Island	9	16.7	18	33.3	27	50.0	0	0.0
Tennessee	5	9.3	20	37.0	26	48.1	3	5.6
All States	214	12.9	556	33.5	793	47.7	98	5.9

Note. Numbers and percentages are based on the total number of valid responses (missing = 26).

Table 13. TA Survey: Q1-4 Scale Means for Test Administration Experience

State	Mean	Standard Deviation
Arizona	2.30	0.60
Arkansas	2.42	0.68
Colorado	2.37	0.65
D.C.	2.94	0.43
Florida[a]	--	--
Illinois	2.56	0.59
Louisiana	2.29	0.87
Maryland	2.60	0.66
Massachusetts	2.56	0.55
Mississippi	2.41	0.74
New Jersey	1.83	1.04
New York	2.92	1.13
Ohio	2.61	0.61
Rhode Island	2.53	0.59
Tennessee	2.56	0.63
All States	2.52	0.64

Note. Mean scale scores computed by taking the mean of items 1-4, which were rated on a 4-point agreement scale where 1 = Strongly Disagree and 4 = Strongly Agree. Overall internal consistency reliability estimate is α = .84.
[a] Mean and standard deviation were not calculated for Florida due to sample size (n = 1).

Test Environment

Table 14. TA Survey: Q1. Were there any problems in the physical environment during the test session that might have negatively affected student performance?

	Yes		No	
State	n	%	n	%
Arizona	8	4.1	188	95.9
Arkansas	5	3.2	151	96.8
Colorado	2	2.8	69	97.2
D.C.	0	0.0	4	100.0
Florida	0	0.0	1	100.0
Illinois	29	10.1	258	89.9
Louisiana	0	0.0	7	100.0
Maryland	34	7.4	424	92.6
Massachusetts	1	0.6	172	99.4
Mississippi	1	1.9	53	98.1
New Jersey	0	0.0	3	100.0
New York	0	0.0	3	100.0
Ohio	5	3.3	148	96.7
Rhode Island	2	3.7	52	96.3
Tennessee	0	0.0	55	100.0
All States	87	5.2	1591	94.8

Note. Numbers and percentages are based on the total number of valid responses (missing = 9).

Table 15. TA Survey: Q1a. Please indicate the nature of the problem in the physical environment. (Select all that apply[a])

	Lighting Problems		Other	
State	n	%	n	%
Arizona (n = 10)	0	0.0	7	70.0
Arkansas (n = 6)	0	0.0	5	83.3
Colorado (n = 2)	0	0.0	2	100.0
D.C. (n = 0)	--	--	--	--
Florida (n = 0)	--	--	--	--
Illinois(n = 29)	0	0.0	29	100.0
Louisiana (n = 0)	--	--	--	--
Maryland (n = 37)	2	5.4	31	83.8
Massachusetts (n = 3)	0	0.0	1	33.3
Mississippi (n = 1)	0	0.0	0	0.0
New Jersey (n = 0)	--	--	--	--
New York (n = 0)	--	--	--	--
Ohio (n = 5)	0	0.0	5	100.0
Rhode Island (n = 3)	0	0.0	2	66.7
Tennessee (n = 0)	--	--	--	--
All States (n = 96)	2	2.1	82	85.4

Note. Individuals who selected 'No' for item 1 (see Table 14) have been excluded from analyses. Individuals with missing responses to item 1 (see note in Table 14) who responded to item 1a were included in analyses.
[a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

PARCC's Timing Policy

Table 16. TA Survey: Q1. Indicate the proportion of students who needed the Additional Time Allowed.

	None		Less than ⅓		Approximately ½		More than ½	
State	n	%	n	%	n	%	n	%
Arizona	20	10.2	84	42.9	34	17.3	58	29.6
Arkansas	55	35.3	67	42.9	15	9.6	19	12.2
Colorado	18	26.1	36	52.2	2	2.9	13	18.8
D.C.	0	0.0	0	0.0	0	0.0	3	75.0
Florida	0	0.0	1	100.0	0	0.0	0	0.0
Illinois	73	25.8	123	43.5	35	12.4	52	18.4
Louisiana	1	16.7	3	50.0	0	0.0	2	33.3
Maryland	145	32.0	190	41.9	67	14.8	51	11.3
Massachusetts	26	14.9	75	43.1	28	16.1	45	25.9
Mississippi	14	25.9	27	50.0	8	14.8	5	9.3
New Jersey	1	33.3	1	33.3	1	33.3	0	0.0
New York	0	0.0	3	100.0	0	0.0	0	0.0
Ohio	62	40.8	43	28.3	21	13.8	26	17.1
Rhode Island	7	12.7	28	50.9	10	18.2	10	18.2
Tennessee	12	21.8	30	54.5	8	14.5	5	9.1
All States	434	26.1	713	42.8	230	13.8	289	17.3

Note. Numbers and percentages are based on the total number of valid responses (missing = 21).

Table 17. TA Survey: Q1a. Please indicate how much additional time was used by the majority of these students.

	Less than 10 minutes		Between 10 – 20 minutes		More than 20 minutes	
State	n	%	n	%	n	%
Arizona	17	9.7	95	54.0	64	36.4
Arkansas	30	29.7	52	51.5	19	18.8
Colorado	5	9.8	39	76.5	7	13.7
D.C.	0	0.0	0	0.0	3	75.0
Florida	0	0.0	1	100.0	0	0.0
Illinois	46	21.8	113	53.6	52	24.6
Louisiana	0	0.0	3	60.0	2	40.0
Maryland	65	21.1	191	62.0	52	16.9
Massachusetts	8	5.5	93	63.7	45	30.8
Mississippi	6	15.0	24	60.0	10	25.0
New Jersey	0	0.0	1	50.0	1	50.0
New York	1	33.3	2	66.7	0	0.0
Ohio	12	13.3	64	71.1	14	15.6
Rhode Island	3	6.3	28	58.3	17	35.4
Tennessee	10	23.8	27	64.3	5	11.9
All States	205	16.7	734	59.7	291	23.7

Note. Numbers and percentages are based on the total number of valid responses (missing = 23). Individuals who selected 'None' for item 1 (see Table 16) have been excluded from analyses. Individuals with missing responses to item 1 (see note in Table 16) who responded to this item were included in analyses.

Accessibility Features and Accommodations

Table 18. TA Survey: Q1. Are you aware that there is an approved PARCC Accessibility Features and Accommodations Manual?

	Yes		No	
State	n	%	n	%
Arizona	121	61.7	75	38.3
Arkansas	104	66.7	52	33.3
Colorado	39	55.7	31	44.3
D.C.	2	66.7	1	33.3
Florida	0	0.0	1	100.0
Illinois	169	59.9	113	40.1
Louisiana	3	50.0	3	50.0
Maryland	308	68.3	143	31.7
Massachusetts	121	69.5	53	30.5
Mississippi	34	64.2	19	35.8
New Jersey	1	33.3	2	66.7
New York	0	0.0	3	100.0
Ohio	97	63.8	55	36.2
Rhode Island	47	85.5	8	14.5
Tennessee	32	59.3	22	40.7
All States	1079	64.9	583	35.1

Note. Numbers and percentages are based on the total number of valid responses (missing = 25).

Table 19. TA Survey: Q1a. Did you read the "Accessibility Features and Accommodations Manual" prior to administration?

	Yes		No	
State	n	%	n	%
Arizona	94	78.3	26	21.7
Arkansas	73	70.9	30	29.1
Colorado	20	52.6	18	47.4
D.C.	1	50.0	1	50.0
Florida	0	0.0	0	0.0
Illinois	109	64.5	60	35.5
Louisiana	2	66.7	1	33.3
Maryland	226	73.1	83	26.9
Massachusetts	88	72.7	33	27.3
Mississippi	19	54.3	16	45.7
New Jersey	1	100.0	0	0.0
New York	0	0.0	0	0.0
Ohio	67	69.8	29	30.2
Rhode Island	34	73.9	12	26.1
Tennessee	18	56.3	14	43.8
All States	753	70.0	323	30.0

Note. Numbers and percentages are based on the total number of valid responses (missing = 28). Individuals who selected 'No' for item 1 (see Table 18) have been excluded from analyses. Individuals with missing responses to item 1 (see note in Table 18) who responded to item 1a were included in analyses.

Table 20. TA Survey: Q2. Indicate whether you administered any of the following accessibility features or accommodations to your students during the Field Test Administration (select all that apply[a]).

	Not Applicable	
State	n	%
Arizona	95	48.0
Arkansas	70	44.6
Colorado	37	52.1
D.C.	1	25.0
Florida	0	0.0
Illinois	162	56.4
Louisiana	3	42.9
Maryland	211	45.8
Massachusetts	69	39.4
Mississippi	29	53.7
New Jersey	1	33.3
New York	1	33.3
Ohio	72	47.1
Rhode Island	30	54.5
Tennessee	28	50.9
All States	811	48.1

Note. [a] Percentages reported for “select all that apply” items should be interpreted with caution, as it is not possible to differentiate “missing” (i.e., skipped) vs. “not selected” responses.

Table 21. TA Survey: Q2. Indicate whether you administered any of the following accessibility features or accommodations to your students during the Field Test Administration (select all that apply[a]).

	Clarify Directions		Repeat Directions		Redirect a Student		Human Reader Math		Human Reader English		Scribe English		Scribe Math	
State	n	%	n	%	n	%	n	n	%	n	%	n	%	n
Arizona (n = 103)	68	66.0	81	78.6	52	50.5	17	16.5	1	1.0	0	0.0	3	2.9
Arkansas (n = 87)	34	39.1	38	43.7	34	39.1	30	34.5	13	14.9	2	2.3	1	1.1
Colorado (n = 34)	14	41.2	17	50.0	14	41.2	6	17.6	5	14.7	0	0.0	1	2.9
D.C. (n = 3)	2	66.7	2	66.7	2	66.7	0	0.0	0	0.0	0	0.0	0	0.0
Florida (n = 1)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0
Illinois (n = 125)	74	59.2	70	56.0	56	44.8	29	23.2	16	12.8	6	4.8	4	3.2
Louisiana (n = 4)	2	50.0	2	50.0	1	25.0	0	0.0	0	0.0	0	0.0	0	0.0
Maryland (n = 250)	89	35.6	117	46.8	93	37.2	60	24.0	36	14.4	27	10.8	36	14.4
Massachusetts (n = 106)	75	70.8	58	54.7	62	58.5	24	22.6	6	5.7	5	4.7	3	2.8
Mississippi (n = 25)	11	44.0	13	52.0	6	24.0	8	32.0	2	8.0	0	0.0	0	0.0
New Jersey (n = 2)	1	50.0	0	0.0	0	0.0	0	0.0	1	50.0	1	50.0	0	0.0
New York (n = 2)	1	50.0	1	50.0	2	100.0	0	0.0	0	0.0	0	0.0	0	0.0
Ohio (n = 81)	40	49.4	40	49.4	26	32.1	34	42.0	11	13.6	2	2.5	14	17.3
Rhode Island (n = 25)	11	44.0	14	56.0	15	60.0	9	36.0	1	4.0	1	4.0	0	0.0
Tennessee (n = 27)	11	40.7	13	48.1	12	44.4	6	22.2	4	14.8	0	0.0	0	0.0
All States (n = 876)	434	49.5	467	53.3	376	42.9	223	25.5	96	11.0	45	5.1	62	7.1

Note. Individuals who selected N/A for this item (see Table 20) have been excluded from analyses.

[a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Table 22. TA Survey: Q3. If you served as a human reader (read text aloud) to a student and/or served as a scribe, please indicate if you read the following documents (select all that apply[a]):

	Not Applicable	
State	n	%
Arizona	143	72.2
Arkansas	97	61.8
Colorado	49	69.0
D.C.	3	75.0
Florida	1	100.0
Illinois	228	79.4
Louisiana	6	85.7
Maryland	314	68.1
Massachusetts	114	65.1
Mississippi	35	64.8
New Jersey	2	66.7
New York	3	100.0
Ohio	97	63.4
Rhode Island	34	61.8
Tennessee	42	76.4
All States	1170	69.4

Note. [a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Table 23. TA Survey: Q3. If you served as a human reader (read text aloud) to a student and/or served as a scribe, please indicate if you read the following documents (select all that apply[a]):

	Appendix B		Appendix C		Appendix I		Appendix J	
State	n	%	n	%	n	%	n	%
Arizona (n = 55)	11	20.0	4	7.3	2	3.6	10	18.2
Arkansas (n = 60)	23	38.3	4	6.7	9	15.0	19	31.7
Colorado (n = 22)	7	31.8	1	4.5	4	18.2	1	4.5
D.C. (n = 1)	0	0.0	0	0.0	0	0.0	0	0.0
Florida (n = 0)	--	--	--	--	--	--	--	--
Illinois (n = 59)	21	35.6	11	18.6	7	11.9	13	22.0
Louisiana (n = 1)	0	0.0	0	0.0	0	0.0	0	0.0
Maryland (n = 147)	51	34.7	45	30.6	27	18.4	39	26.5
Massachusetts (n = 61)	15	24.6	7	11.5	5	8.2	11	18.0
Mississippi (n = 19)	9	47.4	0	0.0	0	0.0	2	10.5
New Jersey (n = 1)	1	100.0	1	100.0	1	100.0	0	0.0
New York (n = 0)	--	--	--	--	--	--	--	--
Ohio (n = 56)	34	60.7	14	25.0	4	7.1	17	30.4
Rhode Island (n = 21)	5	23.8	2	9.5	1	4.8	4	19.0
Tennessee (n = 5)	5	38.5	1	7.7	4	30.8	3	23.1
All States (n = 517)	182	35.2	90	17.4	64	12.4	119	23.0

Note. Individuals who selected N/A for this item (see Table 22) have been excluded from analyses.
[a] Percentages reported for "select all that apply" items should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Table 24. TA Survey: Q4. Did you receive training on administering accessibility features/accommodations from your school or district?

	Yes		No	
State	n	%	n	%
Arizona	74	40.0	111	60.0
Arkansas	75	51.7	70	48.3
Colorado	21	32.3	44	67.7
D.C.	1	33.3	2	66.7
Florida	1	100.0	0	0.0
Illinois	63	22.8	213	77.2
Louisiana	3	50.0	3	50.0
Maryland	262	61.1	167	38.9
Massachusetts	76	46.1	89	53.9
Mississippi	22	42.3	30	57.7
New Jersey	2	66.7	1	33.3
New York	0	0.0	3	100.0
Ohio	57	38.5	91	61.5
Rhode Island	14	25.9	40	74.1
Tennessee	21	40.4	31	59.6
All States	693	43.6	896	56.4

Note. Numbers and percentages are based on the total number of valid responses (missing = 98).

Sample Items/Tutorials

Table 25. TA Survey: Q1. Did the students in your session(s) practice with PARCC sample items prior to administration?

	Yes		No		Not Sure/Don't Know	
State	n	%	n	%	n	%
Arizona	49	25.9	114	60.3	26	13.8
Arkansas	30	20.3	77	52.0	41	27.7
Colorado	16	24.6	41	63.1	8	12.3
D.C.	1	33.3	1	33.3	1	33.3
Florida	1	100.0	0	0.0	0	0.0
Illinois	65	23.3	162	58.1	52	18.6
Louisiana	0	0.0	6	100.0	0	0.0
Maryland	149	34.7	161	37.4	120	27.9
Massachusetts	31	18.3	104	61.5	34	20.1
Mississippi	11	21.2	18	34.6	23	44.2
New Jersey	1	33.3	2	66.7	0	0.0
New York	2	66.7	1	33.3	0	0.0
Ohio	18	12.0	86	57.3	46	30.7
Rhode Island	17	31.5	23	42.6	14	25.9
Tennessee	19	36.5	25	48.1	8	15.4
All States	411	25.6	823	51.2	373	23.2

Note. Numbers and percentages are based on the total number of valid responses (missing = 80).

Table 26. TA Survey: Q2. Did the students in your session(s) complete the PARCC tutorial prior to administration?

	Yes		No		Not Sure/Don't Know	
State	n	%	n	%	n	%
Arizona	11	5.8	143	74.9	37	19.4
Arkansas	11	7.5	87	59.2	49	33.3
Colorado	4	6.1	49	74.2	13	19.7
D.C.	0	0.0	3	100.0	0	0.0
Florida	0	0.0	1	100.0	0	0.0
Illinois	11	3.9	206	73.8	62	22.2
Louisiana	1	16.7	5	83.3	0	0.0
Maryland	60	13.9	213	49.4	158	36.7
Massachusetts	6	3.6	120	71.4	42	25.0
Mississippi	1	1.9	24	46.2	27	51.9
New Jersey	1	33.3	1	33.3	1	33.3
New York	0	0.0	1	33.3	2	66.7
Ohio	5	3.3	91	60.3	55	36.4
Rhode Island	5	9.1	36	65.5	14	25.5
Tennessee	3	5.8	33	63.5	16	30.8
All States	119	7.4	1016	63.1	476	29.5

Note. Numbers and percentages are based on the total number of valid responses (missing = 76).

Table 27. TA Survey: Q3. In accordance with your state or local policy, please indicate which of the following options was given to students after the completion of testing.

	Sit Quietly		Dismissed		Quiet Recreational Material	
State	n	%	n	%	n	%
Arizona	66	34.4	6	3.1	120	62.5
Arkansas	100	67.1	8	5.4	41	27.5
Colorado	28	43.1	3	4.6	34	52.3
D.C.	0	0.0	0	0.0	3	100.0
Florida	1	100.0	0	0.0	0	0.0
Illinois	88	31.7	12	4.3	178	64.0
Louisiana	2	33.3	0	0.0	4	66.7
Maryland	238	55.9	39	9.2	149	35.0
Massachusetts	33	19.3	4	2.3	134	78.4
Mississippi	30	57.7	0	0.0	22	42.3
New Jersey	2	66.7	0	0.0	1	33.3
New York	2	66.7	0	0.0	1	33.3
Ohio	56	37.3	33	22.0	61	40.7
Rhode Island	19	34.5	1	1.8	35	63.6
Tennessee	42	80.8	2	3.8	8	15.4
All States	708	44.0	108	6.7	793	49.3

Note. Numbers and percentages are based on the total number of valid responses (missing = 78).

Process for Cleaning Up Data for PARCC TA Survey

- Initial dataset had 8736 respondents, which included responses from Test Administrators who administered the computer/tablet-based test (CBT) and Test Administrators who administered the paper-based test (PBT).

Clean-up Steps

1) Sorted data by start date and deleted cases that began before the initial launch of the survey (3/24/14), as well as cases that included words such as ‘test’, ‘delete’, or ‘dummy’ in the text box items.
    - n = 8729
        - CBT respondents = 6478
        - PBT respondents = 2251

2) Checked for duplicate cases within the dataset; none were found.
    - n = 8729

3) Individuals who only responded to the first five background items (1-4b) and no other substantive survey content were removed.
    - n = 8583
        - CBT respondents = 6362
        - PBT respondents = 2221

4) Further examined survey content items for each assessment type (CBT and PBT) to identify participants who failed to respond to any substantive content on the survey. So as not to exclude any meaningful responses, a conservative guideline was applied for removing cases; only individuals with 2 or fewer responses (not including background items) were removed.
    - n = 6322
        - CBT respondents = 4635
        - PBT respondents = 1687

5) Checked for pattern responding. Computed the number of times individuals used a particular response option (i.e., response 1, response 2, etc.) to help determine whether respondent provided thoughtful responses or was simply selecting the first response option for every item on the survey, for example. No evidence of pattern responding was found. Consequently, no cases were removed at this step.
    - n = 6322
        - CBT respondents = 4635
        - PBT respondents = 1687

Appendix K – Item-level Results from the Student Survey for Mathematics: Computer/Tablet-based Administration

Table 1. Student Survey Responses by State (Math CBT)

	Performance-Based Assessment		End-of-Year Assessment	
State	n	% of Total Responses	n	% of Total Responses
Arizona	15,180	8.3	12,615	8.0
Arkansas	8,283	4.5	7,641	4.8
Colorado	4,907	2.7	5,480	3.5
District of Columbia	460	0.3	2,557	1.6
Florida	2,450	1.3	2,010	1.3
Illinois	24,746	13.5	24,622	15.6
Louisiana	9,914	5.4	7,683	4.9
Maryland	13,553	7.4	13,673	8.7
Massachusetts	17,163	9.4	16,843	10.7
Mississippi	13,329	7.3	10,825	6.9
New Jersey	22,151	12.1	21,352	13.5
New Mexico	2,816	1.5	1,977	1.3
New York	3,243	1.8	3,484	2.2
Ohio	26,688	14.6	20,644	13.1
Rhode Island	4,402	2.4	2,773	1.8
Tennessee	13,814	7.5	3,693	2.3
All States	183,099	100.0	157,872	100.0

*Table 2. Student Survey Math CBT (**PBA**): Q1. Did you understand all of the directions read by the person who gave you the test?*

	Yes		No	
State	n	%	n	%
Arizona	12,690	83.7	2,474	16.3
Arkansas	7,387	89.2	891	10.8
Colorado	4,154	84.8	747	15.2
District of Columbia	405	88.0	55	12.0
Florida	2,227	91.0	219	9.0
Illinois	21,114	85.4	3,616	14.6
Louisiana	8,910	89.9	1,000	10.1
Maryland	11,942	88.3	1,582	11.7
Massachusetts	15,243	88.9	1,909	11.1
Mississippi	11,534	86.6	1,779	13.4
New Jersey	19,787	89.4	2,337	10.6
New Mexico	2,427	86.3	385	13.7
New York	2,741	84.6	498	15.4
Ohio	22,354	83.8	4,307	16.2
Rhode Island	3,796	86.3	601	13.7
Tennessee	12,269	88.9	1,525	11.1
All States	158,980	86.9	23,925	13.1

Note. Percentages are based on the number of valid responses. Missing = 194.

*Table 3. Student Survey Math CBT (**EOY**): Q1. Did you understand all of the directions read by the person who gave you the test?*

	Yes		No	
State	n	%	n	%
Arizona	9,605	76.2	2,993	23.8
Arkansas	6,137	80.3	1,503	19.7
Colorado	4,252	77.7	1,221	22.3
District of Columbia	2,088	81.7	468	18.3
Florida	1,651	82.2	357	17.8
Illinois	18,792	76.4	5,818	23.6
Louisiana	6,246	81.4	1,426	18.6
Maryland	10,471	76.7	3,179	23.3
Massachusetts	13,512	80.3	3,316	19.7
Mississippi	8,482	78.4	2,332	21.6
New Jersey	17,196	80.6	4,142	19.4
New Mexico	1,599	80.9	378	19.1
New York	2,634	75.7	844	24.3
Ohio	15,345	74.4	5,272	25.6
Rhode Island	2,113	76.3	655	23.7
Tennessee	2,825	76.6	861	23.4
All States	122,948	78.0	34,765	22.0

Note. Percentages are based on the number of valid responses. Missing = 159.

