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Graduate School of Education & Information Studies
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CONNECTING POLICY TO PRACTICE: ACCOMMODATIONS IN STATES' LARGE-SCALE MATH ASSESSMENTS FOR ENGLISH LANGUAGE LEARNERS[1]

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Abstract

Accommodations have been widely utilized as a way of increasing the validity of content assessments for ELL students. However, concerns have also arisen regarding the validity of accommodation use, as well as accessibility and fairness. While many states have developed ELL-specific accommodation policies and guidelines, little research has been available on how the accommodation policies are carried out in practice. The present study investigated two states' accommodation policies, specifically for the states' respective large-scale Grade 8 math assessments, and conducted a case study to examine teachers' understanding of the policies and uses of accommodations in their respective schools. Results indicated a wide variation in applying the policies in practice, which raises a validity concern for providing accommodations and interpreting accommodated test results. Based on the findings, implications and recommendations for an appropriate use of accommodations are offered.

Introduction

Background of the Study

The climate of educational accountability underwent substantial changes following the No Child Left Behind Act of 2001 (NCLB, 2002). Policies pertaining to English language learner (ELL) students in particular have gained attention as a result of federal mandates for including the ELL students into states' large-scale assessments of content and English language proficiency for accountability purposes. In order to validly measure ELL students' content knowledge and skills, a growing number of states have established or modified testing accommodation policies specific to ELL students, distinguishing those from the students with disabilities (Rivera & Collum, 2006; Shafer Willner, Rivera, & Acosta, 2008; Wolf, Kao, Herman, et al., 2008). As noted in the *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association & National Council on Measurement in Education, 1999), the language of a test may introduce construct-irrelevant components to the testing process,

[1]We would like to thank Joan Herman for her invaluable feedback throughout the study and on earlier drafts of this report. We thank Patina Bachman, Julie Nollner, Alice Hsu, Yuichiro Otani, Jean Jho, and Stella Tsang Li for their helpful research assistance. Finally, our sincere thanks go to all the teachers who participated in this study, and all the state and district representatives who provided enormous support and help with our study.

especially in assessing ELL students who may not be proficient enough to understand the language to demonstrate what they know and can do in a content test. ELL-specific accommodations are thus intended to reduce the students' language barriers and make assessments more fair and accessible to ELL students.

However, a widespread concern has arisen as to the validity of the use of accommodations as well as the interpretation of accommodated test results. Broadly speaking, validity concerns related to accommodation use can be framed at least under two strands. One strand concerns the validity and effectiveness of specific accommodations on the test results. Some questions in this aspect include: Does the accommodation alter the construct that the assessment intended to measure? Do some students receive inadvertent advantages over others by receiving the accommodations? Do ELL students perform better on the test with the provision of accommodations compared to the test without accommodations? Another strand concerns the practice of accommodations. For instance, who should receive what accommodations based on what criteria? Do the accommodation decision makers receive systematic guidance for adequate and appropriate decisions? Is the use of accommodations comparable across schools? These practice issues influence the comparability, accessibility, and fairness of accommodations, and then ultimately, the validity of the accommodation use and test results.

Past research on accommodations has primarily focused on their effectiveness and validity; however, results have been mixed. For instance, Abedi, Hofstetter, Baker, and Lord's (2001) study found that linguistic modification of test items was effective in reducing the gap between ELL and non-ELL students performance. However, Sireci, Li, and Scarpati (2003) pointed out that the accommodation negatively interfered with non-ELL students' performance, resulting in the narrow score gap. Francis, Rivera, Lesaux, Kieffer, and Rivera's (2006) meta-analysis study indicated that the effects of linguistic modification were varied depending on grades, content areas, and assessment types. Likewise, Abedi, Courtney, Mirocha, Leon, and Goldberg (2005) also found that providing an English dictionary yielded different results for the grade levels in their study, with positive effects on Grade 4, but not on Grade 8. Although the results were mixed, researchers from this line of accommodation research made some general suggestions for practitioners in selecting appropriate accommodations (Abedi, Hofstetter, & Lord, 2004; Koenig & Bachman, 2004; Sireci et al., 2003). Key issues of consideration include (a) effectiveness (i.e., increasing ELL students' performance), (b) validity (i.e., preserving the construct of a test; improving the intended group's performance only), (c) feasibility (i.e., implementing easily and practically), (d) familiarity (i.e., using in daily instruction), and (e) differential impact of accommodations on

ELL students with varying levels of English language proficiency (i.e., providing an individualized accommodation).