*Table 4. Student Survey Math CBT (**PBA**): Q2. How often was it hard to understand the directions for the questions on this test?*

	Almost Always		Most of the Time		Some of the Time		Almost Never	
State	n	%	n	%	n	%	n	%
Arizona	2,598	17.2	4,277	28.2	6,576	43.4	1,691	11.2
Arkansas	1,137	13.7	2,036	24.6	3,779	45.7	1,319	15.9
Colorado	903	18.4	1,362	27.8	2,114	43.2	519	10.6
District of Columbia	59	12.9	138	30.1	209	45.5	53	11.5
Florida	290	11.8	611	24.9	1,150	47.0	398	16.3
Illinois	4,481	18.1	6,654	26.9	10,787	43.7	2,785	11.3
Louisiana	1,358	13.7	2,580	26.1	4,366	44.1	1,593	16.1
Maryland	1,857	13.7	3,314	24.5	6,393	47.3	1,950	14.4
Massachusetts	2,180	12.7	4,274	25.0	8,176	47.7	2,500	14.6
Mississippi	2,446	18.4	3,569	26.8	5,774	43.4	1,524	11.4
New Jersey	2,930	13.3	5,629	25.5	10,490	47.4	3,059	13.8
New Mexico	495	17.6	794	28.3	1,185	42.2	335	11.9
New York	464	14.4	831	25.7	1,522	47.1	415	12.8
Ohio	5,676	21.3	7,009	26.3	10,974	41.2	2,986	11.2
Rhode Island	975	22.2	1,163	26.5	1,757	40.0	496	11.3
Tennessee	2,343	17.0	3,471	25.2	6,066	44.0	1,907	13.8
All States	30,192	16.5	47,712	26.1	81,318	44.5	23,530	12.9

Note. Percentages are based on the number of valid responses. Missing = 347.

*Table 5. Student Survey Math CBT (**EOY**): Q2. How often was it hard to understand the directions for the questions on this test?*

	Almost Always		Most of the Time		Some of the Time		Almost Never	
State	n	%	n	%	n	%	n	%
Arizona	1,813	14.4	3,147	25.0	5,773	45.9	1,841	14.6
Arkansas	924	12.1	1,651	21.6	3,528	46.2	1,526	20.0
Colorado	647	11.8	1,236	22.6	2,664	48.7	925	16.9
District of Columbia	303	11.9	540	21.2	1,125	44.1	583	22.9
Florida	234	11.7	418	20.8	925	46.1	428	21.3
Illinois	3,436	14.0	5,543	22.5	11,486	46.7	4,130	16.8
Louisiana	989	12.9	1,687	22.0	3,473	45.4	1,509	19.7
Maryland	1,603	11.8	2,910	21.3	6,552	48.0	2,573	18.9
Massachusetts	1,975	11.7	3,390	20.2	7,792	46.4	3,654	21.7
Mississippi	1,942	18.0	2,545	23.6	4,516	41.8	1,788	16.6
New Jersey	2,454	11.5	4,412	20.7	10,159	47.7	4,293	20.1
New Mexico	284	14.4	509	25.8	891	45.2	289	14.6
New York	393	11.3	733	21.1	1,666	48.1	675	19.5
Ohio	3,714	18.0	4,718	22.9	8,888	43.2	3,274	15.9
Rhode Island	488	17.7	673	24.4	1,148	41.6	451	16.3
Tennessee	625	17.0	814	22.1	1,622	44.1	616	16.8
All States	21,824	13.9	34,926	22.2	72,208	45.8	28,555	18.1

Note. Percentages are based on the number of valid responses. Missing = 359.

*Table 6. Student Survey Math CBT (**PBA**): Q3. How many questions asked you about things you have not learned in school this year?*

	All of Them		Most of Them		Few of Them		None of Them	
State	n	%	n	%	n	%	n	%
Arizona	820	5.4	3,930	26.0	7,862	52.0	2,507	16.6
Arkansas	396	4.8	2,002	24.2	4,320	52.2	1,555	18.8
Colorado	278	5.7	1,586	32.4	2,390	48.8	640	13.1
District of Columbia	34	7.4	102	22.2	207	45.1	116	25.3
Florida	77	3.1	542	22.2	1,370	56.0	457	18.7
Illinois	1,242	5.0	8,193	33.2	12,340	50.0	2,920	11.8
Louisiana	457	4.6	2,415	24.4	5,113	51.7	1,911	19.3
Maryland	726	5.4	3,539	26.2	7,162	53.0	2,084	15.4
Massachusetts	694	4.1	4,486	26.2	9,036	52.8	2,906	17.0
Mississippi	715	5.4	3,511	26.4	6,549	49.2	2,539	19.1
New Jersey	1,012	4.6	6,890	31.2	11,330	51.2	2,883	13.0
New Mexico	173	6.2	826	29.4	1,349	48.0	461	16.4
New York	164	5.1	832	25.8	1,621	50.2	610	18.9
Ohio	1,932	7.3	9,173	34.5	12,500	47.0	3,003	11.3
Rhode Island	308	7.0	1,465	33.4	2,083	47.5	532	12.1
Tennessee	697	5.1	3,454	25.1	6,933	50.3	2,689	19.5
All States	9,725	5.3	52,946	29.0	92,165	50.5	27,813	15.2

Note. Percentages are based on the number of valid responses. Missing = 450.

*Table 7. Student Survey Math CBT (**EOY**): Q3. How many questions asked you about things you have not learned in school this year?*

	All of Them		Most of Them		Few of Them		None of Them	
State	n	%	n	%	n	%	n	%
Arizona	689	5.5	3,083	24.5	6,409	51.0	2,390	19.0
Arkansas	344	4.5	1,806	23.7	4,050	53.1	1,426	18.7
Colorado	228	4.2	1,384	24.3	3,018	55.2	840	15.4
District of Columbia	142	5.6	571	22.5	1,046	41.2	782	30.8
Florida	59	2.9	269	13.4	1,090	54.3	589	29.3
Illinois	1,193	4.9	6,857	27.9	12,883	52.4	3,653	14.9
Louisiana	440	5.7	1,603	20.9	3,864	50.5	1,746	22.8
Maryland	646	4.7	3,062	22.5	7,588	55.7	2,336	17.1
Massachusetts	780	4.6	3,436	20.5	8,442	50.3	4,134	24.6
Mississippi	718	6.7	2,637	24.5	4,988	46.3	2,439	22.6
New Jersey	951	4.5	5,499	25.8	10,395	48.8	4,459	20.9
New Mexico	112	5.7	574	29.1	942	47.7	345	17.5
New York	172	5.0	640	18.5	1,728	50.0	919	26.6
Ohio	1,579	7.7	6,178	30.0	9,398	45.7	3,414	16.6
Rhode Island	164	5.9	802	29.0	1,388	50.3	408	14.8
Tennessee	212	5.8	844	23.0	1,803	49.1	813	22.1
All States	8,429	5.4	39,245	24.9	79,032	50.2	30,693	19.5

Note. Percentages are based on the number of valid responses. Missing = 473.

*Table 8. Student Survey Math CBT (**PBA**): Q4. How difficult was this test?*

	Easier than School Work		Same as School Work		Harder than School Work	
State	n	%	n	%	n	%
Arizona	833	5.5	4,852	32.1	9,418	62.4
Arkansas	396	4.8	2,791	33.7	5,086	61.5
Colorado	216	4.4	1,491	30.5	3,187	65.1
District of Columbia	50	10.9	207	45.1	202	44.0
Florida	108	4.4	807	32.9	1,535	62.7
Illinois	846	3.4	6,007	24.3	17,837	72.2
Louisiana	596	6.0	3,392	34.3	5,900	59.7
Maryland	835	6.2	4,771	35.3	7,909	58.5
Massachusetts	871	5.1	5,730	33.5	10,516	61.4
Mississippi	485	3.6	3,812	28.6	9,011	67.7
New Jersey	690	3.1	6,408	29.0	15,010	67.9
New Mexico	139	4.9	943	33.6	1,727	61.5
New York	173	5.4	1,087	33.7	1,970	61.0
Ohio	852	3.2	6,058	22.8	19,701	74.0
Rhode Island	113	2.6	913	20.8	3,365	76.6
Tennessee	578	4.2	3,742	27.2	9,452	68.6
All States	7,781	4.3	53,011	29.0	121,826	66.7

Note. Percentages are based on the number of valid responses. Missing = 481.

*Table 9. Student Survey Math CBT (**EOY**): Q4. How difficult was this test?*

	Easier than School Work		Same as School Work		Harder than School Work	
State	n	%	n	%	n	%
Arizona	894	7.1	4,586	36.5	7,070	56.3
Arkansas	497	6.5	2,684	35.2	4,445	58.3
Colorado	335	6.1	2,052	37.5	3,079	56.3
District of Columbia	266	10.5	1,219	47.9	1,058	41.6
Florida	138	6.9	859	42.9	1,006	50.2
Illinois	1,329	5.4	7,647	31.1	15,610	63.5
Louisiana	586	7.7	2,984	39.0	4,088	53.4
Maryland	1,074	7.9	5,359	39.3	7,201	52.8
Massachusetts	1,313	7.8	6,436	38.3	9,038	53.8
Mississippi	649	6.0	3,477	32.3	6,650	61.7
New Jersey	1,253	5.9	7,564	35.5	12,480	58.6
New Mexico	96	4.9	729	37.0	1,146	58.1
New York	286	8.3	1,500	43.4	1,671	48.3
Ohio	1,096	5.3	5,931	28.8	13,538	65.8
Rhode Island	130	4.7	767	27.8	1,863	67.5
Tennessee	224	6.1	1,235	33.6	2,216	60.3
All States	10,166	6.5	55,029	35.0	92,159	58.6

Note. Percentages are based on the number of valid responses. Missing = 518.

*Table 10. Student Survey Math CBT (**PBA**): Q5. Did you have enough time to finish this test?*

	Finished Very Early		Finished On Time		Rushed to Finish		Did Not Finish	
State	n	%	n	%	n	%	n	%
Arizona	3,814	25.2	8,985	59.4	1,453	9.6	875	5.8
Arkansas	2,593	31.4	4,637	56.1	746	9.0	289	3.5
Colorado	1,458	29.8	2,657	54.3	530	10.8	247	5.0
District of Columbia	103	22.5	309	67.5	23	5.0	23	5.0
Florida	559	22.9	1,475	60.3	272	11.1	140	5.7
Illinois	7,723	31.3	13,891	56.3	2,186	8.9	867	3.5
Louisiana	2,644	26.7	6,008	60.7	826	8.4	412	4.2
Maryland	4,545	33.7	6,927	51.3	1,352	10.0	682	5.0
Massachusetts	4,405	25.8	9,767	57.1	1,707	10.0	1,227	7.2
Mississippi	3,486	26.2	8,512	64.0	814	6.1	491	3.7
New Jersey	6,250	28.3	12,218	55.4	2,424	11.0	1,181	5.4
New Mexico	568	20.2	1,752	62.5	310	11.1	175	6.2
New York	1,059	32.8	1,720	53.3	265	8.2	182	5.6
Ohio	7,948	29.9	14,763	55.5	2,662	10.0	1,232	4.6
Rhode Island	1,209	27.6	2,602	59.3	405	9.2	170	3.9
Tennessee	3,757	27.3	8,060	58.6	1,255	9.1	690	5.0
All States	52,121	28.6	104,283	57.1	17,230	9.4	8,883	4.9

Note. Percentages are based on the number of valid responses. Missing = 582.

*Table 11. Student Survey Math CBT (**EOY**): Q5. Did you have enough time to finish this test?*

	Finished Very Early		Finished On Time		Rushed to Finish		Did Not Finish	
State	n	%	n	%	n	%	n	%
Arizona	3,354	26.7	7,501	59.7	1,275	10.2	424	3.4
Arkansas	2,781	36.5	4,074	53.4	608	8.0	165	2.2
Colorado	1,870	34.2	3,012	55.1	435	8.0	146	2.7
District of Columbia	643	25.4	1,630	64.3	165	6.5	97	3.8
Florida	541	27.0	1,230	61.3	189	9.4	47	2.3
Illinois	8,942	36.4	13,567	55.2	1,671	6.8	392	1.6
Louisiana	1,927	25.2	4,870	63.6	651	8.5	210	2.7
Maryland	5,575	40.9	6,841	50.1	944	6.9	285	2.1
Massachusetts	5,525	32.9	9,539	56.9	1,328	7.9	383	2.3
Mississippi	3,101	28.8	6,672	61.9	746	6.9	256	2.4
New Jersey	7,593	35.7	11,195	52.6	2,002	9.4	503	2.4
New Mexico	404	20.5	1,263	64.0	242	12.3	63	3.2
New York	1,198	34.7	1,789	51.8	392	11.3	76	2.2
Ohio	6,559	31.9	11,462	55.8	2,052	10.0	484	2.4
Rhode Island	884	32.0	1,672	60.5	166	6.0	42	1.5
Tennessee	1,121	30.6	2,045	55.8	324	8.8	178	4.9
All States	52,018	33.1	88,362	56.2	13,190	8.4	3,751	2.4

Note. Percentages are based on the number of valid responses. Missing = 551.

*Table 12. Student Survey Math CBT (**PBA**): Q6. How often do you use a computer or tablet at home?*

	Every Day		A Few Times a Week		A Couple Times A Month or Less		Do Not Have at Home	
State	n	%	n	%	n	%	n	%
Arizona	7,007	46.4	4,603	30.5	1,894	12.5	1,600	10.6
Arkansas	3,951	47.8	2,257	27.3	1,045	12.6	1,021	12.3
Colorado	2,530	51.8	1,453	29.7	554	11.3	351	7.2
District of Columbia	204	44.5	143	31.2	63	13.8	48	10.5
Florida	1,222	49.9	813	33.2	276	11.3	137	5.6
Illinois	13,898	56.3	6,987	28.3	2,361	9.6	1,421	5.8
Louisiana	4,842	49.0	2,870	29.0	1,267	12.8	909	9.2
Maryland	6,933	51.4	4,277	31.7	1,512	11.2	771	5.7
Massachusetts	9,567	55.9	5,197	30.4	1,619	9.5	725	4.2
Mississippi	5,932	44.6	3,992	30.0	1,910	14.4	1,462	11.0
New Jersey	13,305	60.2	6,228	28.2	1,764	8.0	800	3.6
New Mexico	1,170	41.8	890	31.8	436	15.6	304	10.9
New York	1,715	53.3	974	30.2	339	10.5	192	6.0
Ohio	14,752	55.5	7,124	26.8	2,874	10.8	1,831	6.9
Rhode Island	2,371	54.1	1,438	32.8	380	8.7	191	4.4
Tennessee	7,003	50.9	3,786	27.5	1,613	11.7	1,358	9.9
All States	96,402	52.8	53,032	29.1	19,907	10.9	13,121	7.2

Note. Percentages are based on the number of valid responses. Missing = 637.

*Table 13. Student Survey Math CBT (**EOY**): Q6. How often do you use a computer or tablet at home?*

	Every Day		A Few Times a Week		A Couple Times A Month or Less		Do Not Have at Home	
State	n	%	n	%	n	%	n	%
Arizona	5,771	46.0	3,859	30.8	1,706	13.6	1,207	9.6
Arkansas	3,661	48.0	2,168	28.4	994	13.0	800	10.5
Colorado	2,607	47.7	1,812	33.2	682	12.5	359	6.6
District of Columbia	1,094	43.2	899	35.5	333	13.1	208	8.2
Florida	1,023	51.0	623	31.0	250	12.5	111	5.5
Illinois	13,380	54.5	7,251	29.5	2,596	10.6	1,343	5.5
Louisiana	3,667	47.9	2,236	29.2	1,085	14.2	667	8.7
Maryland	6,918	50.7	4,327	31.7	1,707	12.5	686	5.0
Massachusetts	9,292	55.4	5,147	30.7	1,697	10.1	635	3.8
Mississippi	4,757	44.1	3,203	29.7	1,709	15.9	1,109	10.3
New Jersey	12,468	58.6	6,147	28.9	1,925	9.0	749	3.5
New Mexico	818	41.5	649	33.0	284	14.4	218	11.1
New York	1,699	49.2	1,131	32.8	404	11.7	217	6.3
Ohio	11,050	53.8	5,635	27.5	2,343	11.4	1,497	7.3
Rhode Island	1,477	53.6	892	32.3	286	10.4	103	3.7
Tennessee	1,757	48.1	1,017	27.8	523	14.3	359	9.8
All States	81,439	51.8	46,996	29.9	18,524	11.8	10,268	6.5

Note. Percentages are based on the number of valid responses. Missing = 645.

*Table 14. Student Survey Math CBT (**PBA**): Q7. How often do you use a computer or tablet in school?*

	Every Day		A Few Times a Week		A Couple Times A Month or Less		Do Not Use in School	
State	n	%	n	%	n	%	n	%
Arizona	2,741	18.2	5,682	37.6	5,394	35.7	1,284	8.5
Arkansas	2,343	28.3	3,528	42.7	2,123	25.7	276	3.3
Colorado	1,287	26.3	2,181	44.6	1,308	26.8	111	2.3
District of Columbia	116	25.5	169	37.1	141	31.0	29	6.4
Florida	385	15.8	852	34.9	1,014	41.6	188	7.7
Illinois	6,513	26.4	10,806	43.8	6,702	27.2	633	2.6
Louisiana	2,421	24.5	3,586	36.3	3,286	33.3	583	5.9
Maryland	1,866	13.8	5,404	40.1	5,549	41.2	662	4.9
Massachusetts	3,001	17.6	7,162	41.9	6,157	36.0	769	4.5
Mississippi	3,650	27.5	5,140	38.7	3,632	27.3	869	6.5
New Jersey	4,248	19.3	9,572	43.4	7,565	34.3	679	3.1
New Mexico	548	19.6	1,065	38.1	1,047	37.4	138	4.9
New York	580	18.1	1,321	41.1	1,060	33.0	252	7.8
Ohio	7,115	26.8	10,667	40.2	8,032	30.2	743	2.8
Rhode Island	592	13.5	2,060	47.0	1,545	35.3	183	4.2
Tennessee	2,446	17.8	5,662	41.2	5,134	37.3	504	3.7
All States	39,852	21.9	74,857	41.1	59,689	32.7	7,903	4.3

Note. Percentages are based on the number of valid responses. Missing = 798.

*Table 15. Student Survey Math CBT (**EOY**): Q7. How often do you use a computer or tablet in school?*

	Every Day		A Few Times a Week		A Couple Times A Month or Less		Do Not Use in School	
State	n	%	n	%	n	%	n	%
Arizona	2,378	19.0	5,039	40.2	4,135	33.0	973	7.8
Arkansas	2,204	28.9	3,223	42.3	1,972	25.9	225	3.0
Colorado	1,155	21.2	2,400	44.0	1,733	31.8	167	3.1
District of Columbia	537	21.2	1,122	44.2	773	30.5	105	4.1
Florida	351	17.6	709	35.5	803	40.2	135	6.8
Illinois	6,532	26.6	10,925	44.5	6,420	26.2	669	2.7
Louisiana	1,713	22.4	2,768	36.2	2,735	35.8	429	5.6
Maryland	1,886	13.8	5,391	39.6	5,761	42.3	584	4.3
Massachusetts	3,216	19.2	7,013	41.9	5,919	35.3	601	3.6
Mississippi	2,986	27.7	3,964	36.8	3,144	29.2	672	6.2
New Jersey	4,241	19.9	9,338	43.9	7,051	33.1	641	3.0
New Mexico	495	25.2	651	33.1	726	36.9	94	4.8
New York	659	19.1	1,390	40.4	1,148	33.4	245	7.1
Ohio	5,228	25.5	8,090	39.5	6,425	31.3	758	3.7
Rhode Island	421	15.3	1,247	45.3	955	34.7	130	4.7
Tennessee	684	18.7	1,412	38.6	1,376	37.7	182	5.0
All States	34,686	22.1	64,682	41.2	51,076	32.5	6,610	4.2

Note. Percentages are based on the number of valid responses. Missing = 818.

*Table 16. Student Survey Math CBT (**PBA**): Q8. When writing a story or essay, how often do you use a computer or tablet?*

	All of the Time		Most of the Time		Some of the Time		Never	
State	n	%	n	%	n	%	n	%
Arizona	1,774	11.8	3,649	24.2	5,912	39.2	3,745	24.8
Arkansas	816	9.9	1,719	20.8	3,664	44.3	2,070	25.0
Colorado	777	15.9	1,605	32.9	1,926	39.4	577	11.8
District of Columbia	57	12.5	104	22.8	183	40.0	113	24.7
Florida	227	9.3	453	18.5	919	37.6	844	34.5
Illinois	4,619	18.7	7,674	31.1	8,928	36.2	3,433	13.9
Louisiana	1,189	12.0	2,101	21.3	3,849	39.0	2,739	27.7
Maryland	1,840	13.6	3,488	25.9	5,562	41.3	2,592	19.2
Massachusetts	2,857	16.7	4,806	28.1	6,325	37.0	3,096	18.1
Mississippi	1,637	12.3	3,295	24.8	5,330	40.1	3,021	22.7
New Jersey	3,533	16.0	6,845	31.0	8,510	38.5	3,198	14.5
New Mexico	396	14.1	726	25.9	1,149	41.0	532	19.0
New York	436	13.6	789	24.5	1,246	38.7	746	23.2
Ohio	4,013	15.1	7,776	29.3	10,637	40.0	4,137	15.6
Rhode Island	844	19.3	1,322	30.2	1,638	37.5	569	13.0
Tennessee	1,463	10.6	3,643	26.5	6,104	44.4	2,531	18.4
All States	26,478	14.5	49,995	27.4	71,882	39.4	33,943	18.6

Note. Percentages are based on the number of valid responses. Missing = 801.

*Table 17. Student Survey Math CBT (**EOY**): Q8. When writing a story or essay, how often do you use a computer or tablet?*

	All of the Time		Most of the Time		Some of the Time		Never	
State	n	%	n	%	n	%	n	%
Arizona	1,694	13.5	3,185	25.4	4,885	39.0	2,759	22.0
Arkansas	791	10.4	1,797	23.6	3,388	44.4	1,647	21.6
Colorado	741	13.6	1,659	30.4	2,245	41.1	811	14.9
District of Columbia	383	15.1	663	26.1	1,046	41.2	447	17.6
Florida	175	8.8	348	17.4	768	38.4	708	35.4
Illinois	4,222	17.2	7,933	32.3	8,664	35.3	3,738	15.2
Louisiana	977	12.8	1,636	21.4	3,009	39.3	2,025	26.5
Maryland	1,887	13.9	3,483	25.6	5,655	41.5	2,593	19.0
Massachusetts	2,826	16.9	4,739	28.3	6,233	37.2	2,971	17.7
Mississippi	1,557	14.5	2,707	25.2	3,975	36.9	2,520	23.4
New Jersey	3,343	15.7	6,356	29.9	8,397	39.5	3,185	15.0
New Mexico	284	14.4	585	29.7	788	40.0	312	15.8
New York	411	11.9	898	26.1	1,402	40.7	733	21.3
Ohio	3,560	17.4	5,939	29.0	7,715	37.6	3,285	16.0
Rhode Island	559	20.3	859	31.2	950	34.5	389	14.1
Tennessee	444	12.1	846	23.1	1,632	44.5	742	20.3
All States	23,854	15.2	43,633	27.8	60,752	38.7	28,865	18.4

Note. Percentages are based on the number of valid responses. Missing = 768.

*Table 18. Student Survey Math CBT (**PBA**): Q9. Would you rather take this test on paper OR on a computer or tablet?*

	On Paper		On a Computer or Tablet	
State	n	%	n	%
Arizona	5,462	36.2	9,628	63.8
Arkansas	3,688	44.6	4,581	55.4
Colorado	2,344	48.0	2,541	52.0
District of Columbia	103	22.5	355	77.5
Florida	858	35.1	1,585	64.9
Illinois	10,365	42.1	14,274	57.9
Louisiana	3,409	34.5	6,472	65.5
Maryland	3,782	28.0	9,716	72.0
Massachusetts	7,596	44.5	9,490	55.5
Mississippi	4,896	36.9	8,389	63.1
New Jersey	10,819	49.0	11,259	51.0
New Mexico	1,040	37.1	1,763	62.9
New York	1,427	44.3	1,791	55.7
Ohio	14,206	53.5	12,363	46.5
Rhode Island	1,807	41.3	2,570	58.7
Tennessee	4,986	36.3	8,751	63.7
All States	76,788	42.1	105,528	57.9

Note. Percentages are based on the number of valid responses. Missing = 783.

*Table 19. Student Survey Math CBT (**EOY**): Q9. Would you rather take this test on paper OR on a computer or tablet?*

	On Paper		On a Computer or Tablet	
State	n	%	n	%
Arizona	3,972	31.7	8,557	68.3
Arkansas	3,011	39.5	4,613	60.5
Colorado	1,962	36.0	3,493	64.0
District of Columbia	569	22.4	1,966	77.6
Florida	671	33.4	1,337	66.6
Illinois	8,431	34.3	16,116	65.7
Louisiana	2,444	32.0	5,205	68.0
Maryland	3,346	24.5	10,292	75.5
Massachusetts	6,849	40.8	9,924	59.2
Mississippi	4,412	41.0	6,351	59.0
New Jersey	9,384	44.1	11,896	55.9
New Mexico	634	32.2	1,332	67.8
New York	1,318	38.4	2,118	61.6
Ohio	10,208	49.8	10,305	50.2
Rhode Island	921	33.4	1,836	66.6
Tennessee	1,279	35.0	2,376	65.0
All States	59,411	37.8	97,717	62.2

Note. Percentages are based on the number of valid responses. Missing = 744.

*Table 20. Student Survey Math CBT (**PBA**): Q10. What did you use to take this test?*

	Desktop Computer		Laptop Computer		Tablet with a Keyboard		Tablet without Keyboard	
State	n	%	n	%	n	%	n	%
Arizona	9,990	66.2	4,228	28.0	652	4.3	215	1.4
Arkansas	5,007	60.6	2,927	35.4	276	3.3	55	0.7
Colorado	2,796	57.2	1,953	40.0	102	2.1	36	0.7
District of Columbia	263	57.4	155	33.8	31	6.8	9	2.0
Florida	2,253	92.3	103	4.2	67	2.7	18	0.7
Illinois	15,735	63.8	7,530	30.5	1,082	4.4	306	1.2
Louisiana	7,488	75.8	1,856	18.8	401	4.1	140	1.4
Maryland	10,019	74.2	3,062	22.7	327	2.4	88	0.7
Massachusetts	9,097	53.2	5,875	34.4	1,776	10.4	352	2.1
Mississippi	11,333	85.3	1,410	10.6	442	3.3	104	0.8
New Jersey	12,312	55.7	8,373	37.9	1,262	5.7	140	0.6
New Mexico	2,266	80.8	456	16.3	67	2.4	15	0.5
New York	2,037	63.3	1,011	31.4	140	4.4	28	0.9
Ohio	15,727	59.4	9,489	35.8	967	3.7	293	1.1
Rhode Island	2,304	52.6	1,945	44.4	115	2.6	19	0.4
Tennessee	8,683	63.2	4,773	34.7	232	1.7	57	0.4
All States	117,310	64.4	55,146	30.3	7,939	4.4	1,875	1.0

Note. Percentages are based on the number of valid responses. Missing = 829.

*Table 21. Student Survey Math CBT (**EOY**): Q10. What did you use to take this test?*

	Desktop Computer		Laptop Computer		Tablet with a Keyboard		Tablet without Keyboard	
State	n	%	n	%	n	%	n	%
Arizona	7,977	63.7	3,735	29.8	643	5.1	163	1.3
Arkansas	4,394	57.6	2,779	36.4	374	4.9	78	1.0
Colorado	3,141	57.6	1,992	36.5	293	5.4	30	0.5
District of Columbia	843	33.3	1,589	62.7	79	3.1	24	0.9
Florida	1,869	93.2	80	4.0	41	2.0	15	0.7
Illinois	14,476	59.0	8,781	35.8	941	3.8	351	1.4
Louisiana	5,681	74.2	1,409	18.4	419	5.5	149	1.9
Maryland	10,204	74.9	3,021	22.2	308	2.3	96	0.7
Massachusetts	8,866	52.9	5,529	33.0	1,915	11.4	454	2.7
Mississippi	8,329	77.4	1,889	17.6	424	3.9	119	1.1
New Jersey	11,335	53.2	8,508	40.0	1,213	5.7	231	1.1
New Mexico	1,409	71.6	403	20.5	137	7.0	20	1.0
New York	2,343	68.1	904	26.3	142	4.1	50	1.5
Ohio	12,476	60.9	7,028	34.3	803	3.9	185	0.9
Rhode Island	1,041	37.9	1,593	57.9	97	3.5	18	0.7
Tennessee	2,270	62.1	1,261	34.5	77	2.1	46	1.3
All States	96,654	61.5	50,501	32.1	7,906	5.0	2,029	1.3

Note. Percentages are based on the number of valid responses. Missing = 782.

*Table 22. Student Survey Math CBT (**PBA**): Q11. How many times did you practice on a computer or tablet to get ready for this test?*

	Never		Once		More than Once	
State	n	%	n	%	n	%
Arizona	7,061	46.9	5,602	37.2	2,398	15.9
Arkansas	2,702	32.7	3,662	44.3	1,903	23.0
Colorado	2,884	59.0	1,441	29.5	560	11.5
District of Columbia	170	37.2	143	31.3	144	31.5
Florida	1,227	50.3	728	29.8	484	19.8
Illinois	10,652	43.2	9,929	40.3	4,062	16.5
Louisiana	4,590	46.4	3,325	33.6	1,967	19.9
Maryland	4,430	32.8	5,301	39.3	3,756	27.8
Massachusetts	6,077	35.6	7,516	44.0	3,500	20.5
Mississippi	6,254	47.1	4,469	33.7	2,555	19.2
New Jersey	7,833	35.5	9,324	42.2	4,912	22.3
New Mexico	1,367	48.7	992	35.3	449	16.0
New York	1,549	48.2	1,088	33.9	574	17.9
Ohio	14,592	55.1	8,845	33.4	3,051	11.5
Rhode Island	1,677	38.3	1,756	40.1	946	21.6
Tennessee	7,221	52.6	4,463	32.5	2,050	14.9
All States	80,286	44.1	68,584	37.6	33,311	18.3

Note. Percentages are based on the number of valid responses. Missing = 918.

*Table 23. Student Survey Math CBT (**EOY**): Q11. How many times did you practice on a computer or tablet to get ready for this test?*

	Never		Once		More than Once	
State	n	%	n	%	n	%
Arizona	5,861	46.8	4,361	34.9	2,291	18.3
Arkansas	2,410	31.6	3,424	44.9	1,785	23.4
Colorado	2,756	50.5	1,806	33.1	893	16.4
District of Columbia	1,061	41.8	818	32.3	657	25.9
Florida	804	40.1	675	33.7	525	26.2
Illinois	10,868	44.3	9,166	37.3	4,513	18.4
Louisiana	3,712	48.5	2,329	30.5	1,605	21.0
Maryland	5,010	36.8	4,930	36.2	3,688	27.1
Massachusetts	6,536	39.0	6,596	39.4	3,622	21.6
Mississippi	5,227	48.6	3,169	29.5	2,356	21.9
New Jersey	8,021	37.7	8,098	38.1	5,153	24.2
New Mexico	967	49.1	646	32.8	355	18.0
New York	1,554	45.1	1,194	34.7	694	20.2
Ohio	10,280	50.2	6,733	32.9	3,476	17.0
Rhode Island	999	36.3	1,027	37.3	729	26.5
Tennessee	2,073	56.7	1,018	27.9	563	15.4
All States	68,139	43.4	55,990	35.7	32,905	21.0

Note. Percentages are based on the number of valid responses. Missing = 838.

*Table 24. Student Survey Math CBT (**PBA**): Q12. Was it easy to use the highlighter?*

	Yes		No		Did Not Use Highlighter	
State	n	%	n	%	n	%
Arizona	6,100	40.5	837	5.6	8,117	53.9
Arkansas	2,835	34.3	395	4.8	5,037	60.9
Colorado	1,347	27.6	403	8.3	3,133	64.2
District of Columbia	185	40.6	39	8.6	232	50.9
Florida	991	40.6	117	4.8	1,332	54.6
Illinois	7,029	28.5	1,228	5.0	16,366	66.5
Louisiana	3,696	37.4	532	5.4	5,650	57.2
Maryland	5,098	37.8	748	5.5	7,653	56.7
Massachusetts	6,278	36.8	987	5.8	9,815	57.5
Mississippi	4,808	36.2	586	4.4	7,874	59.3
New Jersey	7,189	32.6	1,235	5.6	13,640	61.8
New Mexico	1,115	39.8	222	7.9	1,466	52.3
New York	1,121	34.9	193	6.0	1,900	59.1
Ohio	7,838	29.6	1,672	6.3	16,995	64.1
Rhode Island	1,540	35.2	321	7.3	2,517	57.5
Tennessee	3,920	28.6	721	5.3	9,088	66.2
All States	61,090	33.5	10,236	5.6	110,815	60.8

Note. Percentages are based on the number of valid responses. Missing = 958.

*Table 25. Student Survey Math CBT (**EOY**): Q12. Was it easy to use the highlighter?*

	Yes		No		Did Not Use Highlighter	
State	n	%	n	%	n	%
Arizona	5,735	45.9	691	5.5	6,078	48.6
Arkansas	3,042	39.9	335	4.4	4,243	55.7
Colorado	1,973	36.2	269	4.9	3,212	58.9
District of Columbia	1,116	44.1	146	5.8	1,268	50.1
Florida	946	47.2	97	4.8	962	48.0
Illinois	8,805	35.9	957	3.9	14,784	60.2
Louisiana	3,120	40.8	408	5.3	4,116	53.8
Maryland	5,762	42.3	562	4.1	7,302	53.6
Massachusetts	6,380	38.1	943	5.6	9,429	56.3
Mississippi	4,309	40.1	601	5.6	5,845	54.3
New Jersey	7,817	36.7	853	4.0	12,604	59.2
New Mexico	841	42.7	98	5.0	1,030	52.3
New York	1,435	41.8	186	5.4	1,815	52.8
Ohio	7,408	36.2	1,242	6.1	11,838	57.8
Rhode Island	1,084	39.4	145	5.3	1,521	55.3
Tennessee	1,224	33.6	213	5.8	2,211	60.6
All States	60,997	38.9	7,746	4.9	88,258	56.2

Note. Percentages are based on the number of valid responses. Missing = 871.

*Table 26. Student Survey Math CBT (**PBA**): Q13. Was it easy to type your answers?*

	Yes		No		Did Not Type Answers	
State	n	%	n	%	n	%
Arizona	10,485	69.8	4,287	28.5	260	1.7
Arkansas	6,012	72.8	2,170	26.3	74	0.9
Colorado	2,901	59.5	1,914	39.3	60	1.2
District of Columbia	358	78.2	88	19.2	12	2.6
Florida	1,695	69.6	708	29.1	34	1.4
Illinois	15,547	63.2	8,802	35.8	256	1.0
Louisiana	7,184	72.8	2,530	25.6	156	1.6
Maryland	8,634	64.0	4,634	34.4	221	1.6
Massachusetts	9,863	57.8	6,994	41.0	211	1.2
Mississippi	9,804	74.0	3,299	24.9	151	1.1
New Jersey	12,771	57.9	9,048	41.0	243	1.1
New Mexico	1,924	68.7	842	30.1	34	1.2
New York	2,034	63.4	1,122	35.0	53	1.7
Ohio	15,962	60.2	10,129	38.2	428	1.6
Rhode Island	2,632	60.1	1,676	38.3	70	1.6
Tennessee	9,539	69.6	3,970	29.0	202	1.5
All States	117,345	64.5	62,213	34.2	2,465	1.4

Note. Percentages are based on the number of valid responses. Missing = 1076.

*Table 27. Student Survey Math CBT (**EOY**): Q13. Was it easy to type your answers?*

	Yes		No		Did Not Type Answers	
State	n	%	n	%	n	%
Arizona	10,008	80.1	2,128	17.0	358	2.9
Arkansas	6,162	80.9	1,264	16.6	187	2.5
Colorado	4,021	73.8	1,180	21.6	250	4.6
District of Columbia	2,061	81.5	355	14.0	112	4.4
Florida	1,614	80.7	325	16.2	62	3.1
Illinois	19,238	78.4	4,348	17.7	941	3.8
Louisiana	6,202	81.1	1,218	15.9	223	2.9
Maryland	10,289	75.6	2,516	18.5	809	5.9
Massachusetts	12,511	74.7	3,464	20.7	763	4.6
Mississippi	8,512	79.2	1,875	17.5	355	3.3
New Jersey	16,354	77.0	4,226	19.9	666	3.1
New Mexico	1,559	79.4	336	17.1	68	3.5
New York	2,779	80.9	543	15.8	112	3.3
Ohio	14,706	71.9	4,840	23.7	917	4.5
Rhode Island	2,098	76.2	534	19.4	120	4.4
Tennessee	2,891	79.2	626	17.2	131	3.6
All States	121,005	77.1	29,778	19.0	6,074	3.9

Note. Percentages are based on the number of valid responses. Missing = 1015.

*Table 28. Student Survey Math CBT (**PBA**): Q14. Was it easy to make pictures or words bigger or smaller?*

	Yes		No		Did Not Change Size	
State	n	%	n	%	n	%
Arizona	4,182	27.8	1,940	12.9	8,907	59.3
Arkansas	1,997	24.2	882	10.7	5,371	65.1
Colorado	763	15.6	805	16.5	3,308	67.8
District of Columbia	195	43.0	57	12.6	202	44.5
Florida	620	25.5	371	15.2	1,445	59.3
Illinois	5,075	20.6	2,913	11.8	16,628	67.5
Louisiana	3,005	30.4	1,078	10.9	5,788	58.6
Maryland	3,200	23.7	1,833	13.6	8,466	62.7
Massachusetts	3,946	23.1	2,398	14.1	10,712	62.8
Mississippi	3,553	26.8	1,351	10.2	8,364	63.0
New Jersey	4,407	20.0	2,769	12.6	14,883	67.5
New Mexico	766	27.3	510	18.2	1,526	54.5
New York	762	23.8	453	14.1	1,993	62.1
Ohio	5,345	20.2	3,751	14.2	17,403	65.7
Rhode Island	955	21.8	735	16.8	2,683	61.4
Tennessee	3,180	23.2	1,454	10.6	9,076	66.2
All States	41,951	23.0	23,300	12.8	116,755	64.1

Note. Percentages are based on the number of valid responses. Missing = 1093.

*Table 29. Student Survey Math CBT (**EOY**): Q14. Was it easy to make pictures or words bigger or smaller?*

	Yes		No		Did Not Change Size	
State	n	%	n	%	n	%
Arizona	3,668	29.4	1,478	11.8	7,343	58.8
Arkansas	1,939	25.5	688	9.0	4,989	65.5
Colorado	1,033	19.0	665	12.2	3,748	68.8
District of Columbia	778	30.8	283	11.2	1,467	58.0
Florida	454	22.7	194	9.7	1,352	67.6
Illinois	5,268	21.5	2,260	9.2	17,010	69.3
Louisiana	2,189	28.6	811	10.6	4,647	60.8
Maryland	3,071	22.5	1,365	10.0	9,185	67.4
Massachusetts	3,820	22.8	1,813	10.8	11,098	66.3
Mississippi	2,827	26.3	1,070	10.0	6,839	63.7
New Jersey	4,581	21.6	2,089	9.8	14,587	68.6
New Mexico	555	28.2	209	10.6	1,202	61.1
New York	862	25.1	390	11.4	2,180	63.5
Ohio	4,719	23.1	2,517	12.3	13,211	64.6
Rhode Island	672	24.4	358	13.0	1,719	62.5
Tennessee	797	21.8	369	10.1	2,482	68.0
All States	37,233	23.7	16,559	10.6	103,059	65.7

Note. Percentages are based on the number of valid responses. Missing = 1021.

*Table 30. Student Survey Math CBT (**PBA**): Q15. Was it easy to enter math symbols and numbers for your answers?*

	Yes		No		Did Not Enter Math Symbols or Numbers	
State	n	%	n	%	n	%
Arizona	10,364	69.0	3,875	25.8	787	5.2
Arkansas	5,869	71.1	1,987	24.1	394	4.8
Colorado	3,006	61.6	1,637	33.6	235	4.8
District of Columbia	343	75.1	96	21.0	18	3.9
Florida	1,805	74.1	558	22.9	74	3.0
Illinois	16,580	67.4	6,887	28.0	1,141	4.6
Louisiana	7,164	72.6	2,179	22.1	521	5.3
Maryland	9,311	69.1	3,553	26.4	607	4.5
Massachusetts	10,868	63.8	5,540	32.5	635	3.7
Mississippi	9,888	74.6	2,775	20.9	589	4.4
New Jersey	14,245	64.6	6,935	31.5	861	3.9
New Mexico	1,969	70.4	711	25.4	115	4.1
New York	2,119	66.2	923	28.8	159	5.0
Ohio	16,364	61.8	8,639	32.6	1,496	5.6
Rhode Island	2,832	64.8	1,334	30.5	204	4.7
Tennessee	9,655	70.5	3,349	24.5	691	5.0
All States	122,382	67.3	50,978	28.0	8,527	4.7

Note. Percentages are based on the number of valid responses. Missing = 1212.

*Table 31. Student Survey Math CBT (**EOY**): Q15. Was it easy to enter math symbols and numbers for your answers?*

	Yes		No		Did Not Enter Math Symbols or Numbers	
State	n	%	n	%	n	%
Arizona	8,255	66.2	2,809	22.5	1,409	11.3
Arkansas	5,139	67.5	1,580	20.8	889	11.7
Colorado	3,435	63.1	1,462	26.9	547	10.0
District of Columbia	1,789	70.8	500	19.8	238	9.4
Florida	1,396	70.0	375	18.8	224	11.2
Illinois	15,955	65.1	5,378	21.9	3,176	13.0
Louisiana	5,208	68.3	1,530	20.1	887	11.6
Maryland	9,335	68.6	2,546	18.7	1,730	12.7
Massachusetts	10,557	63.1	4,144	24.8	2,024	12.1
Mississippi	6,923	64.6	2,262	21.1	1,532	14.3
New Jersey	13,577	63.9	5,195	24.4	2,479	11.7
New Mexico	1,251	63.7	506	25.8	207	10.5
New York	2,280	66.6	714	20.9	430	12.6
Ohio	12,226	59.8	5,448	26.7	2,762	13.5
Rhode Island	1,803	65.6	591	21.5	354	12.9
Tennessee	2,293	62.9	851	23.3	502	13.8
All States	101,422	64.7	35,891	22.9	19,390	12.4

Note. Percentages are based on the number of valid responses. Missing = 1169.

*Table 32. Student Survey Math CBT (**PBA**): Q16. Was it easy to use the calculator?*

	Yes		No		Did Not Use Calculator	
State	n	%	n	%	n	%
Arizona	8,103	54.0	1,296	8.6	5,609	37.4
Arkansas	4,512	54.7	573	6.9	3,164	38.4
Colorado	2,928	60.0	514	10.5	1,434	29.4
District of Columbia	195	42.6	26	5.7	237	51.7
Florida	771	31.7	181	7.4	1,484	60.9
Illinois	11,793	47.9	2,517	10.2	10,295	41.8
Louisiana	5,111	51.8	639	6.5	4,109	41.7
Maryland	6,776	50.2	811	6.0	5,899	43.7
Massachusetts	8,159	47.8	1,549	9.1	7,353	43.1
Mississippi	7,211	54.4	999	7.5	5,051	38.1
New Jersey	10,274	46.6	2,422	11.0	9,353	42.4
New Mexico	1,700	60.7	248	8.9	853	30.5
New York	1,519	47.4	260	8.1	1,423	44.4
Ohio	13,120	49.6	4,522	17.1	8,834	33.4
Rhode Island	2,354	53.9	474	10.9	1,540	35.3
Tennessee	6,874	50.2	1,503	11.0	5,317	38.8
All States	91,400	50.3	18,534	10.2	71,955	39.6

Note. Percentages are based on the number of valid responses. Missing = 1210.