More recently, accommodation research has examined the state of current accommodation policies and practices, recognizing its importance as one of the underlying sources to determine the validity of accommodations. Studies reviewing accommodation policies including guidelines for accommodation selection and implementation have identified common validity issues and challenges in the use of accommodations for ELL students. For example, Rivera, Collum, Shafer Willner, and Sia (2006) examined accommodation policies for all 50 states and the District of Columbia in 2000–2001 and found substantial variations in accommodation policies and practices. Their analysis revealed that most states did not focus on the unique linguistic needs of ELL students and made little distinction between ELL students and students with disabilities. This finding implies a potential validity threat if accommodations were not appropriately used for ELL students in practice. Furthermore, one plausible reason for the previously mixed results on the effects of accommodations might be related to the policy and practice of accommodations. If a student has no experience of using a dictionary for a math assessment, for example, experimentally examining the dictionary effect with this student may provide different results compared to a student who has had experience using a dictionary. Thus, examining the surrounding policies and practices of ELL students is essential as part of the validation process of ELL assessment.

A recent study of the accommodation assignment criteria conducted by Kopriva, Emick, Hipolito-Delgao, and Cameron (2007) provides more supportive evidence of the significance of examining accommodation practices to inform validity of accommodations. The researchers discussed how little guidance exists to assist accommodation decision makers in determining the assignment of specific accommodations for ELL students with different characteristics. Through a series of experimental studies, the researchers found that a group of ELL students who were assigned accommodations based on specific criteria to meet their individual needs performed better compared to ELL students who were assigned random accommodations. In fact, there was no statistically significant difference between the group with no accommodations and the group with accommodations assigned at random (i.e., not guided by any consistent decision rules). This study carries significant implications for researchers and practitioners to identify and utilize appropriate accommodation selection criteria.

Despite the importance of knowing accommodation policies and practices, there is limited research examining the actual practice of ELL accommodations for states'

accountability assessments. The latest policy review studies (Shafer Willner et al., 2008; Wolf, Kao, Griffin, et al., 2008) noted that states have made progress in establishing accommodation policies for ELL students. Separate listings of accommodations for students with disabilities and ELL students were found in most states and increased types of accommodations specific to ELL students' needs were noted based on a 2006–2007 policy review (Wolf et al.). However, no research has been conducted how these current ELL accommodation policies have been applied in practice. Often, there is a gap between the policies created at the state level and the practices performed at the local district and school levels. Investigating the actual use of accommodations will offer useful information to validate the appropriate use of accommodations for ELL students. This information will also be valuable for policymakers to develop adequate accommodation guidelines or to improve existing guidelines for ELL students.

Purposes of the Study

The present study aimed to examine two states' accommodation policies, particularly for the states' respective large-scale math assessments at Grade 8, and how the polices were carried out in practice. This study also focused on the use of two specific types of accommodations, read aloud (also known as oral administration) of test items and dictionary or glossary for large-scale math assessments. These two accommodations were deliberately chosen for a number of reasons: (a) the two states of this study were particularly interested in the use of read aloud, (b) almost no research has been conducted on read aloud for ELL students specifically, (c) the glossary/dictionary accommodations accompanied by extra time was one of the few accommodations found effective from previous studies (Abedi, Courtney, & Leon, 2003), and (d) the two accommodations directly support ELL students' linguistic barriers as suggested in previous literature (Rivera et al., 2006). The two states of this study allowed "word-to-word dictionary" rather than "glossary" accommodations. In this study, "word-to-word dictionary" and "glossary" are categorized into one accommodation in that both are associated with providing vocabulary support without providing full definitions of terms. This study attempted to investigate how teachers used these two accommodations in practice. The last critical reason to select these two accommodations is to provide contextual information for our companion study, which examines the validity and effectiveness of these two accommodations in a mathematics assessment through an experimental design. The present report serves a companion report of the experimental study (Wolf, Kim, Kao, & Rivera, 2009).

The present study is a case study where we explored some key issues related to accommodation policies and their implementation in practice through a small number of

states and a limited sample of schools. The study is not intended to generalize any of the findings to the entire state or nation, but to identify issues to consider for the appropriate and valid use of accommodations for ELL students. By comparing the state-level policies and their implementation by teachers at the school level, the study aimed to provide useful information for policymakers to improve their accommodation policies. This information will also shed light on important validity considerations in ELL assessment.