*Table 33. Student Survey Math CBT (**EOY**): Q16. Was it easy to use the calculator?*

	Yes		No		Did Not Use Calculator	
State	n	%	n	%	n	%
Arizona	6,169	49.6	1,094	8.8	5,179	41.6
Arkansas	3,873	50.9	645	8.5	3,087	40.6
Colorado	3,008	55.2	413	7.6	2,025	37.2
District of Columbia	927	36.7	144	5.7	1,455	57.6
Florida	532	26.6	122	6.1	1,349	67.3
Illinois	10,929	44.6	2,240	9.1	11,341	46.3
Louisiana	3,619	47.4	553	7.2	3,457	45.3
Maryland	6,337	46.6	742	5.5	6,533	48.0
Massachusetts	7,211	43.1	1,657	9.9	7,848	46.9
Mississippi	5,523	51.7	891	8.3	4,265	39.9
New Jersey	9,685	45.6	2,340	11.0	9,224	43.4
New Mexico	1,101	56.1	163	8.3	698	35.6
New York	1,560	45.7	298	8.7	1,557	45.6
Ohio	9,626	47.2	3,205	15.7	7,574	37.1
Rhode Island	1,322	48.1	239	8.7	1,189	43.2
Tennessee	1,630	44.7	374	10.3	1,639	45.0
All States	73,052	46.7	15,120	9.7	68,420	43.7

Note. Percentages are based on the number of valid responses. Missing = 1280.

*Table 34. Student Survey Math CBT (**PBA**): Q17. Did any of the problems listed below happen during your test? (Select all that apply)*[a].

	Computer Stopped Working		Computer Worked Slowly		Difficulty Dragging or Moving Things on Screen		Difficulty Making Changes to Answers		No Problems Occurred During the Test	
State	n	%	n	%	n	%	n	%	n	%
Arizona	2,197	14.5	4,401	29.0	3,269	21.5	5,134	33.8	6,692	44.1
Arkansas	1,002	12.1	2,256	27.2	1,771	21.4	2,979	36.0	3,745	45.2
Colorado	863	17.6	2,057	41.9	1,449	29.5	2,439	49.7	1,539	31.4
District of Columbia	61	13.3	109	23.7	70	15.2	90	19.6	238	51.7
Florida	531	21.7	847	34.6	512	20.9	902	36.8	880	35.9
Illinois	3,380	13.7	8,243	33.3	5,728	23.1	10,678	43.2	9,522	38.5
Louisiana	1,240	12.5	2,330	23.5	1,878	18.9	3,186	32.1	4,864	49.1
Maryland	2,440	18.0	4,977	36.7	3,114	23.0	5,548	40.9	5,012	37.0
Massachusetts	2,996	17.5	6,447	37.6	4,413	25.7	8,162	47.6	5,777	33.7
Mississippi	1,604	12.0	2,908	21.8	2,242	16.8	3,881	29.1	7,044	52.8
New Jersey	3,951	17.8	8,730	39.4	5,898	26.6	11,280	50.9	7,006	31.6
New Mexico	421	15.0	900	32.0	614	21.8	1,114	39.6	1,190	42.3
New York	432	13.3	910	28.1	731	22.5	1,254	38.7	1,358	41.9
Ohio	3,539	13.3	9,200	34.5	7,118	26.7	11,888	44.5	9,947	37.3
Rhode Island	826	18.8	1,745	39.6	1,186	26.9	2,002	45.5	1,554	35.3
Tennessee	1,933	14.0	4,244	30.7	3,067	22.2	5,155	37.3	5,875	42.5
All States	27,416	15.0	60,304	32.9	43,060	23.5	75,692	41.3	72,243	39.5

[a] Percentages reported for “select all that apply” should be interpreted with caution, as it is not possible to differentiate “missing” (i.e., skipped) vs. “not selected” responses.

*Table 35. Student Survey Math CBT (**EOY**): Q17. Did any of the problems listed below happen during your test? (Select all that apply)*[a].

	Computer Stopped Working		Computer Worked Slowly		Difficulty Dragging or Moving Things on Screen		Difficulty Making Changes to Answers		No Problems Occurred During the Test	
State	n	%	n	%	n	%	n	%	n	%
Arizona	1,510	12.0	2,615	20.7	2,953	23.4	2,401	19.0	6,978	55.3
Arkansas	803	10.5	1,680	22.0	1,946	25.5	1,385	18.1	4,224	55.3
Colorado	613	11.2	1,422	25.9	1,492	27.2	1,309	23.9	2,793	51.0
District of Columbia	277	10.8	595	23.3	567	22.2	404	15.8	1,399	54.7
Florida	538	26.8	359	17.9	424	21.1	402	20.0	983	48.9
Illinois	2,263	9.2	5,168	21.0	5,993	24.3	4,846	19.7	13,859	56.3
Louisiana	1,004	13.1	1,537	20.0	1,722	22.4	1,324	17.2	4,412	57.4
Maryland	1,830	13.4	3,541	25.9	3,288	24.0	2,873	21.0	7,158	52.4
Massachusetts	1,994	11.8	4,077	24.2	4,691	27.9	3,843	22.8	8,690	51.6
Mississippi	951	8.8	1,789	16.5	2,299	21.2	1,685	15.6	6,528	60.3
New Jersey	2,413	11.3	5,027	23.5	5,890	27.6	5,004	23.4	10,956	51.3
New Mexico	264	13.4	470	23.8	488	24.7	386	19.5	1,034	52.3
New York	375	10.8	592	17.0	829	23.8	610	17.5	1,976	56.7
Ohio	2,258	10.9	4,839	23.4	6,120	29.6	4,897	23.7	10,435	50.5
Rhode Island	451	16.3	942	34.0	739	36.6	621	22.4	1,271	45.8
Tennessee	582	15.8	967	26.2	1,100	29.8	737	20.0	1,798	48.7
All States	18,126	11.5	35,620	22.6	40541	25.7	32,727	20.7	84,494	53.5

[a] Percentages reported for “select all that apply” should be interpreted with caution, as it is not possible to differentiate “missing” (i.e., skipped) vs. “not selected” responses

Appendix L – Item-level Results from the Student Survey for Mathematics: Paper-based Test Administration

Table 1. Student Survey Responses by State (Math PBT)

	Performance-Based Assessment		End-of-Year Assessment	
State	n	% of Total Responses	n	% of Total Responses
Arizona	9,517	13.3	9,474	15.8
Arkansas	5,027	7.0	4,258	7.1
Colorado	1,562	2.2	1,948	3.2
District of Columbia	169	0.2	88	0.1
Illinois	12,026	16.8	9,515	15.8
Louisiana	219	0.3	472	0.8
Maryland	7,338	10.3	7,546	12.6
Massachusetts	7,040	9.9	7,013	11.7
Mississippi	7,652	10.7	6,898	11.5
New Jersey	--	--	6	0.0
New York	1,642	2.3	1,631	2.7
Ohio	11,000	15.4	7,481	12.5
Rhode Island	2,050	2.9	1,407	2.3
Tennessee	6,210	8.7	2,336	3.9
All States	71,452	100.0	60,073	100.0

*Table 2. Student Survey Math PBT (**PBA**): Q1. Did you understand all of the directions read by the person who gave you the test?*

	Yes		No	
State	n	%	n	%
Arizona	7,756	81.8	1,731	18.2
Arkansas	4,378	87.2	641	12.8
Colorado	1,320	84.7	238	15.3
District of Columbia	141	83.9	27	16.1
Illinois	10,427	86.9	1,570	13.1
Louisiana	197	90.0	22	10.0
Maryland	6,409	87.7	903	12.3
Massachusetts	6,153	87.7	860	12.3
Mississippi	6,695	87.9	922	12.1
New York	1,368	84.1	259	15.9
Ohio	9,812	89.6	1,143	10.4
Rhode Island	1,853	90.6	192	9.4
Tennessee	5,547	89.7	635	10.3
All States	62,056	87.2	9,143	12.8

Note. Percentages are based on the number of valid responses. Missing = 253.

*Table 3. Student Survey Math PBT (**EOY**): Q1. Did you understand all of the directions read by the person who gave you the test?*

	Yes		No	
State	n	%	n	%
Arizona	7,021	74.2	2,437	25.8
Arkansas	3,103	73.1	1,141	26.9
Colorado	1,443	74.2	502	25.8
District of Columbia	76	87.4	11	12.6
Illinois	7,662	80.7	1,834	19.3
Louisiana	371	78.9	99	21.1
Maryland	6,015	79.9	1,510	20.1
Massachusetts	5,359	76.7	1,629	23.3
Mississippi	5,634	82.1	1,232	17.9
New Jersey	4	66.7	2	33.3
New York	1,271	78.4	351	21.6
Ohio	6,082	81.5	1,380	18.5
Rhode Island	1,192	84.8	214	15.2
Tennessee	1,778	76.6	544	23.4
All States	47,011	78.5	12,886	21.5

Note. Percentages are based on the number of valid responses. Missing = 176.

*Table 4. Student Survey Math PBT (**PBA**): Q2. How often was it hard to understand the directions for the questions on this test?*

	Almost Always		Most of the Time		Some of the Time		Almost Never	
State	n	%	n	%	n	%	n	%
Arizona	1,467	15.5	2,631	27.7	4,394	46.3	996	10.5
Arkansas	593	11.8	1,150	22.9	2,467	49.2	806	16.1
Colorado	180	11.6	395	25.4	763	49.0	218	14.0
District of Columbia	8	4.7	39	23.1	103	60.9	19	11.2
Illinois	1,708	14.2	3,211	26.8	5,663	47.2	1,418	11.8
Louisiana	15	6.8	44	20.1	129	58.9	31	14.2
Maryland	810	11.1	1,773	24.2	3,682	50.3	1,048	14.3
Massachusetts	848	12.1	1,745	24.9	3,360	47.9	1,061	15.1
Mississippi	1,216	16.0	1,924	25.3	3,524	46.3	954	12.5
New York	233	14.3	412	25.3	754	46.3	228	14.0
Ohio	1,484	13.5	2,480	22.6	5,329	48.6	1,664	15.2
Rhode Island	328	16.0	486	23.8	936	45.7	296	14.5
Tennessee	768	12.4	1,362	22.0	2,998	48.5	1,052	17.0
All States	9,658	13.6	17,652	24.8	34,102	47.9	9,791	13.8

Note. Percentages are based on the number of valid responses. Missing = 249.

*Table 5. Student Survey Math PBT (**EOY**): Q2. How often was it hard to understand the directions for the questions on this test?*

	Almost Always		Most of the Time		Some of the Time		Almost Never	
State	n	%	n	%	n	%	n	%
Arizona	1,161	12.3	2,145	22.7	4,647	49.2	1,490	15.8
Arkansas	481	11.3	916	21.6	2,015	47.4	835	19.7
Colorado	192	9.9	398	20.5	972	50.0	382	19.7
District of Columbia	14	16.1	23	26.4	31	35.6	19	21.8
Illinois	1,183	12.5	2,108	22.2	4,575	48.2	1,626	17.1
Louisiana	36	7.6	86	18.3	252	53.5	97	20.6
Maryland	719	9.6	1,483	19.7	3,771	50.1	1,550	20.6
Massachusetts	706	10.1	1,400	20.0	3,440	49.2	1,440	20.6
Mississippi	879	12.8	1,523	22.2	3,195	46.6	1,266	18.4
New Jersey	0	0.0	2	33.3	2	33.3	2	33.3
New York	161	10.0	334	20.6	795	49.1	328	20.3
Ohio	816	10.9	1,488	20.0	3,693	49.5	1,457	19.5
Rhode Island	163	11.6	273	19.4	708	50.4	261	18.6
Tennessee	331	14.2	458	19.7	1,087	46.7	450	19.3
All States	6,842	11.4	1,2637	21.1	29,183	48.7	11,203	18.7

Note. Percentages are based on the number of valid responses. Missing = 208.

*Table 6. Student Survey Math PBT (**PBA**): Q3. How many questions asked you about things you have not learned in school this year?*

State	All of Them n	All of Them %	Most of Them n	Most of Them %	Few of Them n	Few of Them %	None of Them n	None of Them %
Arizona	410	4.3	2,226	23.5	5,040	53.1	1,814	19.1
Arkansas	125	2.5	1,104	22.0	2,838	56.6	944	18.8
Colorado	46	3.0	399	25.6	834	53.6	278	17.9
District of Columbia	4	2.4	31	18.3	84	49.7	50	29.6
Illinois	440	3.7	3,729	31.1	6,406	53.4	1,417	11.8
Louisiana	5	2.3	42	19.2	125	57.1	47	21.5
Maryland	271	3.7	1,742	23.8	4,104	56.1	1,194	16.3
Massachusetts	251	3.6	1,890	26.9	3,854	55.0	1,018	14.5
Mississippi	317	4.2	1,927	25.3	3,993	52.4	1,379	18.1
New York	74	4.5	433	26.6	905	55.6	217	13.3
Ohio	424	3.9	3,137	28.6	5,917	54.0	1,479	13.5
Rhode Island	81	4.0	642	31.4	1,051	51.4	272	13.3
Tennessee	210	3.4	1,294	21.0	3,359	54.4	1,311	21.2
All States	2,658	3.7	18,596	26.1	38,510	54.1	11,420	16.0

Note. Percentages are based on the number of valid responses. Missing = 268.

*Table 7. Student Survey Math PBT (**EOY**): Q3. How many questions asked you about things you have not learned in school this year?*

State	All of Them n	All of Them %	Most of Them n	Most of Them %	Few of Them n	Few of Them %	None of Them n	None of Them %
Arizona	378	4.0	2,117	22.4	5,117	54.2	1,826	19.3
Arkansas	145	3.4	976	23.0	2,334	54.9	794	18.7
Colorado	44	2.3	426	21.9	1,101	56.7	370	19.1
District of Columbia	4	4.6	32	36.8	40	46.0	11	12.6
Illinois	348	3.7	3,032	32.0	4,952	52.2	1,151	12.1
Louisiana	9	1.9	56	11.9	245	52.0	161	34.2
Maryland	251	3.3	1,575	20.9	4,230	56.3	1,462	19.4
Massachusetts	244	3.5	1,439	20.6	3,738	53.5	1,562	22.4
Mississippi	315	4.6	1,558	22.7	3,382	49.3	1,607	23.4
New Jersey	1	16.7	1	16.7	4	66.7	0	0.0
New York	43	2.7	275	17.0	932	57.7	366	22.6
Ohio	250	3.4	1,894	25.4	3,865	51.9	1,442	19.4
Rhode Island	55	3.9	303	21.6	843	60.1	201	14.3
Tennessee	84	3.6	505	21.7	1,247	53.7	487	21.0
All States	2,171	3.6	14,189	23.7	32,030	53.5	11,440	19.1

Note. Percentages are based on the number of valid responses. Missing = 243.

*Table 8. Student Survey Math PBT (**PBA**): Q4. How difficult was this test?*

	Easier than School Work		Same as School Work		Harder than School Work	
State	n	%	n	%	n	%
Arizona	341	3.6	2,846	30.1	6,283	66.3
Arkansas	202	4.0	1,697	33.8	3,115	62.1
Colorado	120	7.7	472	30.5	957	61.8
District of Columbia	4	2.4	76	45.0	89	52.7
Illinois	315	2.6	2,771	23.1	8,899	74.3
Louisiana	19	8.7	63	28.8	137	62.6
Maryland	339	4.6	2,338	32.0	4,618	63.3
Massachusetts	277	4.0	2,117	30.3	4,601	65.8
Mississippi	243	3.2	2,129	28.0	5,236	68.8
New York	57	3.5	542	33.3	1,027	63.2
Ohio	358	3.3	3,017	27.6	7,575	69.2
Rhode Island	54	2.6	503	24.6	1,486	72.7
Tennessee	234	3.8	1,841	29.8	4,096	66.4
All States	2,563	3.6	20,412	28.7	48,119	67.7

Note. Percentages are based on the number of valid responses. Missing = 358.

*Table 9. Student Survey Math PBT (**EOY**): Q4. How difficult was this test?*

	Easier than School Work		Same as School Work		Harder than School Work	
State	n	%	n	%	n	%
Arizona	554	5.9	3,247	34.4	5,634	59.7
Arkansas	218	5.1	1,417	33.3	2,614	61.5
Colorado	116	6.0	745	38.4	1,077	55.6
District of Columbia	6	6.9	22	25.3	59	67.8
Illinois	348	3.7	2,466	26.0	6,657	70.3
Louisiana	61	13.0	201	42.7	209	44.4
Maryland	465	6.2	2,924	39.0	4,112	54.8
Massachusetts	339	4.9	2,451	35.2	4,181	60.0
Mississippi	313	4.6	2,219	32.4	4,317	63.0
New Jersey	0	0.0	6	100.0	0	0.0
New York	87	5.4	653	40.4	878	54.3
Ohio	334	4.5	2,375	31.9	4,729	63.6
Rhode Island	43	3.1	407	29.1	951	67.9
Tennessee	83	3.6	655	28.2	1,585	68.2
All States	2,967	5.0	19,788	33.1	37,003	61.9

Note. Percentages are based on the number of valid responses. Missing = 315.

*Table 10. Student Survey Math PBT (**PBA**): Q5. Did you have enough time to finish this test?*

	Finished Very Early		Finished On Time		Rushed to Finish		Did Not Finish	
State	n	%	n	%	n	%	n	%
Arizona	1,988	21.0	5,425	57.3	984	10.4	1,063	11.2
Arkansas	1,384	27.6	2,742	54.7	531	10.6	352	7.0
Colorado	526	33.9	843	54.3	110	7.1	74	4.8
District of Columbia	32	18.9	113	66.9	8	4.7	16	9.5
Illinois	3,348	27.9	6,952	58.0	1,006	8.4	677	5.6
Louisiana	52	23.7	127	58.0	10	4.6	30	13.7
Maryland	2,093	28.6	3,925	53.7	705	9.6	587	8.0
Massachusetts	1,593	22.8	3,829	54.8	764	10.9	805	11.5
Mississippi	1,893	24.9	4,629	60.8	450	5.9	638	8.4
New York	468	28.9	706	43.6	139	8.6	306	18.9
Ohio	3,494	32.0	5,834	53.4	785	7.2	811	7.4
Rhode Island	608	29.7	1,157	56.6	129	6.3	151	7.4
Tennessee	1,751	28.4	3,417	55.3	462	7.5	545	8.8
All States	19,230	27.1	39,699	55.9	6,083	8.6	6,055	8.5

Note. Percentages are based on the number of valid responses. Missing = 385.

*Table 11. Student Survey Math PBT (**EOY**): Q5. Did you have enough time to finish this test?*

	Finished Very Early		Finished On Time		Rushed to Finish		Did Not Finish	
State	n	%	n	%	n	%	n	%
Arizona	2,207	23.4	5,652	59.9	976	10.3	601	6.4
Arkansas	1,645	38.7	2,126	50.1	335	7.9	140	3.3
Colorado	666	34.3	1,031	53.1	169	8.7	75	3.9
District of Columbia	17	19.3	50	56.8	13	14.8	8	9.1
Illinois	3,939	41.5	4,890	51.6	467	4.9	189	2.0
Louisiana	111	23.6	298	63.3	30	6.4	32	6.8
Maryland	2,698	35.9	3,990	53.1	519	6.9	312	4.1
Massachusetts	2,039	29.2	4,008	57.5	613	8.8	311	4.5
Mississippi	1,791	26.1	4,233	61.7	435	6.3	397	5.8
New Jersey	6	100.0	0	0.0	0	0.0	0	0.0
New York	532	33.1	778	48.4	131	8.1	167	10.4
Ohio	2,547	34.2	4,209	56.6	471	6.3	215	2.9
Rhode Island	479	34.2	800	57.1	62	4.4	60	4.3
Tennessee	721	31.0	1,275	54.8	216	9.3	113	4.9
All States	19,398	32.4	33,340	55.8	4,437	7.4	2,620	4.4

Note. Percentages are based on the number of valid responses. Missing = 278.

*Table 12. Student Survey Math PBT (**PBA**): Q6. How often do you use a computer or tablet at home?*

	Every Day		A Few Times a Week		A Couple Times A Month or Less		Do Not Have at Home	
State	n	%	n	%	n	%	n	%
Arizona	4,191	44.2	3,096	32.7	1,227	12.9	964	10.2
Arkansas	2,491	49.8	1,416	28.3	583	11.6	516	10.3
Colorado	747	48.1	516	33.2	190	12.2	100	6.4
District of Columbia	70	41.9	68	40.7	20	12.0	9	5.4
Illinois	6,558	54.7	3,590	29.9	1,162	9.7	686	5.7
Louisiana	78	35.6	71	32.4	33	15.1	37	16.9
Maryland	3,598	49.2	2,459	33.6	811	11.1	440	6.0
Massachusetts	3,864	55.2	2,241	32.0	599	8.5	302	4.3
Mississippi	3,393	44.6	2,194	28.8	1,018	13.4	1,006	13.2
New York	787	48.3	554	34.0	188	11.5	99	6.1
Ohio	6,158	56.3	3,150	28.8	1,012	9.3	619	5.7
Rhode Island	1,126	55.1	634	31.0	189	9.3	94	4.6
Tennessee	3,216	52.1	1,647	26.7	733	11.9	581	9.4
All States	36,277	51.0	21,636	30.4	7,765	10.9	5,453	7.7

Note. Percentages are based on the number of valid responses. Missing = 321.

*Table 13. Student Survey Math PBT (**EOY**): Q6. How often do you use a computer or tablet at home?*

	Every Day		A Few Times a Week		A Couple Times A Month or Less		Do Not Have at Home	
State	n	%	n	%	n	%	n	%
Arizona	4,349	46.1	2,989	31.7	1,262	13.4	833	8.8
Arkansas	2,131	50.2	1,170	27.6	502	11.8	442	10.4
Colorado	953	49.3	614	31.7	237	12.3	130	6.7
District of Columbia	59	67.0	20	22.7	7	8.0	2	2.3
Illinois	5,239	55.3	2,654	28.0	986	10.4	597	6.3
Louisiana	190	40.4	167	35.5	61	13.0	52	11.1
Maryland	3,822	50.8	2,417	32.2	899	12.0	379	5.0
Massachusetts	3,918	56.1	2,188	31.3	632	9.0	247	3.5
Mississippi	3,089	45.1	1,968	28.7	1,011	14.8	782	11.4
New Jersey	3	50.0	2	33.3	0	0.0	1	16.7
New York	780	48.4	548	34.0	205	12.7	80	5.0
Ohio	3,948	53.1	2,115	28.4	785	10.6	590	7.9
Rhode Island	725	51.8	467	33.4	140	10.0	68	4.9
Tennessee	1,172	50.5	605	26.1	296	12.8	248	10.7
All States	30,378	50.8	17,924	30.0	7,023	11.7	4,451	7.4

Note. Percentages are based on the number of valid responses. Missing = 297.

*Table 14. Student Survey Math PBT (**PBA**): Q7. How often do you use a computer or tablet in school?*

	Every Day		A Few Times a Week		A Couple Times A Month or Less		Do Not Use in School	
State	n	%	n	%	n	%	n	%
Arizona	1,338	14.1	3,503	37.0	3,533	37.3	1,104	11.6
Arkansas	911	18.2	2,080	41.5	1,727	34.5	293	5.8
Colorado	399	25.6	700	45.0	388	24.9	69	4.4
District of Columbia	16	9.5	102	60.4	37	21.9	14	8.3
Illinois	1,739	14.5	4,856	40.5	4,869	40.6	527	4.4
Louisiana	53	24.2	100	45.7	41	18.7	25	11.4
Maryland	681	9.3	2,728	37.3	3,191	43.7	708	9.7
Massachusetts	654	9.3	2,594	37.0	3,144	44.9	611	8.7
Mississippi	1,962	25.8	2,375	31.2	2,426	31.9	844	11.1
New York	153	9.4	487	29.9	710	43.5	281	17.2
Ohio	1,654	15.1	4,660	42.6	4,043	37.0	581	5.3
Rhode Island	159	7.8	820	40.1	943	46.1	123	6.0
Tennessee	862	14.0	2,313	37.5	2,722	44.1	270	4.4
All States	10,581	14.9	27,318	38.4	27,774	39.1	5,450	7.7

Note. Percentages are based on the number of valid responses. Missing = 329.

*Table 15. Student Survey Math PBT (**EOY**): Q7. How often do you use a computer or tablet in school?*

	Every Day		A Few Times a Week		A Couple Times A Month or Less		Do Not Use in School	
State	n	%	n	%	n	%	n	%
Arizona	1,315	14.0	3,379	35.9	3,641	38.6	1,088	11.5
Arkansas	1,139	26.8	1,888	44.5	1,049	24.7	167	3.9
Colorado	524	27.1	792	41.0	516	26.7	101	5.2
District of Columbia	11	12.6	43	49.4	28	32.2	5	5.7
Illinois	2,001	21.1	4,277	45.1	2,843	30.0	358	3.8
Louisiana	79	16.8	238	50.5	96	20.4	58	12.3
Maryland	733	9.8	2,802	37.3	3,424	45.6	555	7.4
Massachusetts	686	9.8	2,615	37.5	3,192	45.7	485	7.0
Mississippi	1,826	26.6	2,322	33.9	2,185	31.9	524	7.6
New Jersey	0	0.0	4	66.7	1	16.7	1	16.7
New York	219	13.6	626	38.9	540	33.5	225	14.0
Ohio	1,332	17.9	3,355	45.1	2,372	31.9	380	5.1
Rhode Island	138	9.9	660	47.1	497	35.5	106	7.6
Tennessee	280	12.1	1,033	44.5	913	39.3	95	4.1
All States	10,283	17.2	24,034	40.2	21,297	35.6	4,148	6.9

Note. Percentages are based on the number of valid responses. Missing = 311.

*Table 16. Student Survey Math PBT (**PBA**): Q8. When writing a story or essay, how often do you use a computer or tablet?*

	All of the Time		Most of the Time		Some of the Time		Never	
State	n	%	n	%	n	%	n	%
Arizona	1,026	10.8	2,194	23.2	3,681	38.9	2,573	27.2
Arkansas	425	8.5	1,046	20.9	2,005	40.0	1,534	30.6
Colorado	144	9.3	485	31.2	640	41.2	284	18.3
District of Columbia	24	14.2	34	20.1	75	44.4	36	21.3
Illinois	1,966	16.4	3,536	29.5	4,436	37.0	2,046	17.1
Louisiana	14	6.4	22	10.1	48	22.0	134	61.5
Maryland	816	11.2	1,779	24.4	2,958	40.5	1,750	24.0
Massachusetts	1,167	16.7	1,844	26.3	2,407	34.3	1,591	22.7
Mississippi	1,020	13.4	1,777	23.4	2,863	37.6	1,950	25.6
New York	209	12.9	352	21.7	560	34.5	504	31.0
Ohio	1,622	14.8	2,988	27.3	4,295	39.2	2,050	18.7
Rhode Island	356	17.4	632	30.9	794	38.8	266	13.0
Tennessee	634	10.3	1,509	24.4	2,703	43.8	1,329	21.5
All States	9,423	13.2	18,198	25.6	27,465	38.6	16,047	22.6

Note. Percentages are based on the number of valid responses. Missing = 319.

*Table 17. Student Survey Math PBT (**EOY**): Q8. When writing a story or essay, how often do you use a computer or tablet?*

	All of the Time		Most of the Time		Some of the Time		Never	
State	n	%	n	%	n	%	n	%
Arizona	1,007	10.7	2,274	24.1	3,624	38.4	2,528	26.8
Arkansas	375	8.8	846	19.9	1,733	40.8	1,289	30.4
Colorado	234	12.1	551	28.5	809	41.8	340	17.6
District of Columbia	24	27.6	27	31.0	22	25.3	14	16.1
Illinois	1,777	18.7	3,099	32.7	3,194	33.7	1,417	14.9
Louisiana	37	7.9	54	11.5	160	34.0	220	46.7
Maryland	906	12.1	1,836	24.5	3,076	41.0	1,689	22.5
Massachusetts	1,146	16.4	2,099	30.0	2,470	35.3	1,273	18.2
Mississippi	933	13.6	1,642	24.0	2,556	37.3	1,723	25.1
New Jersey	1	16.7	1	16.7	3	50.0	1	16.7
New York	122	7.6	347	21.5	656	40.7	487	30.2
Ohio	1,049	14.1	2,038	27.4	2,964	39.9	1,386	18.6
Rhode Island	228	16.3	408	29.1	540	38.5	226	16.1
Tennessee	291	12.5	624	26.9	981	42.2	427	18.4
All States	8,130	13.6	15,846	26.5	22,788	38.1	13,020	21.8

Note. Percentages are based on the number of valid responses. Missing = 289.

*Table 18. Student Survey Math PBT (**PBA**): Q9. Would you rather take this test on paper OR on a computer or tablet?*

	On Paper		On a Computer or Tablet	
State	n	%	n	%
Arizona	3,217	34.1	6,230	65.9
Arkansas	1,697	33.9	3,305	66.1
Colorado	491	31.8	1,055	68.2
District of Columbia	22	13.0	147	87.0
Illinois	4,485	37.5	7,478	62.5
Louisiana	85	38.8	134	61.2
Maryland	1,952	26.7	5,350	73.3
Massachusetts	2,772	39.6	4,222	60.4
Mississippi	2,095	27.6	5,498	72.4
New York	646	39.9	973	60.1
Ohio	4,632	42.5	6,275	57.5
Rhode Island	764	37.4	1,278	62.6
Tennessee	2,137	34.7	4,016	65.3
All States	24,995	35.2	45,961	64.8

Note. Percentages are based on the number of valid responses. Missing = 496.

*Table 19. Student Survey Math PBT (**EOY**): Q9. Would you rather take this test on paper OR on a computer or tablet?*

	On Paper		On a Computer or Tablet	
State	n	%	n	%
Arizona	3,263	34.7	6,151	65.3
Arkansas	1,491	35.2	2,744	64.8
Colorado	684	35.4	1,246	64.6
District of Columbia	20	23.0	67	77.0
Illinois	3,697	39.1	5,754	60.9
Louisiana	182	38.6	289	61.4
Maryland	1,929	25.7	5,572	74.3
Massachusetts	2,790	40.1	4,166	59.9
Mississippi	2,032	29.7	4,801	70.3
New Jersey	2	33.3	4	66.7
New York	638	39.7	968	60.3
Ohio	3,043	41.0	4,377	59.0
Rhode Island	540	38.6	859	61.4
Tennessee	842	36.3	1,476	63.7
All States	21,153	35.5	38,474	64.5

Note. Percentages are based on the number of valid responses. Missing = 446.

Appendix M – Item-level Results from the Student Survey for English Language Arts: Computer/Tablet-based Administration

Table 1. Student Survey Responses by State (ELA CBT)

	Performance-Based Assessment		End-of-Year Assessment	
State	n	% of Total Responses	n	% of Total Responses
Arizona	18,867	8.5	13,672	8.5
Arkansas	10,975	5.0	8,371	5.2
Colorado	5,089	2.3	5,372	3.3
District of Columbia	663	0.3	2,064	1.3
Florida	2,446	1.1	2,098	1.3
Illinois	29,770	13.5	23,193	14.4
Louisiana	11,753	5.3	7,042	4.4
Maryland	17,372	7.9	17,035	10.6
Massachusetts	21,348	9.7	18,609	11.6
Mississippi	14,185	6.4	9,933	6.2
New Jersey	29,198	13.2	21,219	13.2
New Mexico	3,582	1.6	1,800	1.1
New York	2,714	1.2	3,583	2.2
Ohio	30,943	14.0	20,417	12.7
Rhode Island	5,252	2.4	2,608	1.6
Tennessee	17,001	7.7	3,804	2.4
All States	221,158	100.0	160,820	100.0

*Table 2. Student Survey ELA CBT (**PBA**): Q1. Did you understand all of the directions read by the person who gave you the test?*

	Yes		No	
State	n	%	n	%
Arizona	17,309	91.8	1,541	8.2
Arkansas	10,375	94.6	595	5.4
Colorado	4,691	92.3	393	7.7
District of Columbia	633	95.6	29	4.4
Florida	2,303	94.2	143	5.8
Illinois	27,821	93.5	1,932	6.5
Louisiana	11,118	94.7	624	5.3
Maryland	16,401	94.5	960	5.5
Massachusetts	20,263	95.0	1,069	5.0
Mississippi	13,454	95.0	715	5.0
New Jersey	27,536	94.4	1,647	5.6
New Mexico	3,332	93.1	247	6.9
New York	2,526	93.2	185	6.8
Ohio	28,768	93.1	2,148	6.9
Rhode Island	4,960	94.5	289	5.5
Tennessee	16,058	94.6	923	5.4
All States	207,548	93.9	13,440	6.1

Note. Percentages are based on the number of valid responses. Missing = 170.

*Table 3. Student Survey ELA CBT (**EOY**): Q1. Did you understand all of the directions read by the person who gave you the test?*

	Yes		No	
State	n	%	n	%
Arizona	11,566	84.6	2,102	15.4
Arkansas	7,323	87.5	1,043	12.5
Colorado	4,585	85.4	786	14.6
District of Columbia	1,815	88.0	248	12.0
Florida	1,870	89.2	227	10.8
Illinois	19,899	85.8	3,281	14.2
Louisiana	6,145	87.3	895	12.7
Maryland	14,646	86.1	2,368	13.9
Massachusetts	16,019	86.1	2,582	13.9
Mississippi	8,644	87.1	1,279	12.9
New Jersey	18,416	86.8	2,797	13.2
New Mexico	1,590	88.4	208	11.6
New York	3,050	85.1	533	14.9
Ohio	16,942	83.0	3,464	17.0
Rhode Island	2,235	85.7	372	14.3
Tennessee	3,263	85.9	537	14.1
All States	138,008	85.9	22,722	14.1

Note. Percentages are based on the number of valid responses. Missing = 90.

*Table 4. Student Survey ELA CBT (**PBA**): Q2. How often was it hard to understand the directions for the questions on this test?*

	Almost Always		Most of the Time		Some of the Time		Almost Never	
State	n	%	n	%	n	%	n	%
Arizona	1,199	6.4	3,187	16.9	9,944	52.8	4,497	23.9
Arkansas	540	4.9	1,453	13.3	5,229	47.7	3,738	34.1
Colorado	290	5.7	708	13.9	2,609	51.4	1,471	29.0
District of Columbia	42	6.3	87	13.1	316	47.7	217	32.8
Florida	137	5.6	365	15.0	1,224	50.2	714	29.3
Illinois	1,572	5.3	4,140	13.9	15,578	52.4	8,441	28.4
Louisiana	741	6.3	1,731	14.8	5,892	50.2	3,369	28.7
Maryland	1,050	6.1	2,504	14.4	8,496	49.0	5,289	30.5
Massachusetts	1,094	5.1	2,801	13.1	10,717	50.3	6,691	31.4
Mississippi	815	5.8	2,182	15.4	7,401	52.3	3,766	26.6
New Jersey	1,461	5.0	3,920	13.4	14,849	50.9	8,939	30.6
New Mexico	220	6.2	604	16.9	1,705	47.7	1,043	29.2
New York	185	6.8	424	15.7	1,375	50.8	722	26.7
Ohio	1,950	6.3	4,233	13.7	16,024	51.9	8,678	28.1
Rhode Island	322	6.1	738	14.1	2,518	48.0	1,666	31.8
Tennessee	1,023	6.0	2,292	13.5	8,356	49.3	5,291	31.2
All States	12,641	5.7	31,369	14.2	112,233	50.8	64,532	29.2

Note. Percentages are based on the number of valid responses. Missing = 383.

*Table 5. Student Survey ELA CBT (**EOY**): Q2. How often was it hard to understand the directions for the questions on this test?*

	Almost Always		Most of the Time		Some of the Time		Almost Never	
State	n	%	n	%	n	%	n	%
Arizona	992	7.3	2,410	17.7	7,020	51.4	3,224	23.6
Arkansas	539	6.4	1,113	13.3	4,170	49.9	2,541	30.4
Colorado	292	5.4	773	14.4	2,821	52.6	1,480	27.6
District of Columbia	175	8.5	378	18.4	949	46.2	551	26.8
Florida	144	6.9	342	16.3	986	47.1	622	29.7
Illinois	1,405	6.1	3,265	14.1	12,026	51.9	6,473	27.9
Louisiana	547	7.8	1,176	16.7	3,360	47.8	1,945	27.7
Maryland	1,187	7.0	2,639	15.5	8,231	48.4	4,952	29.1
Massachusetts	1,280	6.9	2,509	13.5	8,935	48.1	5,846	31.5
Mississippi	797	8.0	1,705	17.2	4,833	48.8	2,576	26.0
New Jersey	1,229	5.8	3,103	14.7	10,640	50.2	6,208	29.3
New Mexico	124	6.9	326	18.1	900	50.1	448	24.9
New York	239	6.7	569	15.9	1,825	51.0	946	26.4
Ohio	1,684	8.3	3,203	15.7	10,235	50.3	5,244	25.7
Rhode Island	178	6.8	406	15.6	1,280	49.2	740	28.4
Tennessee	276	7.3	625	16.5	1,855	48.9	1,036	27.3
All States	11,088	6.9	24,542	15.3	80,066	49.9	44,832	27.9

Note. Percentages are based on the number of valid responses. Missing = 292.

*Table 6. Student Survey ELA CBT (**PBA**): Q3. How many questions asked you about things you have not learned in school this year?*

	All of Them		Most of Them		Few of Them		None of Them	
State	n	%	n	%	n	%	n	%
Arizona	673	3.6	2,183	11.6	9,218	49.0	6,729	35.8
Arkansas	393	3.6	981	9.0	5,301	48.4	4,275	39.0
Colorado	169	3.3	491	9.7	2,524	49.7	1,890	37.2
District of Columbia	24	3.6	65	9.8	293	44.3	279	42.2
Florida	58	2.4	243	10.0	1,253	51.4	886	36.3
Illinois	1,070	3.6	3,631	12.2	15,948	53.7	9,063	30.5
Louisiana	455	3.9	1,354	11.6	5,825	49.7	4,086	34.9
Maryland	796	4.6	2,107	12.2	8,705	50.3	5,705	33.0
Massachusetts	671	3.2	1,997	9.4	10,198	47.9	8,415	39.5
Mississippi	533	3.8	1,534	10.8	6,459	45.6	5,634	39.8
New Jersey	1,108	3.8	3,673	12.6	14,345	49.2	10,026	34.4
New Mexico	121	3.4	381	10.7	1,814	50.8	1,255	35.1
New York	151	5.6	336	12.4	1,271	47.0	944	34.9
Ohio	1,226	4.0	3,839	12.4	16,461	53.3	9,343	30.3
Rhode Island	218	4.2	639	12.2	2,603	49.7	1,777	33.9
Tennessee	600	3.5	1,669	9.8	8,314	49.0	6,368	37.6
All States	8,266	3.7	25,123	11.4	110,532	50.1	76,675	34.8

Note. Percentages are based on the number of valid responses. Missing = 562.

*Table 7. Student Survey ELA CBT (**EOY**): Q3. How many questions asked you about things you have not learned in school this year?*

	All of Them		Most of Them		Few of Them		None of Them	
State	n	%	n	%	n	%	n	%
Arizona	604	4.4	1,884	13.8	7,205	52.8	3,946	28.9
Arkansas	349	4.2	1,037	12.4	4,297	51.4	2,675	32.0
Colorado	161	3.0	727	13.5	2,952	55.0	1,529	28.5
District of Columbia	128	6.2	279	13.6	941	45.9	702	34.2
Florida	70	3.3	212	10.1	961	45.9	852	40.7
Illinois	887	3.8	3,210	13.9	12,809	55.3	6,257	27.0
Louisiana	395	5.6	950	13.5	3,489	49.7	2,189	31.2
Maryland	826	4.9	2,165	12.7	8,623	50.7	5,387	31.7
Massachusetts	821	4.4	2,143	11.5	8,833	47.6	6,766	36.4
Mississippi	494	5.0	1,208	12.2	4,610	46.5	3,610	36.4
New Jersey	940	4.4	2,740	12.9	10,646	50.3	6,843	32.3
New Mexico	86	4.8	258	14.4	1,003	55.8	450	25.0
New York	191	5.3	456	12.8	1,816	50.8	1,109	31.0
Ohio	1,096	5.4	3,042	14.9	10,759	52.9	5,459	26.8
Rhode Island	131	5.0	389	15.0	1,353	52.0	728	28.0
Tennessee	158	4.2	502	13.2	1,870	49.3	1,261	33.3
All States	7,337	4.6	21,202	13.2	82,167	51.2	49,763	31.0

Note. Percentages are based on the number of valid responses. Missing = 351.

*Table 8. Student Survey ELA CBT (**PBA**): Q4. How difficult was this test?*

	Easier than School Work		Same as School Work		Harder than School Work	
State	n	%	n	%	n	%
Arizona	2,973	15.8	10,188	54.2	5,633	30.0
Arkansas	1,818	16.6	6,107	55.8	3,026	27.6
Colorado	956	18.8	2,933	57.8	1,184	23.3
District of Columbia	136	20.5	407	61.5	119	18.0
Florida	305	12.5	1,410	57.8	724	29.7
Illinois	4,340	14.6	15,468	52.1	9,887	33.3
Louisiana	1,709	14.6	6,463	55.1	3,551	30.3
Maryland	3,111	18.0	9,659	55.8	4,551	26.3
Massachusetts	3,514	16.5	11,874	55.8	5,897	27.7
Mississippi	1,918	13.6	7,585	53.6	4,646	32.8
New Jersey	3,629	12.5	15,369	52.7	10,149	34.8
New Mexico	635	17.8	1,984	55.5	957	26.8
New York	385	14.3	1,543	57.1	772	28.6
Ohio	4,070	13.2	15,514	50.3	11,270	36.5
Rhode Island	613	11.7	2,629	50.2	1,993	38.1
Tennessee	2,359	13.9	9,027	53.3	5,549	32.8
All States	32,471	14.7	118,160	53.6	69,908	31.7

Note. Percentages are based on the number of valid responses. Missing = 619.

*Table 9. Student Survey ELA CBT (**EOY**): Q4. How difficult was this test?*

	Easier than School Work		Same as School Work		Harder than School Work	
State	n	%	n	%	n	%
Arizona	1,818	13.3	7,339	53.8	4,482	32.9
Arkansas	1,210	14.5	4,612	55.2	2,539	30.4
Colorado	844	15.7	3,130	58.3	1,392	25.9
District of Columbia	331	16.1	1,236	60.2	487	23.7
Florida	244	11.7	1,219	58.3	629	30.1
Illinois	2,850	12.3	12,128	52.4	8,182	35.3
Louisiana	986	14.0	3,796	54.1	2,240	31.9
Maryland	2,566	15.1	9,584	56.4	4,853	28.5
Massachusetts	2,635	14.2	9,832	52.9	6,102	32.9
Mississippi	1,048	10.6	5,222	52.7	3,641	36.7
New Jersey	2,291	10.8	11,238	53.1	7,641	36.1
New Mexico	217	12.1	1,055	58.7	524	29.2
New York	435	12.2	2,052	57.4	1,090	30.5
Ohio	2,235	11.0	9,927	48.8	8,190	40.2
Rhode Island	223	8.6	1,210	46.5	1,167	44.9
Tennessee	421	11.1	1,961	51.7	1,410	37.2
All States	20,354	12.7	85,541	53.3	54,569	34.0

Note. Percentages are based on the number of valid responses. Missing = 356.

*Table 10. Student Survey ELA CBT (**PBA**): Q5. Did you have enough time to finish this test?*

	Finished Very Early		Finished On Time		Rushed to Finish		Did Not Finish	
State	n	%	n	%	n	%	n	%
Arizona	6,001	31.9	11,224	59.7	1,171	6.2	397	2.1
Arkansas	5,223	47.7	5,201	47.5	391	3.6	141	1.3
Colorado	2,085	41.1	2,652	52.3	267	5.3	70	1.4
District of Columbia	196	29.6	409	61.8	35	5.3	22	3.3
Florida	738	30.2	1,478	60.6	170	7.0	54	2.2
Illinois	12,739	42.9	15,339	51.6	1,234	4.2	387	1.3
Louisiana	3,959	33.8	6,851	58.4	660	5.6	257	2.2
Maryland	8,476	48.9	7,892	45.6	666	3.8	287	1.7
Massachusetts	8,213	38.6	11,611	54.6	1,049	4.9	411	1.9
Mississippi	4,698	33.2	8,757	61.9	482	3.4	217	1.5
New Jersey	12,334	42.3	14,597	50.1	1,712	5.9	501	1.7
New Mexico	1,087	30.4	2,222	62.2	171	4.8	93	2.6
New York	946	35.0	1,415	52.4	242	9.0	97	3.6
Ohio	13,326	43.2	15,509	50.3	1,627	5.3	389	1.3
Rhode Island	2,053	39.1	2,901	55.3	211	4.0	79	1.5
Tennessee	6,820	40.3	9,046	53.4	778	4.6	288	1.7
All States	88,894	40.3	117,104	53.1	10,866	4.9	3,690	1.7

Note. Percentages are based on the number of valid responses. Missing = 604.