Specifically, we address the following research questions:

1. How varied are the state and school policies within a given state on the use of accommodations for ELL students for the state's large-scale mathematics assessment?
2. How do teachers use the accommodations for ELL students in a state's large-scale mathematics assessment? Particularly, how are the read aloud and glossary accommodations used for ELL students in a state's mathematics assessment?
3. What are teachers' perceptions on the helpfulness of accommodations for ELL students?

In order to investigate our research questions, we explored the following areas related to the two states' policies and practices of accommodations for ELL students:

- Accommodation decision makers (who makes decisions on what accommodations each individual ELL student receives?)
- Accommodation selection criteria (what criteria are used to make those decisions?)
- Permitted and used accommodations for the state's large-scale mathematics assessment (what accommodations are permitted for use, and which ones were actually used?)
- Accommodations during instruction (what types of accommodations are used in the classroom either for math tests or tasks?)
- Read aloud and glossary uses for the mathematics assessments (in what ways were read aloud and glossary implemented in the states' mathematics assessments?)
- Policy communication channel (are policies clearly communicated to teachers and how are they communicated?)
- Recording practice of the accommodation data (how are the accommodations provided to ELL students recorded or kept on file?)
- Teachers' perception on the helpfulness of specific accommodations (do teachers think accommodations are helpful to ELL students? Which accommodations do teachers believe are most helpful?)

ELL Accommodation Policies in Two States of the Study

The two states that participated in this study are henceforth referred to as State X and State Y to preserve anonymity. These two states were selected for this study largely due to their interest in collaborating with the researchers to improve their current ELL accommodation policies and practices. In both states, ELL students' public school enrollment consisted of between 10 to 20 % of their total student populations. Although these states do not have the largest proportion of ELL students in the country, these ELL population distributions are consistent with the nationwide average, and they are also amongst the states with the fastest and largest ELL growth. Below is a brief description of the states' policies related to ELL students, based on information gathered from the states' public web sites.

ELL Identification and Redesignation. In both states, students with a home language other than English (identified by a Home Language Survey), must take an initial English language proficiency placement test. Annual progress of English language proficiency is measured by a state's English language proficiency (ELP) test. Once students are exited from ELL status, they are given a code to indicate their exit status (i.e., Fluent English Proficient [FEP]). In State X, ELL students are exited after achieving specific standards in *both* the state large-scale academic content assessment and the state ELP assessment. Specifically, students must achieve Level 2 out of 4 on the state assessment *and* Level 5 out of 5 overall on the state ELP assessment, with at least Level 4 on each of the ELP domains. In State Y, ELL students are exited after achieving specific standards in *either* the state large-scale academic content assessment *or* the state ELP assessment, in addition to other information, such as teacher observations and formative assessments. Specifically, students can achieve Level 2 out of 4 on the state assessment in reading or writing, *or* Level 4.5 or 5 out of 5 overall on the state ELP assessment, in addition to other evidence, as determined by a local committee.

Content Assessments and Inclusion Criteria. Both states follow the NCLB requirements of including all students in content assessments used for Adequate Yearly Progress (AYP) reporting: Reading, Writing, Mathematics, and Science. ELL students are allowed to participate with accommodations if necessary. Students who are "newly arrived" or have no English proficiency are still required to participate, but their scores are not included for AYP decisions.

Accommodation Decision Makers and Decision Rules. The assessment procedures manuals for both states indicate the decisions made for ELL students on providing accommodations should be made by a team of people. State X names the students, parents,

teachers, and the school administrators who are most familiar with the student's English language acquisition. State Y also names students and parents along with an educational team, which includes the content area teacher. State Y also specifically underscores the need for decisions to be made on an individual (i.e., per student) basis. State Y allows all students (including non-ELL) to be eligible to receive standard accommodations, as needed. Information on the eligibility of accommodations was not found in the State X manual. Both states stress that accommodations given during the state assessments should be ones with which the students are familiar.

Records/Documentation of Accommodations. Both states require documentation of accommodation plans for every ELL student, prior to the test administration date. State X does not indicate how far in advance documentation must be made, whereas State Y stipulates that documentation must be made prior to testing, by a specific date. State Y also indicates that students must be familiar with using the documented accommodations in the classroom. State X provides an accommodation form for all schools to use, whereas State Y does not. State Y instead provides a list of acceptable educational plans where accommodations can be documented.

Allowable Accommodations. Table 1 lists each state's allowable accommodations for ELL students in the state standardized large-scale assessments in mathematics during the 2007–2008 school year. Accommodations are displayed in two categories, direct linguistic support and indirect linguistic support, following the taxonomy developed by Rivera et al. (2006). Note that states did not necessarily organize accommodations in this format. With respect to read aloud of the test items, the two states had a distinctive use of read aloud. In State X's accommodation policy document, a few principles were written such as "Do not read numbers, symbols" in the state math assessment. Whereas instead of a set of written rules, State Y provided a script of the state math assessment published by the test developer for test administrators to read verbatim, which omitted certain numbers and symbols. In regards to dictionary, both states specified that dictionaries must be "word-to-word" and should not contain full definitions. Of important note is that both states allowed local districts to make their own decisions in the use of accommodations considering their specific needs and contexts.

Table 1

Allowable Accommodations for ELL Students in State Standardized Assessments in Mathematics for the 2007–2008 School Year by Accommodation Type and by State

Accommodation Type	State X	State Y
Indirect linguistic support accommodations	• extra time	• extra time • breaks during test sessions • shorter sessions with breaks in between
	• test individually administered • test administered in small groups • test administered in alternative setting • test administered in study carrel • specific individual administers the test (e.g., ESL/ELL teacher)	• test individually administered • test administered in small groups • test taker provided preferential seating
Direct linguistic support accommodations	• bilingual, word-to-word dictionary or electronic translator • read and re-read aloud directions in English • read and re-read aloud directions in native language • read aloud entire test (text only, no numerals or symbols) in English	• word-to-word dictionaries • read aloud directions in English • read aloud directions in native language • read aloud entire test in English • read aloud entire test in native language • student highlights or underlines key words or phrases in the directions • student highlights or underlines key words or phrases in the assessment

Note. The following practices are considered "best practices" for administering a test for all students in State Y, and are not considered to be accommodations and do not require documentation: teacher faces test taker; test administered with minimal distractions; person familiar to test taker (e.g., ESL/ELL teacher) administers the test; test administered in familiar room.

Prohibited Accommodations. During the 2007–2008 school year, State X prohibited reading aloud math tests to students using a language other than English. State Y did not list any specific prohibited accommodations. Both states, however, had policies on how to request the use of accommodations not listed as allowable.

Method

In this section, we describe the participants of the study and instruments utilized for the study. Data collection procedures and analyses are also described.

Sample

Sampling Procedure. For the purpose of the study, the targeted sample was math and ELL teachers who taught Grade 8 ELL students during the school year, 2007–2008. Data collection occurred from April to December in 2008. Participants were recruited after obtaining applicable approvals from the states, districts, and schools. Both states' department of education (DOE) provided their assistance in recruiting math and ELL teachers at Grade 8 by promoting the current studies through meetings with district personnel. In State X, teachers were recruited from targeted districts and then targeted schools that the state DOE recommended because of their relatively large ELL proportions. Schools in State X designated a site coordinator (typically an ELL coordinator or department head) who then recruited participants for both the survey and interview. In State Y, the study was open to teachers in any district or school after targeted districts failed to produce a large enough sample size. For State Y, survey participants were recruited first, and then interview participants were recruited from the survey participants.

All participation was strictly voluntary and all necessary consent forms were collected. Monetary compensation was provided for teachers for their participation and time. The participation rate of return was lower for State Y (on a per school basis) than for State X, largely due to the lack of local site coordinators and the nature of the recruitment.

Surveys were collected via mail, fax, email, or online. Teacher interviews were conducted one-on-one, either face-to-face or via telephone. All interviews were audio recorded, and then later transcribed.

Participants. A total of 165 volunteer middle-school teachers from two states participated in this study. In State X, a total of 64 teachers from 19 schools in two districts participated in the study. Thirty-four teachers (5 ELL and 29 math) completed the survey and 42 teachers (22 ELL and 20 math) participated in the interview. Some of the teachers completed both interview and survey, whereas others completed only one or the other. In State Y, a total of 101 teachers from 54 schools in 18 school districts participated in the study. All 101 teachers (27 ELL and 74 math) completed the survey. Of those, 35 teachers (16 ELL and 19 math) also participated in the interview. Math teachers included math

coaches. In both states, ELL teachers included ELL Specialists or Facilitators/Coordinators, ELL Math, and teachers of ELL classes of other subjects (e.g., science). Table 2 summarizes the number of teachers who participated in the two components of this study by state and by teacher assignment, or type (i.e., math vs. ELL).