*Table 11. Student Survey ELA CBT (**EOY**): Q5. Did you have enough time to finish this test?*

	Finished Very Early		Finished On Time		Rushed to Finish		Did Not Finish	
State	n	%	n	%	n	%	n	%
Arizona	4,529	33.2	7,824	57.3	1,016	7.4	275	2.0
Arkansas	4,229	50.6	3,735	44.7	323	3.9	77	0.9
Colorado	2,417	45.1	2,642	49.2	253	4.7	53	1.0
District of Columbia	630	30.7	1,226	59.8	136	6.6	58	2.8
Florida	703	33.6	1,210	57.9	140	6.7	38	1.8
Illinois	10,211	44.1	11,736	50.7	997	4.3	217	0.9
Louisiana	2,293	32.6	4,208	59.9	408	5.8	117	1.7
Maryland	8,500	50.0	7,610	44.8	702	4.1	190	1.1
Massachusetts	7,521	40.5	9,858	53.1	967	5.2	217	1.2
Mississippi	3,391	34.2	6,006	60.6	413	4.2	106	1.1
New Jersey	9,844	46.5	9,824	46.4	1,201	5.7	298	1.4
New Mexico	515	28.7	1,131	62.9	131	7.3	20	1.1
New York	1,392	38.9	1,815	50.8	304	8.5	64	1.8
Ohio	7,737	38.0	10,681	52.5	1,634	8.0	292	1.4
Rhode Island	1,008	38.7	1,468	56.4	99	3.8	29	1.1
Tennessee	1,501	39.6	2,012	53.1	240	6.3	39	1.0
All States	66,421	41.4	82,986	51.7	8,964	5.6	2,090	1.3

Note. Percentages are based on the number of valid responses. Missing = 359.

*Table 12. Student Survey ELA CBT (**PBA**): Q6. How often do you use a computer or tablet at home?*

	Every Day		A Few Times a Week		A Couple Times A Month or Less		Do Not Have at Home	
State	n	%	n	%	n	%	n	%
Arizona	9,012	48.0	5,709	30.4	2,259	12.0	1,809	9.6
Arkansas	5,313	48.5	3,073	28.1	1,343	12.3	1,221	11.2
Colorado	2,296	45.3	1,713	33.8	674	13.3	384	7.6
District of Columbia	295	44.7	222	33.6	91	13.8	52	7.9
Florida	1,172	48.1	848	34.8	261	10.7	158	6.5
Illinois	16,916	57.0	8,421	28.4	2,691	9.1	1,654	5.6
Louisiana	5,849	49.9	3,303	28.2	1,497	12.8	1,065	9.1
Maryland	9,085	52.5	5,291	30.6	1,855	10.7	1,080	6.2
Massachusetts	12,288	57.8	6,406	30.1	1,780	8.4	793	3.7
Mississippi	6,693	47.3	4,021	28.4	1,800	12.7	1,636	11.6
New Jersey	17,872	61.3	7,972	27.4	2,284	7.8	1,008	3.5
New Mexico	1,620	45.3	1,125	31.5	438	12.3	390	10.9
New York	1,367	50.6	798	29.5	323	12.0	213	7.9
Ohio	17,984	58.3	8,087	26.2	2,880	9.3	1,882	6.1
Rhode Island	2,926	55.8	1,674	31.9	415	7.9	225	4.3
Tennessee	8,631	51.0	4,534	26.8	2,097	12.4	1,648	9.7
All States	119,319	54.1	63,197	28.7	22,688	10.3	15,218	6.9

Note. Percentages are based on the number of valid responses. Missing = 736.

*Table 13. Student Survey ELA CBT (**EOY**): Q6. How often do you use a computer or tablet at home?*

	Every Day		A Few Times a Week		A Couple Times A Month or Less		Do Not Have at Home	
State	n	%	n	%	n	%	n	%
Arizona	6,533	47.9	4,140	30.4	1,761	12.9	1,204	8.8
Arkansas	4,032	48.2	2,387	28.6	1,083	13.0	858	10.3
Colorado	2,600	48.5	1,720	32.1	686	12.8	358	6.7
District of Columbia	919	44.9	735	35.9	226	11.0	166	8.1
Florida	933	44.7	773	37.0	261	12.5	122	5.8
Illinois	12,610	54.5	6,897	29.8	2,390	10.3	1,253	5.4
Louisiana	3,442	49.0	1,962	27.9	1,005	14.3	613	8.7
Maryland	8,645	50.9	5,357	31.5	2,064	12.1	932	5.5
Massachusetts	10,410	56.1	5,721	30.8	1,752	9.4	675	3.6
Mississippi	4,394	44.3	2,966	29.9	1,498	15.1	1,053	10.6
New Jersey	12,630	59.7	5,896	27.9	1,875	8.9	753	3.6
New Mexico	799	44.4	552	30.7	265	14.7	182	10.1
New York	1,748	48.9	1,178	33.0	437	12.2	209	5.9
Ohio	11,196	55.0	5,488	27.0	2,260	11.1	1,397	6.9
Rhode Island	1,415	54.4	862	33.1	228	8.8	96	3.7
Tennessee	1,892	50.0	970	25.6	544	14.4	378	10.0
All States	84,198	52.5	47,604	29.7	18,335	11.4	10,249	6.4

Note. Percentages are based on the number of valid responses. Missing = 434.

*Table 14. Student Survey ELA CBT (**PBA**): Q7. How often do you use a computer or tablet in school?*

	Every Day		A Few Times a Week		A Couple Times A Month or Less		Do Not Use in School	
State	n	%	n	%	n	%	n	%
Arizona	3,538	18.8	7,176	38.2	6,504	34.6	1,555	8.3
Arkansas	3,035	27.7	4,681	42.8	2,871	26.2	355	3.2
Colorado	1,037	20.5	2,313	45.7	1,543	30.5	169	3.3
District of Columbia	108	16.4	278	42.1	230	34.8	44	6.7
Florida	375	15.4	893	36.7	964	39.6	203	8.3
Illinois	7,252	24.4	13,793	46.5	7,834	26.4	789	2.7
Louisiana	2,660	22.7	4,352	37.2	3,947	33.7	750	6.4
Maryland	2,591	15.0	6,948	40.2	6,949	40.2	816	4.7
Massachusetts	4,030	19.0	9,279	43.7	7,056	33.2	891	4.2
Mississippi	4,377	30.9	5,159	36.5	3,790	26.8	817	5.8
New Jersey	5,626	19.3	12,601	43.3	9,981	34.3	897	3.1
New Mexico	668	18.7	1,387	38.8	1,302	36.5	214	6.0
New York	403	14.9	1,139	42.1	961	35.6	200	7.4
Ohio	7,446	24.2	13,661	44.3	8,903	28.9	810	2.6
Rhode Island	661	12.6	2,532	48.4	1,853	35.4	189	3.6
Tennessee	2,950	17.5	6,909	40.9	6,402	37.9	638	3.8
All States	46,757	21.2	93,101	42.3	71,090	32.3	9,337	4.2

Note. Percentages are based on the number of valid responses. Missing = 873.

*Table 15. Student Survey ELA CBT (**EOY**): Q7. How often do you use a computer or tablet in school?*

	Every Day		A Few Times a Week		A Couple Times A Month or Less		Do Not Use in School	
State	n	%	n	%	n	%	n	%
Arizona	2,412	17.7	5,170	38.0	5,028	36.9	1,012	7.4
Arkansas	2,280	27.3	3,693	44.2	2,146	25.7	235	2.8
Colorado	1,226	22.9	2,201	41.0	1,759	32.8	177	3.3
District of Columbia	415	20.3	945	46.3	608	29.8	75	3.7
Florida	295	14.1	747	35.8	865	41.5	179	8.6
Illinois	5,570	24.1	10,627	45.9	6,261	27.1	688	3.0
Louisiana	1,625	23.1	2,558	36.4	2,407	34.3	432	6.2
Maryland	2,276	13.4	6,901	40.6	7,078	41.7	726	4.3
Massachusetts	3,731	20.1	7,656	41.3	6,342	34.2	814	4.4
Mississippi	2,920	29.5	3,297	33.3	3,005	30.3	687	6.9
New Jersey	4,387	20.8	9,202	43.5	6,899	32.6	650	3.1
New Mexico	418	23.3	632	35.2	637	35.5	108	6.0
New York	477	13.4	1,530	42.8	1,326	37.1	238	6.7
Ohio	5,125	25.2	8,654	42.6	5,895	29.0	647	3.2
Rhode Island	370	14.2	1,345	51.7	793	30.5	95	3.6
Tennessee	570	15.1	1,471	38.9	1,565	41.3	180	4.8
All States	34,097	21.3	66,629	41.6	52,614	32.8	6,943	4.3

Note. Percentages are based on the number of valid responses. Missing = 537.

*Table 16. Student Survey ELA CBT (**PBA**): Q8. When writing a story or essay, how often do you use a computer or tablet?*

	All of the Time		Most of the Time		Some of the Time		Never	
State	n	%	n	%	n	%	n	%
Arizona	2,199	11.7	4,720	25.1	7,880	42.0	3,970	21.2
Arkansas	875	8.0	2,206	20.2	5,224	47.7	2,640	24.1
Colorado	563	11.1	1,308	25.8	2,341	46.2	854	16.9
District of Columbia	62	9.4	120	18.2	316	47.8	163	24.7
Florida	181	7.4	471	19.4	1,058	43.5	724	29.7
Illinois	4,815	16.2	9,289	31.3	11,591	39.1	3,978	13.4
Louisiana	1,193	10.2	2,193	18.7	4,895	41.8	3,433	29.3
Maryland	2,419	14.0	4,470	25.8	7,459	43.1	2,948	17.0
Massachusetts	3,351	15.8	5,901	27.8	8,298	39.0	3,709	17.4
Mississippi	1,679	11.9	3,353	23.7	5,943	42.1	3,154	22.3
New Jersey	4,013	13.8	8,944	30.7	12,057	41.4	4,087	14.0
New Mexico	505	14.1	1,006	28.2	1,408	39.4	652	18.3
New York	312	11.6	647	24.0	1,169	43.4	567	21.0
Ohio	4,725	15.3	9,144	29.7	12,151	39.4	4,797	15.6
Rhode Island	808	15.4	1,594	30.5	2,095	40.0	735	14.0
Tennessee	1,838	10.9	4,279	25.3	7,799	46.2	2,980	17.6
All States	29,538	13.4	59,645	27.1	91,684	41.6	39,391	17.9

Note. Percentages are based on the number of valid responses. Missing = 900.

*Table 17. Student Survey ELA CBT (**EOY**): Q8. When writing a story or essay, how often do you use a computer or tablet?*

	All of the Time		Most of the Time		Some of the Time		Never	
State	n	%	n	%	n	%	n	%
Arizona	1,717	12.6	3,470	25.5	5,524	40.5	2,914	21.4
Arkansas	813	9.7	1,924	23.0	3,730	44.6	1,892	22.6
Colorado	653	12.2	1,632	30.4	2,308	43.0	770	14.4
District of Columbia	322	15.8	523	25.6	811	39.7	388	19.0
Florida	178	8.5	371	17.8	917	43.9	622	29.8
Illinois	3,891	16.8	7,029	30.4	8,822	38.1	3,399	14.7
Louisiana	811	11.5	1,379	19.6	2,805	39.9	2,028	28.9
Maryland	2,257	13.3	4,208	24.8	7,474	44.0	3,056	18.0
Massachusetts	3,263	17.6	5,246	28.3	6,976	37.6	3,065	16.5
Mississippi	1,321	13.3	2,341	23.6	3,958	39.9	2,292	23.1
New Jersey	3,100	14.7	6,345	30.0	8,489	40.1	3,217	15.2
New Mexico	184	10.2	489	27.2	802	44.6	322	17.9
New York	340	9.5	742	20.8	1,604	45.0	879	24.7
Ohio	3,427	16.9	5,908	29.1	7,760	38.2	3,238	15.9
Rhode Island	446	17.1	809	31.1	961	36.9	387	14.9
Tennessee	457	12.1	918	24.2	1,661	43.8	753	19.9
All States	23,180	14.5	43,334	27.0	64,602	40.3	29,222	18.2

Note. Percentages are based on the number of valid responses. Missing = 482.

*Table 18. Student Survey ELA CBT (**PBA**): Q9. Would you rather take this test on paper OR on a computer or tablet?*

	On Paper		On a Computer or Tablet	
State	n	%	n	%
Arizona	3,768	20.1	14,990	79.9
Arkansas	2,939	26.8	8,009	73.2
Colorado	1,292	25.5	3,776	74.5
District of Columbia	72	10.9	590	89.1
Florida	486	19.9	1,952	80.1
Illinois	6,497	21.9	23,150	78.1
Louisiana	2,599	22.2	9,110	77.8
Maryland	2,366	13.7	14,942	86.3
Massachusetts	5,548	26.1	15,699	73.9
Mississippi	2,920	20.6	11,227	79.4
New Jersey	8,131	27.9	20,988	72.1
New Mexico	674	18.9	2,897	81.1
New York	829	30.8	1,866	69.2
Ohio	9,769	31.7	21,040	68.3
Rhode Island	972	18.6	4,265	81.4
Tennessee	3,074	18.2	13,809	81.8
All States	51,936	23.6	168,310	76.4

Note. Percentages are based on the number of valid responses. Missing = 912.

*Table 19. Student Survey ELA CBT (**EOY**): Q9. Would you rather take this test on paper OR on a computer or tablet?*

	On Paper		On a Computer or Tablet	
State	n	%	n	%
Arizona	3,122	22.9	10,510	77.1
Arkansas	2,488	29.7	5,876	70.3
Colorado	1,378	25.7	3,983	74.3
District of Columbia	405	19.9	1,635	80.1
Florida	466	22.3	1,622	77.7
Illinois	6,012	26.0	17,128	74.0
Louisiana	1,817	25.9	5,205	74.1
Maryland	2,631	15.5	14,370	84.5
Massachusetts	6,332	34.1	12,215	65.9
Mississippi	2,736	27.6	7,176	72.4
New Jersey	7,072	33.5	14,065	66.5
New Mexico	380	21.2	1,414	78.8
New York	1,150	32.2	2,421	67.8
Ohio	7,931	39.0	12,390	61.0
Rhode Island	602	23.1	2,002	76.9
Tennessee	905	23.9	2,877	76.1
All States	45,427	28.3	114,889	71.7

Note. Percentages are based on the number of valid responses. Missing = 504.

*Table 20. Student Survey ELA CBT (**PBA**): Q10. What did you use to take this test?*

	Desktop Computer		Laptop Computer		Tablet with a Keyboard		Tablet without Keyboard	
State	n	%	n	%	n	%	n	%
Arizona	12,196	65.0	5,526	29.5	815	4.3	222	1.2
Arkansas	6,324	57.8	4,070	37.2	493	4.5	61	0.6
Colorado	2,837	56.0	1,876	37.0	187	3.7	165	3.3
District of Columbia	169	25.6	450	68.1	33	5.0	9	1.4
Florida	2,268	93.1	75	3.1	76	3.1	16	0.7
Illinois	17,279	58.3	10,414	35.1	1,565	5.3	398	1.3
Louisiana	8,857	75.6	2,239	19.1	515	4.4	100	0.9
Maryland	11,530	54.3	6,934	32.6	2,466	11.6	310	1.5
Massachusetts	13,509	78.0	3,165	18.3	519	3.0	120	0.7
Mississippi	11,957	84.5	1,549	10.9	456	3.2	186	1.3
New Jersey	16,348	56.2	11,026	37.9	1,596	5.5	142	0.5
New Mexico	2,721	76.2	723	20.2	98	2.7	30	0.8
New York	1,558	57.8	1,031	38.2	72	2.7	35	1.3
Ohio	17,903	58.2	11,254	36.6	1,298	4.2	315	1.0
Rhode Island	2,439	46.6	2,611	49.9	152	2.9	30	0.6
Tennessee	10,705	63.4	5,780	34.2	309	1.8	83	0.5
All States	138,600	62.9	68,723	31.2	10,650	4.8	2,222	1.0

Note. Percentages are based on the number of valid responses. Missing = 963.

*Table 21. Student Survey ELA CBT (**EOY**): Q10. What did you use to take this test?*

	Desktop Computer		Laptop Computer		Tablet with a Keyboard		Tablet without Keyboard	
State	n	%	n	%	n	%	n	%
Arizona	8,899	65.3	4,036	29.6	522	3.8	165	1.2
Arkansas	5,066	60.6	2,981	35.6	246	2.9	71	0.8
Colorado	2,551	47.5	2,264	42.2	481	9.0	69	1.3
District of Columbia	614	30.1	1,330	65.1	76	3.7	23	1.1
Florida	1,913	91.6	103	4.9	52	2.5	21	1.0
Illinois	13,180	56.9	8,463	36.6	1,158	5.0	343	1.5
Louisiana	5,016	71.4	1,492	21.3	407	5.8	106	1.5
Maryland	13,217	77.8	3,182	18.7	470	2.8	130	0.8
Massachusetts	10,096	54.4	5,863	31.6	2,246	12.1	346	1.9
Mississippi	8,198	82.7	1,262	12.7	294	3.0	159	1.6
New Jersey	11,006	52.0	8,397	39.7	1,529	7.2	218	1.0
New Mexico	1,507	84.0	197	11.0	76	4.2	15	0.8
New York	2,193	61.5	1,155	32.4	167	4.7	53	1.5
Ohio	11,702	57.7	7,405	36.5	905	4.5	284	1.4
Rhode Island	1,202	46.2	1,295	49.8	98	3.8	6	0.2
Tennessee	2,381	62.9	1,295	34.2	80	2.1	31	0.8
All States	98,741	61.6	50,720	31.6	8,807	5.5	2,040	1.3

Note. Percentages are based on the number of valid responses. Missing = 512.

*Table 22. Student Survey ELA CBT (**PBA**): Q11. How many times did you practice on a computer or tablet to get ready for this test?*

	Never		Once		More than Once	
State	n	%	n	%	n	%
Arizona	9,520	50.8	6,224	33.2	2,998	16.0
Arkansas	3,386	30.9	4,732	43.2	2,826	25.8
Colorado	2,406	47.5	1,601	31.6	1,057	20.9
District of Columbia	226	34.1	241	36.4	195	29.5
Florida	1,248	51.3	702	28.8	181	19.9
Illinois	13,251	44.7	11,290	38.1	5,108	17.2
Louisiana	5,234	44.7	3,975	34.0	2,496	21.3
Maryland	5,835	33.7	6,569	38.0	4,892	28.3
Massachusetts	8,156	38.4	8,658	40.8	4,423	20.8
Mississippi	6,086	43.0	4,664	33.0	3,394	24.0
New Jersey	11,076	38.1	11,326	38.9	6,703	23.0
New Mexico	1,579	44.2	1,304	36.5	687	19.2
New York	1,451	53.8	737	27.3	510	18.9
Ohio	17,511	56.8	9,194	29.8	4,105	13.3
Rhode Island	2,228	42.6	1,852	35.4	1,151	22.0
Tennessee	8,542	50.6	5,256	31.2	3,073	18.2
All States	97,735	44.4	78,325	35.6	44,102	20.0

Note. Percentages are based on the number of valid responses. Missing = 996.

*Table 23. Student Survey ELA CBT (**EOY**): Q11. How many times did you practice on a computer or tablet to get ready for this test?*

	Never		Once		More than Once	
State	n	%	n	%	n	%
Arizona	7,158	52.6	4,410	32.4	2,044	15.0
Arkansas	2,756	33.0	3,868	46.3	1,736	20.8
Colorado	3,089	57.6	1,363	25.4	912	17.0
District of Columbia	927	45.5	606	29.7	506	24.8
Florida	895	42.9	727	34.8	465	22.3
Illinois	10,364	44.8	8,855	38.3	3,923	17.0
Louisiana	3,216	45.8	2,296	32.7	1,516	21.6
Maryland	6,391	37.6	6,130	36.1	4,463	26.3
Massachusetts	7,837	42.2	7,365	39.7	3,348	18.0
Mississippi	4,863	49.1	2,752	27.8	2,295	23.2
New Jersey	8,393	39.7	8,033	38.0	4,717	22.3
New Mexico	787	43.9	685	38.2	320	17.9
New York	1,584	44.5	1,340	37.7	635	17.8
Ohio	11,338	55.8	5,847	28.8	3,132	15.4
Rhode Island	975	37.5	956	36.7	672	25.8
Tennessee	2,020	53.4	1,042	27.6	718	19.0
All States	72,593	45.3	56,275	35.1	31,402	19.6

Note. Percentages are based on the number of valid responses. Missing = 550.

*Table 24. Student Survey ELA CBT (**PBA**): Q12. Was it easy to use the highlighter?*

	Yes		No		Did Not Use Highlighter	
State	n	%	n	%	n	%
Arizona	12,259	65.4	901	4.8	5,581	29.8
Arkansas	7,111	65.0	409	3.7	3,419	31.3
Colorado	2,870	56.8	310	6.1	1,872	37.1
District of Columbia	489	73.9	50	7.6	123	18.6
Florida	1,631	67.0	116	4.8	687	28.2
Illinois	17,056	57.6	1,225	4.1	11,352	38.3
Louisiana	7,852	67.1	484	4.1	3,362	28.7
Maryland	10,559	61.1	901	5.2	5,832	33.7
Massachusetts	13,158	62.0	1,320	6.2	6,761	31.8
Mississippi	9,302	65.8	490	3.5	4,347	30.7
New Jersey	17,728	60.9	1,314	4.5	10,054	34.6
New Mexico	2,440	68.4	202	5.7	923	25.9
New York	1,745	64.7	160	5.9	790	29.3
Ohio	17,472	56.7	1,369	4.4	11,955	38.8
Rhode Island	3,398	65.0	233	4.5	1,599	30.6
Tennessee	9,932	58.9	774	4.6	6,160	36.5
All States	135,002	61.3	10,258	4.7	74,817	34.0

Note. Percentages are based on the number of valid responses. Missing = 1081.