Table 2

Number of Participants by State, Teacher, and Participation Type

Participants	Survey	Interview
State X	(18 schools)*	(18 schools)*
ELL	5	22
Math	29	20
State X Total	34	42
State Y	(54 schools)	(25 schools)
ELL	27	16
Math	74	19
State Y Total	101	35
Total	135	77

Note. *Not the same 18 schools. A total of 19 schools from State X participated. One school did not participate in interviews and one did not participate in surveys.

In State X, teachers were from two large, urban districts (Districts 1 and 2). In District 1, participants were from four middle schools, which represent 21.1% of the middle schools in this district. Overall, 11.3% of Grade 8 students in this district were ELL. The average proportion of Grade 8 ELL students among the four participating schools ranged from 13.1% to 24.5%, with an average of 18.6% (median of 18.4%). About two to four teachers from each school participated (average of 3 teachers per school, median of 3). The teachers reported having approximately between 8 and 50 ELL students each. In District 2, participants were from 15 schools, which represent 25.9% of the middle schools in this district. Overall, 12.0% of Grade 8 students in this district were ELL. The average proportion of Grade 8 ELL students among the 15 participating schools ranged from 7.6% to 41.0%, with an average of 24.2% (median of 23.5%). About one to five teachers from each school participated (average of 2.8 teachers per school, median of 2). The teachers reported having approximately between 2% to 100% ELL students.

In State Y, teachers were from 18 school districts. The majority of State Y participants (73.3%) were from seven targeted school districts (a mix of mid-size urban and suburban; Districts A, B, D, K, M, P, and V), which were initially targeted for recruitment based on a

combination of recommendations from state representatives as well as district approval/support. Teachers were from about one to seven schools from each of the seven districts, with 37 schools total. The average proportion of Grade 8 ELL students among these 37 schools ranged from less than 1% to over 42%, with an average of 15.0% (median of 9.5%). About one to ten teachers from each school participated (average of 2 teachers per school, median of 2). Among the teachers who responded, teachers reported having between 3 to 60 ELL students in their classes, or about 1% to 100%. The remaining 26.7% of State Y participants came from one of 11 school districts, with participating schools averaging about 12.0% ELL in Grade 8 (median of 4.0%). These teachers, among those who responded, reported having between 0% to 60% ELL students in their classes.

Instruments

In order to examine the accommodation policy and practice in schools, this study entailed collecting qualitative data through surveys and interviews. A description of each instrument is provided below.

Teacher Survey. The teacher survey was drawn from previous CRESST surveys regarding the use of accommodations and instructional strategies for ELL students (see Abedi, Courtney, Leon, Kao, & Azzam, 2006; Martinez, Bailey, Kerr, Huang, & Beauregard, 2009). The survey subscales (i.e., constructs and item scales) were deliberately chosen from the previous surveys to ensure the validity and reliability of the instrument. Broadly speaking, five constructs were intended to be measured including instructional strategies, classroom assessment practices, accommodation practices during instruction, experience with accommodations in state testing, and teacher perception on the helpfulness of accommodations. Throughout the survey, teachers were asked to respond specifically for the 2007–2008 year, including the states' respective 2008 math assessments for Grade 8. In addition, the survey also asked questions related to teacher background information. Paper, electronic, and online versions of the survey were created to facilitate participation.

Teacher Interview Protocol. The teacher interview protocol was developed to gather in-depth information about schools' accommodation practices and teachers' perceptions on the use of accommodations. Specifically, the questions primarily focused on four topics: knowledge of accommodation policies, accommodation data record keeping, previous experience with accommodation usage for state testing administration (in particular, with read aloud and glossary/dictionary usage), as well as accommodation usage during instruction. The interview was designed to be conducted in approximately 30 to 45 minutes.

Data Analysis

For reliability of the survey instrument, internal consistency using Cronbach's alpha was examined[2]. Acceptable level of reliability was obtained in general; .86 for the items on instructional strategies, .59 for the items on classroom assessment practices, .76 for the items on accommodation practices during instruction, and .81 for the items on teacher perception on the helpfulness of accommodations. Descriptive statistics including the frequencies and means of the responses were computed to observe any trends across and within districts and schools. The results were also compared between states and/or between ELL and math teachers when applicable.

For interview data, a coding scheme was developed to identify the accommodation policies and practices in the areas of accommodation decision makers, selection criteria, permitted and used accommodations, read-aloud and glossary accommodation uses, and helpfulness of accommodations. The researchers were trained to apply the coding scheme in examining each transcript. Atlas.ti[3] software was used to code and analyze the interview data. For reliability of coding, coder agreement was examined through the exact percentage of agreement. Transcripts were coded by two sets of two researchers until 80% consensus was reached; remaining transcripts were coded by single researchers. Over 28% of the transcripts were coded by two researchers with 80.1% of exact agreement on average. Where there were disagreements between two raters, consensus was reached through discussion.

Results

The following research questions guided this study and the reporting of results in this section:

1. How varied are the state and school policies within a given state on the use of accommodations for ELL students for the state's large-scale mathematics assessment?
2. How do teachers use the accommodations for ELL students in a state's large-scale mathematics assessment? Particularly, how are the read-aloud and glossary accommodations used for ELL students in a state's mathematics assessment?
3. What are teachers' perceptions on the helpfulness of accommodations for ELL students?

Before discussing the results, it is important to note that findings of this study should be considered as a case study, given that teachers from a small sample of schools from a small

[2] Coefficient alpha for the items on experience with accommodations in state testing was not obtained because these items contained three categorical responses (yes, no, not sure). The other items were on Likert scales.

[3] ATLAS.ti Scientific Software Development GmbH, Nassauische Str. 58, D-10717 Berlin Germany.

sample of districts within each state participated in the study, and that participation was strictly voluntary and based on self-report. Results of this study cannot be generalized to the entire state or the nation. Furthermore, given the unique circumstances of each state, we avoided comparing results across the two states, except when substantial or meaningful. Results are presented by topic area to facilitate reporting.

As indicated earlier, specific areas in accommodation policies and practices are examined in this study. The reporting of all results refer to the focus year, subject, and grade level of this study, (i.e., 2007–2008 state standardized math assessment at Grade 8). Survey results for the first two research questions are presented in each focus area both across and within states as well as by teacher type (i.e., math vs. ELL teacher). Interview results, where applicable, are also reported in each area to provide more in-depth information. All descriptive statistics summary tables from the survey responses are presented in Appendix A.

Accommodation Decision Makers

The policies for both State X and State Y were similar for accommodation decision makers. They both stated that accommodation decisions should be made by a team of people, citing general roles such as teachers most familiar with students' English proficiency (in State X) or content area teachers (in State Y). In order to investigate who was involved in making accommodation decision for each individual ELL student in schools, teachers were asked who determined the selection of accommodations for ELL students at their school for the state math assessment at Grade 8. Teachers were given the following options and asked to choose all that applied and/or specify other personnel/source, if applicable: ELL teacher, math teacher, principal, parents, students, don't know, and other. Various responses were obtained while some patterns were also observed. As shown in Table 3, many teachers in both states responded that the decision was made by a team, typically including an ELL teacher. In State X, however, an ELL teacher was often reported as a sole decision-maker in a sizeable proportion of cases. In State Y, a math teacher was more often reported as being involved in the accommodation decision. It is noteworthy that a considerable percentage of the respondents reported "Don't know" to the question of decision makers. Similar patterns were found with the interview data, indicating that decisions were typically made by a team. A closer inspection of teachers who reported "Don't know" revealed that the majority of them were math teachers, across both states. Although three of those math teachers in State X reported that their math classes contained less than 5% ELL, the remaining six math teachers reported having between 15% to 90% ELL. Similarly, five of the State Y math teachers in "Don't know" reported having less than 5% ELL, whereas eight math teachers reported having between 10% to 95%.

Table 3

Decision Makers for Selecting Accommodations by State

Decision Maker	State X (%)	State Y (%)
Principal only	1 (7.4)	1 (1.0)
ELL teacher only	7 (25.9)	9 (9.1)
Math teacher only	0 (0.0)	7 (7.1)
ELL & Math team	4 (14.8)	53 (53.5)
ELL & other team	2 (7.4)	2 (2.0)
Math & other team	1 (3.7)	6 (6.1)
Other team	1 (3.7)	1 (1.0)
Other single source	0 (0.0)	3 (3.0)
Don't know	10 (37.0)	17 (17.2)
Total	27 (100.0)	99 (100.0)

Note. ELL & Math team includes both math and ELL teachers. ELL & other team and Math & other team include some personnel and ELL teacher, some personnel and math teacher, respectively. Other included special education teacher, testing coordinator, assistant principal, district personnel, parent, and student.