*Table 25. Student Survey ELA CBT (**EOY**): Q12. Was it easy to use the highlighter?*

	Yes		No		Did Not Use Highlighter	
State	n	%	n	%	n	%
Arizona	9,094	66.8	824	6.1	3,690	27.1
Arkansas	5,447	65.2	424	5.1	2,485	29.7
Colorado	2,895	54.0	303	5.6	2,166	40.4
District of Columbia	1,351	66.2	177	8.7	512	25.1
Florida	1,395	66.9	127	6.1	563	27.0
Illinois	13,732	59.3	1,148	5.0	8,269	35.7
Louisiana	4,663	66.4	426	6.1	1,930	27.5
Maryland	10,671	62.8	989	5.8	5,320	31.3
Massachusetts	10,589	57.1	1,358	7.3	6,591	35.6
Mississippi	6,557	66.2	508	5.1	2,838	28.7
New Jersey	12,578	59.5	1,190	5.6	7,371	34.9
New Mexico	1,271	70.7	92	5.1	434	24.2
New York	2,255	63.3	260	7.3	1,047	29.4
Ohio	11,940	58.8	1,389	6.8	6,973	34.3
Rhode Island	1,705	65.6	119	4.6	776	29.8
Tennessee	2,156	57.0	277	7.3	1,352	35.7
All States	98,299	61.3	9,611	6.0	52,317	32.7

Note. Percentages are based on the number of valid responses. Missing = 593.

*Table 26. Student Survey ELA CBT (**PBA**): Q13. Was it easy to type your answers?*

	Yes		No		Did Not Type Answers	
State	n	%	n	%	n	%
Arizona	16,143	86.3	2,039	10.9	522	2.8
Arkansas	9,808	89.7	901	8.2	220	2.0
Colorado	4,332	85.6	658	13.0	68	1.3
District of Columbia	592	89.3	65	9.8	6	0.9
Florida	2,121	87.2	284	11.7	26	1.1
Illinois	25,916	87.6	3,181	10.8	492	1.7
Louisiana	10,213	87.4	1,242	10.6	232	2.0
Maryland	14,991	86.8	1,839	10.7	437	2.5
Massachusetts	18,491	87.2	2,421	11.4	298	1.4
Mississippi	12,243	86.7	1,432	10.1	452	3.2
New Jersey	25,407	87.4	3,282	11.3	382	1.3
New Mexico	3,228	90.5	301	8.4	39	1.1
New York	2,220	82.5	391	14.5	79	2.9
Ohio	26,902	87.4	3,401	11.1	471	1.5
Rhode Island	4,533	86.7	617	11.8	77	1.5
Tennessee	14,743	87.5	1,719	10.2	393	2.3
All States	191,883	87.3	23,773	10.8	4,194	1.9

Note. Percentages are based on the number of valid responses. Missing = 1308.

*Table 27. Student Survey ELA CBT (**EOY**): Q13. Was it easy to type your answers?*

	Yes		No		Did Not Type Answers	
State	n	%	n	%	n	%
Arizona	5,809	42.7	654	4.8	7,140	52.5
Arkansas	3,436	41.1	304	3.6	4,611	55.2
Colorado	1,988	37.1	237	4.4	3,138	58.5
District of Columbia	870	42.6	116	5.7	1,054	51.7
Florida	948	45.5	97	4.7	1,038	49.8
Illinois	8,480	36.6	916	4.0	13,746	59.4
Louisiana	3,058	43.5	335	4.8	3,629	51.7
Maryland	7,151	42.1	704	4.1	9,126	53.7
Massachusetts	6,988	37.7	960	5.2	10,584	57.1
Mississippi	3,865	39.0	462	4.7	5,575	56.3
New Jersey	7,544	35.7	873	4.1	12,716	60.2
New Mexico	722	40.4	67	3.7	1,000	55.9
New York	1,206	33.9	188	5.3	2,166	60.8
Ohio	6,935	34.2	1,058	5.2	12,301	60.6
Rhode Island	1,163	44.7	108	4.1	1,333	51.2
Tennessee	1,505	39.8	173	4.6	2,102	55.6
All States	61,668	38.5	7,252	4.5	91,259	57.0

Note. Percentages are based on the number of valid responses. Missing = 641.

*Table 28. Student Survey ELA CBT (**PBA**): Q14. Was it easy to make pictures or words bigger or smaller?*

	Yes		No		Did Not Change Size	
State	n	%	n	%	n	%
Arizona	6,248	33.4	1,621	8.7	10,838	57.9
Arkansas	3,455	31.6	742	6.8	6,733	61.6
Colorado	1,356	26.8	531	10.5	3,169	62.7
District of Columbia	287	43.4	58	8.8	317	47.9
Florida	815	33.6	213	8.8	1,398	57.6
Illinois	8,080	27.3	2,332	7.9	19,202	64.8
Louisiana	4,246	36.4	907	7.8	6,525	55.9
Maryland	5,234	30.3	1,647	9.5	10,401	60.2
Massachusetts	6,467	30.5	1,962	9.2	12,787	60.3
Mississippi	4,630	32.8	913	6.5	8,587	60.8
New Jersey	7,879	27.1	2,493	8.6	18,706	64.3
New Mexico	1,257	35.3	343	9.6	1,963	55.1
New York	922	34.3	280	10.4	1,485	55.3
Ohio	7,705	25.0	2,413	7.8	20,653	67.1
Rhode Island	1,595	30.5	540	10.3	3,095	59.2
Tennessee	5,311	31.5	1,243	7.4	10,293	61.1
All States	65,487	29.8	18,238	8.3	136,152	61.9

Note. Percentages are based on the number of valid responses. Missing = 1281.

*Table 29. Student Survey ELA CBT (**EOY**): Q14. Was it easy to make pictures or words bigger or smaller?*

	Yes		No		Did Not Change Size	
State	n	%	n	%	n	%
Arizona	3,793	27.9	998	7.3	8,804	64.8
Arkansas	2,233	26.7	527	6.3	5,595	67.0
Colorado	1,105	20.6	409	7.6	3,844	71.7
District of Columbia	582	28.5	172	8.4	1,287	63.1
Florida	566	27.2	162	7.8	1,356	65.1
Illinois	5,424	23.4	1,501	6.5	16,209	70.1
Louisiana	2,177	31.1	520	7.4	4,313	61.5
Maryland	4,464	26.3	1,350	7.9	11,168	65.8
Massachusetts	4,722	25.5	1,456	7.9	12,355	66.7
Mississippi	2,644	26.7	641	6.5	6,617	66.8
New Jersey	5,122	24.2	1,479	7.0	14,528	68.8
New Mexico	631	35.2	104	5.8	1,060	59.1
New York	872	24.5	254	7.1	2,433	68.4
Ohio	4,789	23.6	1,616	8.0	13,880	68.4
Rhode Island	609	23.5	227	8.7	1,761	67.8
Tennessee	1,068	28.3	269	7.1	2,439	64.6
All States	40,801	25.5	11,685	7.3	107,649	67.2

Note. Percentages are based on the number of valid responses. Missing = 685.

*Table 30. Student Survey ELA CBT (**PBA**): Q15. Was it easy to move back and forth between passages or stories?*

	Yes		No		Did Not Move Between Passages or Stories	
State	n	%	n	%	n	%
Arizona	16,224	86.9	1,300	7.0	1,150	6.2
Arkansas	9,747	89.2	672	6.2	507	4.6
Colorado	4,407	87.2	354	7.0	294	5.8
District of Columbia	584	88.1	46	6.9	33	5.0
Florida	2,166	89.3	156	6.4	103	4.2
Illinois	25,927	87.6	1,946	6.6	1,723	5.8
Louisiana	10,123	86.7	842	7.2	709	6.1
Maryland	15,138	87.7	1,168	6.8	956	5.5
Massachusetts	18,448	87.1	1,629	7.7	1,108	5.2
Mississippi	12,469	88.3	825	5.8	825	5.8
New Jersey	25,595	88.1	2,178	7.5	1,272	4.4
New Mexico	3,147	88.4	240	6.7	173	4.9
New York	2,267	84.2	247	9.2	177	6.6
Ohio	26,310	85.5	2,304	7.5	2,149	7.0
Rhode Island	4,607	88.1	379	7.3	241	4.6
Tennessee	14,728	87.5	1,007	6.0	1,098	6.5
All States	191,887	87.3	15,293	7.0	12,518	5.7

Note. Percentages are based on the number of valid responses. Missing = 1460.

*Table 31. Student Survey ELA CBT (**EOY**): Q15. Was it easy to move back and forth between passages or stories?*

	Yes		No		Did Not Move Between Passages or Stories	
State	n	%	n	%	n	%
Arizona	11,163	82.2	1,004	7.4	1,416	10.4
Arkansas	6,944	83.2	537	6.4	866	10.4
Colorado	4,358	81.5	409	7.7	579	10.8
District of Columbia	1,670	81.9	180	8.8	189	9.3
Florida	1,823	87.6	124	6.0	135	6.5
Illinois	18,831	81.4	1,560	6.7	2,733	11.8
Louisiana	5,710	81.4	567	8.1	742	10.6
Maryland	14,198	83.7	1,105	6.5	1,670	9.8
Massachusetts	14,864	80.3	1,600	8.6	2,052	11.1
Mississippi	8,206	82.9	676	6.8	1,017	10.3
New Jersey	17,230	81.6	1,703	8.1	2,189	10.4
New Mexico	1,544	86.4	100	5.6	144	8.1
New York	2,889	81.3	288	8.1	377	10.6
Ohio	15,516	76.5	1,920	9.5	2,850	14.0
Rhode Island	2,159	83.1	175	6.7	265	10.2
Tennessee	3,044	80.7	296	7.8	434	11.5
All States	130,149	81.3	12,244	7.7	17,658	11.0

Note. Percentages are based on the number of valid responses. Missing = 769.

*Table 32. Student Survey ELA CBT (**PBA**): Q16. Was it easy to find information in the passages or stories when answering questions?*

	Yes		No		Did Not Move Between Passages or Stories	
State	n	%	n	%	n	%
Arizona	13,998	75.0	3,994	21.4	682	3.7
Arkansas	8,457	77.4	2,144	19.6	320	2.9
Colorado	3,778	74.7	1,081	21.4	196	3.9
District of Columbia	545	82.8	96	14.6	17	2.6
Florida	1,953	80.6	399	16.5	71	2.9
Illinois	22,068	74.6	6,442	21.8	1,084	3.7
Louisiana	8,868	75.9	2,404	20.6	413	3.5
Maryland	13,145	76.1	3,514	20.4	603	3.5
Massachusetts	15,977	75.4	4,566	21.5	647	3.1
Mississippi	11,141	78.9	2,572	18.2	414	2.9
New Jersey	21,023	72.4	7,269	25.0	763	2.6
New Mexico	2,771	77.9	690	19.4	98	2.8
New York	2,012	74.7	568	21.1	113	4.2
Ohio	22,329	72.6	7,320	23.8	1,090	3.5
Rhode Island	3,942	75.5	1,150	22.0	127	2.4
Tennessee	13,124	78.0	3,082	18.3	613	3.6
All States	165,131	75.2	47,291	21.5	7,251	3.3

Note. Percentages are based on the number of valid responses. Missing = 1485.

*Table 33. Student Survey ELA CBT (**EOY**): Q16. Was it easy to find information in the passages or stories when answering questions?*

	Yes		No		Did Not Move Between Passages or Stories	
State	n	%	n	%	n	%
Arizona	10,127	74.7	2,783	20.5	646	4.8
Arkansas	6,302	75.5	1,698	20.3	344	4.1
Colorado	4,035	75.4	1,108	20.7	210	3.9
District of Columbia	1,568	77.1	387	19.0	80	3.9
Florida	1,700	81.8	310	14.9	67	3.2
Illinois	17,152	74.3	4,962	21.5	982	4.3
Louisiana	5,277	75.3	1,396	19.9	332	4.7
Maryland	13,014	76.7	3,276	19.3	682	4.0
Massachusetts	13,519	73.1	4,243	22.9	742	4.0
Mississippi	7,554	76.4	1,866	18.9	469	4.7
New Jersey	15,222	72.1	5,128	24.3	760	3.6
New Mexico	1,406	78.7	305	17.1	76	4.3
New York	2,638	74.2	773	21.7	145	4.1
Ohio	14,405	71.1	4,721	23.3	1,137	5.6
Rhode Island	1,944	74.9	562	21.6	91	3.5
Tennessee	2,823	74.8	756	20.0	193	5.1
All States	118,686	74.2	34,274	21.4	6,956	4.3

Note. Percentages are based on the number of valid responses. Missing = 904.

*Table 34. Student Survey ELA CBT (**PBA**): Q17. Did any of the problems listed below happen during your test? (Select all that apply)*[a].

	Computer Stopped Working		Computer Worked Slowly		Difficulty Dragging or Moving Things on Screen		Difficulty Making Changes to Answers		No Problems Occurred During the Test	
State	n	%	n	%	n	%	n	%	n	%
Arizona	3,151	16.7	4,259	22.6	3,429	18.2	2,238	11.9	10,744	56.9
Arkansas	1,544	14.1	2,445	22.3	2,087	19.0	1,129	10.3	6,450	58.8
Colorado	935	18.4	1,345	26.4	1,082	21.3	744	14.6	2,622	51.5
District of Columbia	77	11.6	212	32.0	159	24.0	75	11.3	329	49.6
Florida	873	35.7	826	33.8	368	15.0	269	11.0	987	40.4
Illinois	4,292	14.4	6,836	23.0	6,159	20.7	3,500	11.8	16,954	56.9
Louisiana	1,781	15.2	2,221	18.9	1,918	16.3	1,316	11.2	7,271	61.9
Maryland	3,350	19.3	4,623	26.6	3,178	18.3	2,266	13.0	9,371	53.9
Massachusetts	3,297	15.4	4,745	22.2	4,602	21.6	2,954	13.8	11,904	55.8
Mississippi	2,293	16.2	2,923	20.6	2,062	14.5	1,360	9.6	8,726	61.5
New Jersey	5,127	17.6	7,173	24.6	6,750	23.1	3,923	13.4	15,412	52.8
New Mexico	678	18.9	817	22.8	675	18.8	383	10.7	2,045	57.1
New York	420	15.5	462	17.0	583	21.5	373	13.7	1,579	58.2
Ohio	4,182	13.5	6,782	21.9	7,086	22.9	3,779	12.2	17,598	56.9
Rhode Island	1,092	20.8	1,600	30.5	1,114	21.2	737	14.0	2,671	50.9
Tennessee	3,397	20.0	4,513	26.5	3,118	18.3	1,898	11.2	9,198	54.1
All States	36,489	16.5	51,782	23.4	44,370	20.1	26,944	12.2	123,861	56.0

[a] Percentages reported for “select all that apply” should be interpreted with caution, as it is not possible to differentiate “missing” (i.e., skipped) vs. “not selected” responses.

*Table 35. Student Survey ELA CBT (**EOY**): Q17. Did any of the problems listed below happen during your test? (Select all that apply)*[a].

State	Computer Stopped Working		Computer Worked Slowly		Difficulty Dragging or Moving Things on Screen		Difficulty Making Changes to Answers		No Problems Occurred During the Test	
	n	%	n	%	n	%	n	%	n	%
Arizona	1,406	10.3	2,305	16.9	2,951	21.6	1,349	9.9	8,109	59.3
Arkansas	890	10.6	1,448	17.3	1,771	21.2	749	8.9	5,081	60.7
Colorado	459	8.5	1,010	18.8	1,339	24.9	622	11.6	3,093	57.6
District of Columbia	270	13.1	427	20.7	493	23.9	225	10.9	1,096	53.1
Florida	502	23.9	366	17.4	273	13.0	199	9.5	1,145	54.6
Illinois	1,837	7.9	3,673	15.8	5,462	23.6	2,086	9.0	14,109	60.8
Louisiana	831	11.8	1,147	16.3	1,277	18.1	620	8.8	4,406	62.6
Maryland	2,113	12.4	3,269	19.2	3,046	17.9	1,620	9.5	10,349	60.8
Massachusetts	1,790	9.6	3,479	18.7	4,516	24.3	1,884	10.1	10,828	58.2
Mississippi	880	8.9	1,334	13.4	1,809	18.2	895	9.0	6,596	66.4
New Jersey	2,083	9.8	3,918	18.5	5,294	24.9	2,186	10.3	12,052	56.8
New Mexico	169	9.4	252	14.0	325	18.1	154	8.6	1,160	64.4
New York	389	10.9	475	13.3	733	20.5	400	11.2	2,217	61.9
Ohio	1,743	8.5	3,809	18.7	5,526	27.1	2,256	11.0	11,466	56.2
Rhode Island	311	11.9	695	26.6	521	20.0	228	8.7	1,444	55.4
Tennessee	455	12.0	695	18.3	925	24.3	390	10.3	2,126	55.9
All States	16,128	10.0	28,302	17.6	36,261	22.5	15,863	9.9	95,277	59.2

[a] Percentages reported for "select all that apply" should be interpreted with caution, as it is not possible to differentiate "missing" (i.e., skipped) vs. "not selected" responses.

Appendix N – Item-level Results from the Student Survey for English Language Arts: Paper-based Test Administration

Table 1. Student Survey Responses by State (ELA PBT)

	Performance-Based Assessment		End-of-Year Assessment	
State	n	% of Total Responses	n	% of Total Responses
Arizona	8,856	13.5	8,254	15.5
Arkansas	5,292	8.1	4,236	8.0
Colorado	1,909	2.9	1,892	3.6
District of Columbia	39	0.1	268	0.5
Florida	79	0.1	--	--
Illinois	10,051	15.3	7,473	14.0
Louisiana	209	0.3	378	0.7
Maryland	7,274	11.1	7,239	13.6
Massachusetts	5,889	9.0	5,500	10.3
Mississippi	8,020	12.2	7,978	15.0
New Jersey	1	0.0	--	--
New Mexico	18	0.0	--	--
New York	1,365	2.1	1,064	2.0
Ohio	8,216	12.5	6,468	12.1
Rhode Island	1,961	3.0	966	1.8
Tennessee	6,394	9.8	1,563	2.9
All States	65,573	100.0	53,279	100.0

*Table 2. Student Survey ELA PBT (**PBA**): Q1. Did you understand all of the directions read by the person who gave you the test?*

	Yes		No	
State	n	%	n	%
Arizona	8,173	92.5	667	7.5
Arkansas	5,067	95.8	221	4.2
Colorado	1,769	92.8	137	7.2
District of Columbia	36	94.7	2	5.3
Florida	75	94.9	4	5.1
Illinois	9,516	94.8	519	5.2
Louisiana	201	96.6	7	3.4
Maryland	6,968	96.0	289	4.0
Massachusetts	5,572	94.8	304	5.2
Mississippi	7,723	96.5	280	3.5
New Jersey	1	100.0	0	0.0
New Mexico	18	100.0	0	0.0
New York	1,298	95.7	58	4.3
Ohio	7,907	96.5	291	3.5
Rhode Island	1,876	95.9	80	4.1
Tennessee	6,164	96.7	212	3.3
All States	62,364	95.3	3,071	4.7

Note. Percentages are based on the number of valid responses. Missing = 138.

*Table 3. Student Survey ELA PBT (**EOY**): Q1. Did you understand all of the directions read by the person who gave you the test?*

	Yes		No	
State	n	%	n	%
Arizona	7,318	88.8	926	11.2
Arkansas	3,846	91.0	381	9.0
Colorado	1,689	89.6	195	10.4
District of Columbia	251	93.7	17	6.3
Illinois	6,782	90.9	676	9.1
Louisiana	347	91.8	31	8.2
Maryland	6,493	89.9	733	10.1
Massachusetts	5,024	91.5	465	8.5
Mississippi	7,448	93.6	511	6.4
New York	973	91.6	89	8.4
Ohio	5,811	90.0	645	10.0
Rhode Island	893	92.5	72	7.5
Tennessee	1,427	91.7	130	8.3
All States	48,302	90.8	4,871	9.2

Note. Percentages are based on the number of valid responses. Missing = 106.

*Table 4. Student Survey ELA PBT (**PBA**): Q2. How often was it hard to understand the directions for the questions on this test?*

	Almost Always		Most of the Time		Some of the Time		Almost Never	
State	n	%	n	%	n	%	n	%
Arizona	514	5.8	1,412	16.0	4,624	52.3	2,285	25.9
Arkansas	279	5.3	654	12.4	2,443	46.2	1,908	36.1
Colorado	88	4.6	219	11.5	992	52.1	606	31.8
District of Columbia	2	5.4	6	16.2	23	62.2	6	16.2
Florida	10	12.7	5	6.3	38	48.1	26	32.9
Illinois	417	4.2	1,192	11.9	5,198	51.8	3,224	32.1
Louisiana	10	4.8	42	20.2	82	39.4	74	35.6
Maryland	337	4.6	876	12.1	3,537	48.7	2,510	34.6
Massachusetts	322	5.5	804	13.7	2,915	49.6	1,832	31.2
Mississippi	364	4.6	981	12.3	3,860	48.3	2,788	34.9
New Jersey	0	0.0	0	0.0	0	0.0	1	100.0
New Mexico	0	0.0	2	11.1	9	50.0	7	38.9
New York	68	5.0	229	16.9	672	49.6	387	28.5
Ohio	394	4.8	922	11.3	4,011	49.0	2,866	35.0
Rhode Island	121	6.2	251	12.8	899	46.0	685	35.0
Tennessee	326	5.1	712	11.2	3,053	47.9	2,283	35.8
All States	3,252	5.0	8,307	12.7	32,356	49.5	21,488	32.9

Note. Percentages are based on the number of valid responses. Missing = 170.

*Table 5. Student Survey ELA PBT (**EOY**): Q2. How often was it hard to understand the directions for the questions on this test?*

	Almost Always		Most of the Time		Some of the Time		Almost Never	
State	n	%	n	%	n	%	n	%
Arizona	490	5.9	1,226	14.9	4,183	50.7	2,347	28.5
Arkansas	231	5.5	440	10.4	1,829	43.2	1,729	40.9
Colorado	108	5.7	239	12.7	903	47.9	637	33.8
District of Columbia	10	3.7	38	14.2	116	43.4	103	38.6
Illinois	380	5.1	837	11.2	3,585	48.1	2,652	35.6
Louisiana	19	5.0	55	14.6	175	46.4	128	34.0
Maryland	356	4.9	962	13.3	3,432	47.5	2,471	34.2
Massachusetts	265	4.8	688	12.5	2,585	47.1	1,948	35.5
Mississippi	423	5.3	960	12.1	3,652	45.9	2,917	36.7
New York	61	5.8	136	12.9	523	49.5	337	31.9
Ohio	332	5.1	776	12.0	3,158	49.0	2,184	33.9
Rhode Island	53	5.5	121	12.5	423	43.8	368	38.1
Tennessee	110	7.1	215	13.8	709	45.5	523	33.6
All States	2,838	5.3	6,693	12.6	25,273	47.6	18,344	34.5

Note. Percentages are based on the number of valid responses. Missing = 131.