Accommodation Selection Criteria

Both states either directly stated or indirectly implied that accommodations should meet individual students' needs. To examine what specific criteria or rules on which schools relied in selecting accommodations, teachers were asked about the sources or criteria used to make this decision for the state math assessment at Grade 8. Teachers were given the following options and asked to choose all that applied and/or to specify other criteria, if applicable: ELP level, student IEP (Individualized Education Plan), state standardized test scores, no specific criteria (i.e., blanket accommodation in which all ELL students receive the same accommodations), don't know, and other. Table 4 presents the frequency and percentage of the criteria chosen by the teachers. Results indicate a variety of options were utilized, ranging from a single source to varied combinations of multiple sources.

Table 4

Accommodation Selection Criteria by State and by Teacher Type

Criteria	State X (%)	State Y (%)	Math (%)	ELL (%)
ELP level only	4 (14.3)	11 (11.0)	12 (12.5)	3 (9.4)
Student IEP only	5 (17.9)	7 (7.0)	12 (12.5)	0 (0.0)
ELP level & student IEP	4 (14.3)	20 (20.0)	17 (17.7)	7 (21.9)
ELP level & student IEP & state test score	2 (7.1)	3 (3.0)	3 (3.1)	2 (6.2)
ELP level & other	0 (0.0)	5 (5.0)	0 (0.0)	5 (15.6)
ELP level & student IEP & other	0 (0.0)	8 (8.0)	5 (5.2)	3 (9.4)
ELP level & student IEP & state test score & other	0 (0.0)	2 (2.0)	1 (1.0)	1 (3.1)
Student IEP & other	1 (3.6)	5 (5.0)	5 (5.2)	1 (3.1)
Blanket accommodation	4 (14.3)	5 (5.0)	4 (4.2)	5 (15.6)
Other only	0 (0.0)	9 (9.0)	7 (7.3)	2 (6.2)
Don't know	8 (28.6)	25 (25.0)	30 (31.3)	3 (9.4)
Total	28 (100.0)	100 (100.0)	96 (100.0)	32 (100.0)

Note. Other criteria included instructional uses, teacher recommendations, teacher observations, performance on other assessments, other types of educational plans, or based on what students received the prior year.

Several teachers chose blanket accommodation, meaning all students received the same accommodation. During the interview, teachers mentioned logistic difficulties and lack of resources to provide different accommodations for each student. For instance, an ELL teacher in State X stated:

> State X (District 1) ELL teacher: …they all get the same accommodations because it's just easier logistically. Because say, if I gave to all my students the same accommodations, they can all test with me. Whereas if I gave half my students bilingual dictionary to use, and the other half no dictionary to use, or no re-reading the directions, they couldn't—we'd have to find another testing room for them…. So my main criteria is, well, if they have me for English, they get to test with me, and they get all the same accommodations.

Lack of resources for accommodation administration was a recurring comment among teachers, as in the following excerpt:

> State Y (District M) ELL teacher: I think it's frustrating because we're such a highly impacted district. And the way that things are set up, a lot of time by the state with regulations, rules, and expectations are set up for school that maybe have 25% of the population as ELLs. And in our situation, you know, it's the majority of our school and we don't have a lot of extra places to take kids for smaller groupings for different accommodations. And in addition, the staff is limited for breaking kids up into groups and giving them their accommodations…

Additionally, Table 4 shows that 31.3% of the sample math teachers selected "Don't know" as compared to 9.4% of the sample ELL teachers. Further analyses of math teachers by state revealed a similar trend (30.4% of State X sample math teachers, 31.5% of State Y sample math teachers) across both states. This is contrastive to some extent from the responses about the accommodation decision makers in that math teachers in State Y were more frequently reported as being involved in making accommodation decisions. However, a closer inspection of the teachers who reported "Don't know" revealed that eight of the State Y math teachers reported having less than 5% ELL in their classes, whereas 12 reported having between 10% to 98% (others were missing data).

Permitted and Used Accommodations

As summarized earlier, both states specified a list of allowable accommodations for their state math assessments. In order to examine the extent to which this state policy was enacted at the school level, teachers were given a list of accommodations and asked to identify the types of accommodations permitted as well as the types of accommodations actually used for the state math assessment at Grade 8. The results are summarized for State X and State Y in Table 5 and Table 6 respectively. The results are also illustrated in Figure 1 to see the most frequently reported accommodations used. For both states, results indicate differing knowledge about permitted accommodations among the teachers. For instance, although State X's policy restricted the use of reading aloud the test items in students' native language for the state math assessment, a sizeable number of State X sample teachers reported that it was permitted and even used in practice. Similarly, nearly a quarter of State Y sample teachers reported that the reading aloud the test items in students' native language was not permitted, whereas it was permitted by State Y, according to the state's policy. The results also indicate that this different knowledge may stem from district-level policies compared to the state policy. It is notable that over 40% of the sample teachers in both states chose "Not sure" about whether dictionary was allowed or not for the math assessment.