*Table 6. Student Survey ELA PBT (**PBA**): Q3. How many questions asked you about things you have not learned in school this year?*

	All of Them		Most of Them		Few of Them		None of Them	
State	n	%	n	%	n	%	n	%
Arizona	229	2.6	935	10.6	4,479	50.7	3,189	36.1
Arkansas	171	3.2	501	9.5	2,575	48.8	2,034	38.5
Colorado	34	1.8	178	9.4	951	50.0	738	38.8
District of Columbia	1	2.7	4	10.8	19	51.4	13	35.1
Florida	7	8.9	20	25.3	28	35.4	24	30.4
Illinois	175	1.7	1,013	10.1	5,701	56.9	3,136	31.3
Louisiana	6	2.9	17	8.2	96	46.2	89	42.8
Maryland	206	2.8	698	9.6	3,821	52.6	2,534	34.9
Massachusetts	148	2.5	562	9.6	3,008	51.2	2,153	36.7
Mississippi	230	2.9	593	7.4	3,433	43.0	3,736	46.7
New Jersey	0	0.0	0	0.0	1	100.0	0	0.0
New Mexico	0	0.0	0	0.0	9	50.0	9	50.0
New York	66	4.9	155	11.4	650	47.9	485	35.8
Ohio	231	2.8	821	10.0	4,253	52.0	2,881	35.2
Rhode Island	56	2.9	208	10.6	1,014	51.9	676	34.6
Tennessee	173	2.7	514	8.1	3,061	48.1	2,620	41.1
All States	1,733	2.7	6,219	9.5	33,099	50.6	24,317	37.2

Note. Percentages are based on the number of valid responses. Missing = 205.

*Table 7. Student Survey ELA PBT (**EOY**): Q3. How many questions asked you about things you have not learned in school this year?*

	All of Them		Most of Them		Few of Them		None of Them	
State	n	%	n	%	n	%	n	%
Arizona	240	2.9	921	11.2	4,438	53.9	2,635	32.0
Arkansas	158	3.7	412	9.8	2,123	50.2	1,532	36.3
Colorado	82	4.4	229	12.2	946	50.2	627	33.3
District of Columbia	11	4.2	24	9.1	101	38.1	129	48.7
Illinois	176	2.4	859	11.5	4,279	57.4	2,136	28.7
Louisiana	7	1.9	38	10.1	183	48.4	150	39.7
Maryland	197	2.7	778	10.8	3,803	52.7	2,439	33.8
Massachusetts	135	2.5	486	8.9	2,782	50.8	2,073	37.9
Mississippi	252	3.2	629	7.9	3,549	44.6	3,523	44.3
New York	48	4.6	117	11.1	533	50.6	356	33.8
Ohio	184	2.9	689	10.7	3,436	53.3	2,137	33.2
Rhode Island	41	4.3	125	13.0	486	50.4	312	32.4
Tennessee	50	3.2	177	11.4	861	55.4	465	29.9
All States	1,581	3.0	5,484	10.3	27,520	51.8	18,514	34.9

Note. Percentages are based on the number of valid responses. Missing = 180.

*Table 8. Student Survey ELA PBT (**PBA**): Q4. How difficult was this test?*

	Easier than School Work		Same as School Work		Harder than School Work	
State	n	%	n	%	n	%
Arizona	1,013	11.5	4,470	50.7	3,327	37.8
Arkansas	758	14.3	2,894	54.8	1,632	30.9
Colorado	343	18.1	1,035	54.5	521	27.4
District of Columbia	2	5.4	19	51.4	16	43.2
Florida	3	3.8	38	48.1	38	48.1
Illinois	1,219	12.2	5,019	50.1	3,780	37.7
Louisiana	25	12.0	86	41.3	97	46.6
Maryland	966	13.3	4,086	56.3	2,203	30.4
Massachusetts	686	11.7	2,789	47.6	2,386	40.7
Mississippi	1,235	15.5	4,555	57.0	2,203	27.6
New Jersey	0	0.0	1	100.0	0	0.0
New Mexico	4	22.2	12	66.7	2	11.1
New York	161	11.9	847	62.6	345	25.5
Ohio	986	12.1	4,246	51.9	2,947	36.0
Rhode Island	168	8.6	919	47.1	866	44.3
Tennessee	783	12.3	3,443	54.1	2,136	33.6
All States	8,352	12.8	34,459	52.8	22,499	34.4

Note. Percentages are based on the number of valid responses. Missing = 263.

*Table 9. Student Survey ELA PBT (**EOY**): Q4. How difficult was this test?*

	Easier than School Work		Same as School Work		Harder than School Work	
State	n	%	n	%	n	%
Arizona	1,015	12.3	4,159	50.5	3,062	37.2
Arkansas	667	15.8	2,343	55.5	1,212	28.7
Colorado	351	18.7	1,022	54.4	506	26.9
District of Columbia	27	10.1	170	63.7	70	26.2
Illinois	898	12.0	3,829	51.4	2,727	36.6
Louisiana	52	13.8	207	55.1	117	31.1
Maryland	868	12.0	3,977	55.1	2,370	32.8
Massachusetts	766	14.0	2,887	52.7	1,823	33.3
Mississippi	1,037	13.1	4,581	57.7	2,327	29.3
New York	136	12.9	613	58.2	305	28.9
Ohio	679	10.5	3,308	51.3	2,457	38.1
Rhode Island	115	12.0	433	45.1	412	42.9
Tennessee	167	10.8	775	49.9	611	39.3
All States	6,778	12.8	28,304	53.3	17,999	33.9

Note. Percentages are based on the number of valid responses. Missing = 198.

*Table 10. Student Survey ELA PBT (**PBA**): Q5. Did you have enough time to finish this test?*

	Finished Very Early		Finished On Time		Rushed to Finish		Did Not Finish	
State	n	%	n	%	n	%	n	%
Arizona	2,596	29.4	5,116	58.0	723	8.2	384	4.4
Arkansas	2,533	48.0	2,469	46.8	196	3.7	76	1.4
Colorado	844	44.3	930	48.8	110	5.8	22	1.2
District of Columbia	10	27.0	18	48.6	3	8.1	6	16.2
Florida	37	46.8	35	44.3	4	5.1	3	3.8
Illinois	4,657	46.5	5,014	50.0	266	2.7	87	0.9
Louisiana	66	31.6	115	55.0	17	8.1	11	5.3
Maryland	3,725	51.3	3,201	44.1	213	2.9	118	1.6
Massachusetts	1,932	32.9	3,276	55.8	474	8.1	184	3.1
Mississippi	2,957	37.0	4,584	57.3	310	3.9	147	1.8
New Jersey	1	100.0	0	0.0	0	0.0	0	0.0
New Mexico	0	0.0	16	88.9	2	11.1	0	0.0
New York	505	37.3	697	51.4	80	5.9	73	5.4
Ohio	3,875	47.3	3,856	47.1	302	3.7	157	1.9
Rhode Island	701	35.8	1,140	58.3	85	4.3	31	1.6
Tennessee	2,858	44.9	3,116	48.9	232	3.6	161	2.5
All States	27,297	41.8	33,583	51.4	3,017	4.6	1,460	2.2

Note. Percentages are based on the number of valid responses. Missing = 216.

*Table 11. Student Survey ELA PBT (**EOY**): Q5. Did you have enough time to finish this test?*

	Finished Very Early		Finished On Time		Rushed to Finish		Did Not Finish	
State	n	%	n	%	n	%	n	%
Arizona	3,029	36.8	4,519	54.9	525	6.4	162	2.0
Arkansas	2,325	55.0	1,708	40.4	154	3.6	38	0.9
Colorado	907	48.1	812	43.1	126	6.7	39	2.1
District of Columbia	67	25.4	147	55.7	13	4.9	37	14.0
Illinois	3,791	50.8	3,409	45.7	205	2.7	55	0.7
Louisiana	102	27.0	247	65.3	15	4.0	14	3.7
Maryland	3,465	48.0	3,364	46.6	271	3.8	114	1.6
Massachusetts	2,217	40.4	2,880	52.5	294	5.4	96	1.7
Mississippi	2,865	36.1	4,587	57.7	346	4.4	147	1.9
New York	487	46.1	463	43.8	67	6.3	40	3.8
Ohio	2,706	42.0	3,311	51.3	292	4.5	140	2.2
Rhode Island	402	41.7	524	54.4	29	3.0	8	0.8
Tennessee	748	48.1	735	47.3	54	3.5	18	1.2
All States	23,111	43.5	26,706	50.3	2,391	4.5	908	1.7

Note. Percentages are based on the number of valid responses. Missing = 163.

*Table 12. Student Survey ELA PBT (**PBA**): Q6. How often do you use a computer or tablet at home?*

	Every Day		A Few Times a Week		A Couple Times A Month or Less		Do Not Have at Home	
State	n	%	n	%	n	%	n	%
Arizona	4,078	46.3	2,823	32.0	1,127	12.8	786	8.9
Arkansas	2,757	52.3	1,332	25.3	593	11.2	593	11.2
Colorado	892	46.9	673	35.4	216	11.4	120	6.3
District of Columbia	19	51.4	10	27.0	5	13.5	3	8.1
Florida	57	72.2	8	10.1	9	11.4	5	6.3
Illinois	5,772	57.6	2,849	28.4	927	9.3	469	4.7
Louisiana	72	34.4	73	34.9	28	13.4	36	17.2
Maryland	3,738	51.6	2,300	31.7	798	11.0	412	5.7
Massachusetts	3,310	56.4	1,846	31.5	479	8.2	234	4.0
Mississippi	3,777	47.3	2,279	28.5	1,017	12.7	919	11.5
New Jersey	1	100.0	0	0.0	0	0.0	0	0.0
New Mexico	6	33.3	6	33.3	3	16.7	3	16.7
New York	606	44.8	442	32.7	180	13.3	124	9.2
Ohio	4,641	56.7	2,289	28.0	749	9.2	503	6.1
Rhode Island	1,131	57.9	606	31.0	134	6.9	83	4.2
Tennessee	3,394	53.4	1,608	25.3	732	11.5	627	9.9
All States	34,251	52.4	19,144	29.3	6,997	10.7	4,917	7.5

Note. Percentages are based on the number of valid responses. Missing = 264.

*Table 13. Student Survey ELA PBT (**EOY**): Q6. How often do you use a computer or tablet at home?*

	Every Day		A Few Times a Week		A Couple Times A Month or Less		Do Not Have at Home	
State	n	%	n	%	n	%	n	%
Arizona	3,825	46.5	2,652	32.2	1,051	12.8	705	8.6
Arkansas	2,151	50.9	1,076	25.5	513	12.1	485	11.5
Colorado	1,019	54.2	552	29.4	202	10.8	106	5.6
District of Columbia	104	39.2	96	36.2	45	17.0	20	7.5
Illinois	4,113	55.2	2,129	28.6	772	10.4	435	5.8
Louisiana	163	43.5	123	32.8	48	12.8	41	10.9
Maryland	3,796	52.6	2,260	31.3	803	11.1	356	4.9
Massachusetts	3,046	55.7	1,695	31.0	516	9.4	216	3.9
Mississippi	3,764	47.4	2,266	28.5	1,131	14.2	781	9.8
New York	498	47.2	334	31.6	146	13.8	78	7.4
Ohio	3,474	53.9	1,787	27.7	710	11.0	472	7.3
Rhode Island	488	50.6	334	34.6	92	9.5	51	5.3
Tennessee	808	52.0	380	24.5	196	12.6	169	10.9
All States	27,249	51.3	15,684	29.6	6,225	11.7	3,915	7.4

Note. Percentages are based on the number of valid responses. Missing = 206.

*Table 14. Student Survey ELA PBT (**PBA**): Q7. How often do you use a computer or tablet in school?*

	Every Day		A Few Times a Week		A Couple Times A Month or Less		Do Not Use in School	
State	n	%	n	%	n	%	n	%
Arizona	1,165	13.2	2,959	33.6	3,581	40.6	1,110	12.6
Arkansas	1,156	21.9	1,981	37.5	1,853	35.1	290	5.5
Colorado	353	18.6	825	43.4	616	32.4	106	5.6
District of Columbia	10	26.3	20	52.6	4	10.5	4	10.5
Florida	9	11.4	10	12.7	54	68.4	6	7.6
Illinois	1,745	17.4	3,927	39.2	3,913	39.0	436	4.4
Louisiana	52	24.9	95	45.5	42	20.1	20	9.6
Maryland	620	8.6	2,711	37.4	3,321	45.8	595	8.2
Massachusetts	640	10.9	2,205	37.5	2,604	44.3	424	7.2
Mississippi	1,819	22.8	2,630	32.9	2,774	34.7	771	9.6
New Jersey	0	0.0	1	100.0	0	0.0	0	0.0
New Mexico	0	0.0	6	33.3	10	55.6	2	11.1
New York	110	8.1	618	45.5	433	31.9	196	14.4
Ohio	1,577	19.3	3,469	42.4	2,681	32.7	464	5.7
Rhode Island	178	9.1	813	41.6	821	42.0	143	7.3
Tennessee	881	13.8	2,413	37.9	2,706	42.5	362	5.7
All States	10,315	15.8	24,683	37.8	25,413	38.9	4,929	7.5

Note. Percentages are based on the number of valid responses. Missing = 233.

*Table 15. Student Survey ELA PBT (**EOY**): Q7. How often do you use a computer or tablet in school?*

	Every Day		A Few Times a Week		A Couple Times A Month or Less		Do Not Use in School	
State	n	%	n	%	n	%	n	%
Arizona	1,243	15.1	2,916	35.4	3,143	38.2	926	11.3
Arkansas	1,067	25.3	1,755	41.5	1,220	28.9	182	4.3
Colorado	396	21.1	810	43.1	560	29.8	115	6.1
District of Columbia	19	7.3	63	24.1	126	48.3	53	20.3
Illinois	1,743	23.4	3,403	45.6	2,031	27.2	278	3.7
Louisiana	36	9.6	188	50.3	97	25.9	53	14.2
Maryland	592	8.2	2,856	39.6	3,315	45.9	455	6.3
Massachusetts	551	10.1	2,221	40.5	2,368	43.2	338	6.2
Mississippi	1,649	20.8	2,694	33.9	2,928	36.9	668	8.4
New York	110	10.5	431	41.0	378	36.0	132	12.6
Ohio	1,327	20.6	2,958	45.9	1,838	28.5	322	5.0
Rhode Island	106	11.0	506	52.5	301	31.2	51	5.3
Tennessee	223	14.4	641	41.4	610	39.4	75	4.8
All States	9,062	17.1	21,442	40.4	18,915	35.6	3,648	6.9

Note. Percentages are based on the number of valid responses. Missing = 212.

*Table 16. Student Survey ELA PBT (**PBA**): Q8. When writing a story or essay, how often do you use a computer or tablet?*

	All of the Time		Most of the Time		Some of the Time		Never	
State	n	%	n	%	n	%	n	%
Arizona	744	8.4	1,776	20.1	3,329	37.8	2,966	33.6
Arkansas	326	6.2	822	15.6	2,125	40.3	2,004	38.0
Colorado	149	7.8	438	23.0	798	41.9	518	27.2
District of Columbia	1	2.7	6	16.2	20	54.1	10	27.0
Florida	10	12.8	16	20.5	28	35.9	24	30.8
Illinois	1,036	10.3	2,418	24.1	4,000	39.9	2,560	25.6
Louisiana	7	3.3	19	9.1	46	22.0	137	65.6
Maryland	635	8.8	1,451	20.0	2,821	38.9	2,346	32.3
Massachusetts	673	11.5	1,354	23.0	2,100	35.7	1,749	29.8
Mississippi	767	9.6	1,515	19.0	3,022	37.8	2,684	33.6
New Jersey	0	0.0	0	0.0	0	0.0	1	100.0
New Mexico	1	5.6	4	22.2	9	50.0	4	22.2
New York	94	6.9	194	14.3	527	38.9	540	39.9
Ohio	775	9.5	1,713	20.9	3,324	40.6	2,374	29.0
Rhode Island	262	13.4	507	26.0	681	34.9	503	25.8
Tennessee	402	6.3	1,126	17.7	2,926	46.0	1,909	30.0
All States	5,882	9.0	13,359	20.4	25,756	39.4	20,329	31.1

Note. Percentages are based on the number of valid responses. Missing = 247.

*Table 17. Student Survey ELA PBT (**EOY**): Q8. When writing a story or essay, how often do you use a computer or tablet?*

	All of the Time		Most of the Time		Some of the Time		Never	
State	n	%	n	%	n	%	n	%
Arizona	999	12.1	1,962	23.8	3,162	38.4	2,108	25.6
Arkansas	338	8.0	864	20.4	1,728	40.9	1,299	30.7
Colorado	321	17.1	539	28.6	685	36.4	337	17.9
District of Columbia	35	13.2	59	22.3	102	38.5	69	26.0
Illinois	1,051	14.1	2,105	28.3	2,873	38.6	1,420	19.1
Louisiana	22	5.9	30	8.0	105	28.2	216	57.9
Maryland	769	10.7	1,595	22.1	2,944	40.8	1,907	26.4
Massachusetts	914	16.7	1,601	29.2	1,944	35.5	1,021	18.6
Mississippi	1,091	13.7	1,889	23.8	3,039	38.3	1,926	24.2
New York	101	9.6	184	17.4	395	37.4	376	35.6
Ohio	802	12.5	1,806	28.0	2,548	39.6	1,285	20.0
Rhode Island	141	14.6	255	26.5	387	40.1	181	18.8
Tennessee	210	13.5	359	23.1	627	40.4	356	22.9
All States	6,794	12.8	13,248	25.0	20,539	38.7	12,501	23.6

Note. Percentages are based on the number of valid responses. Missing = 197.

*Table 18. Student Survey ELA PBT (**PBA**): Q9. Would you rather take this test on paper OR on a computer or tablet?*

	On Paper		On a Computer or Tablet	
State	n	%	n	%
Arizona	3,142	35.7	5,652	64.3
Arkansas	1,734	32.9	3,529	67.1
Colorado	695	36.6	1,202	63.4
District of Columbia	4	10.5	34	89.5
Florida	50	64.9	27	35.1
Illinois	3,888	38.9	6,111	61.1
Louisiana	93	44.7	115	55.3
Maryland	2,062	28.5	5,176	71.5
Massachusetts	2,139	36.5	3,727	63.5
Mississippi	2,343	29.4	5,637	70.6
New Jersey	1	100.0	0	0.0
New Mexico	3	16.7	15	83.3
New York	459	34.1	887	65.9
Ohio	3,351	41.0	4,814	59.0
Rhode Island	653	33.5	1,298	66.5
Tennessee	2,289	36.1	4,052	63.9
All States	22,906	35.1	42,276	64.9

Note. Percentages are based on the number of valid responses. Missing = 391.

*Table 19. Student Survey ELA PBT (**EOY**): Q9. Would you rather take this test on paper OR on a computer or tablet?*

	On Paper		On a Computer or Tablet	
State	n	%	n	%
Arizona	2,794	34.0	5,413	66.0
Arkansas	1,423	33.7	2,795	66.3
Colorado	710	37.9	1,161	62.1
District of Columbia	39	14.7	226	85.3
Illinois	3,116	41.9	4,324	58.1
Louisiana	129	34.3	247	65.7
Maryland	1,960	27.2	5,251	72.8
Massachusetts	1,873	34.2	3,599	65.8
Mississippi	2,507	31.6	5,422	68.4
New York	369	35.0	684	65.0
Ohio	2,433	37.8	4,002	62.2
Rhode Island	398	41.3	566	58.7
Tennessee	573	36.9	978	63.1
All States	18,324	34.6	34,668	65.4

Note. Percentages are based on the number of valid responses. Missing = 287.

*Table 20. Student Survey ELA PBT (**PBA**): Q10. Was it easy to flip back and forth between pages to find the story or passage that belonged to a question?*

	Yes		No		Did Not Flip Between Pages	
State	n	%	n	%	n	%
Arizona	6,153	69.9	2,215	25.1	440	5.0
Arkansas	3,773	71.5	1,257	23.8	250	4.7
Colorado	1,291	67.9	479	25.2	132	6.9
District of Columbia	19	50.0	16	42.1	3	7.9
Florida	57	72.2	18	22.8	4	5.1
Illinois	7,248	72.4	2,307	23.0	454	4.5
Louisiana	160	76.6	37	17.7	12	5.7
Maryland	5,091	70.2	1,861	25.7	300	4.1
Massachusetts	4,045	68.9	1,577	26.9	251	4.3
Mississippi	6,300	78.8	1,350	16.9	349	4.4
New Jersey	1	100.0	0	0.0	0	0.0
New Mexico	13	72.2	5	27.8	0	0.0
New York	975	72.0	316	23.3	63	4.7
Ohio	6,142	75.1	1,654	20.2	385	4.7
Rhode Island	1,395	71.4	494	25.3	64	3.3
Tennessee	4,848	76.2	1,210	19.0	303	4.8
All States	47,511	72.7	14,796	22.7	3,010	4.6

Note. Percentages are based on the number of valid responses. Missing = 256.

*Table 21. Student Survey ELA PBT (**EOY**): Q10. Was it easy to flip back and forth between pages to find the story or passage that belonged to a question?*

	Yes		No		Did Not Flip Between Pages	
State	n	%	n	%	n	%
Arizona	5,574	67.7	2,151	26.1	504	6.1
Arkansas	2,942	69.6	943	22.3	341	8.1
Colorado	1,237	65.8	507	27.0	136	7.2
District of Columbia	170	63.9	80	30.1	16	6.0
Illinois	5,435	73.0	1,551	20.8	459	6.2
Louisiana	278	73.9	74	19.7	24	6.4
Maryland	4,857	67.3	1,992	27.6	365	5.1
Massachusetts	3,838	70.1	1,364	24.9	274	5.0
Mississippi	6,178	77.8	1,406	17.7	355	4.5
New York	736	69.9	239	22.7	78	7.4
Ohio	4,663	72.4	1,362	21.1	418	6.5
Rhode Island	720	74.6	211	21.9	34	3.5
Tennessee	1,097	70.8	342	22.1	110	7.1
All States	37,725	71.1	12,222	23.0	3,114	5.9

Note. Percentages are based on the number of valid responses. Missing = 218.