Regarding accommodations that were actually used in practice, extended time and directions being read aloud in English were frequently reported in both states as seen in Figure 1. Test administration by an ELL teacher was the most frequently used accommodation as reported by a majority of State X sample teachers, whereas test administration in a small group was the most frequently used accommodation as reported by State Y sample teachers. Again, the types of accommodations used were varied depending on teachers and schools within each state. Teacher interview data revealed that this variation occurred across districts and even within the same district. For example, about half of the sample teachers in one district of State X reported that they read aloud the test in English whereas other teachers in the same district reported not using this accommodation. This within-district variation was also found in State Y. In one district of State Y, just over 40% of the sample teachers reported that they read aloud the test in English.

Table 5

State X Permitted and Used Accommodations for the State Math Assessment

	Permitted				Used			
Accommodation	Yes (%)	No (%)	Not Sure (%)	Total (%)	Yes (%)	No (%)	Not Sure (%)	Total (%)
Extended time	27 (79.4)	2 (5.9)	5 (14.7)	34 (100.0)	22 (66.7)	6 (18.2)	5 (15.2)	33 (100.0)
Individually administered	12 (35.3)	2 (5.9)	14 (41.1)	34 (100.0)	5 (16.1)	14 (45.1)	12 (38.7)	31 (100.0)
Small group	16 (47.1)	7 (20.6)	11 (32.4)	34 (100.0)	13 (41.9)	8 (25.8)	10 (32.6)	31 (100.0)
Separate location	18 (52.9)	8 (23.5)	8 (23.5)	34 (100.0)	14 (46.7)	10 (33.3)	6 (20.0)	30 (100.0)
Administered by ELL teacher	22 (78.6)	0 (0.0)	6 (21.4)	28 (100.0)	18 (69.2)	1 (3.8)	7 (26.9)	26 (100.0)
Directions read aloud	24 (70.6)	6 (17.6)	4 (11.8)	34 (100.0)	18 (58.1)	7 (22.6)	6 (19.4)	31 (100.0)
Items read aloud	17 (50.0)	7 (20.6)	10 (29.4)	34 (100.0)	14 (45.2)	8 (26.7)	9 (30.0)	31 (100.0)
Items read aloud in native language	4 (11.8)	17 (50.0)	13 (38.2)	34 (100.0)	3 (9.7)	16 (51.6)	12 (38.7)	31 (100.0)
Glossary	9 (26.5)	13 (38.2)	12 (35.3)	34 (100.0)	4 (13.3)	15 (50.0)	12 (40.0)	31 (100.0)
Dictionary*	10 (35.7)	6 (21.4)	12 (42.9)	28 (100.0)	9 (36.0)	4 (16.0)	12 (48.0)	25 (100.0)
Electronic translator	2 (5.9)	16 (47.1)	16 (47.1)	34 (100.0)	1 (3.2)	16 (51.6)	14 (45.2)	31 (100.0)

Note. *In State X, the language of dictionary (i.e., bilingual, English) was not specified in the survey.

Table 6

State Y Permitted and Used Accommodations for the State Math Assessment

	Permitted				Used			
Accommodation	Yes (%)	No (%)	Not Sure (%)	Total (%)	Yes (%)	No (%)	Not Sure (%)	Total (%)
Extended time	89 (90.8)	1 (1.0)	8 (8.2)	98 (100.0)	77 (78.6)	4 (4.1)	17 (17.3)	98 (100.0)
Individually administered	58 (61.1)	11 (11.6)	26 (27.4)	95 (100.0)	39 (42.9)	21 (23.1)	31 (34.1)	91 (100.0)
Small group	81 (82.7)	5 (5.1)	12 (12.2)	98 (100.0)	73 (74.5)	9 (9.2)	16 (16.3)	98 (100.0)
Separate location	72 (75.0)	5 (5.2)	19 (19.8)	96 (100.0)	66 (69.5)	7 (7.4)	22 (23.2)	95 (100.0)
Administered by ELL teacher	72 (74.2)	4 (4.1)	21 (21.6)	97 (100.0)	60 (63.2)	12 (12.6)	23 (4.2)	95 (100.0)
Directions read aloud	81 (82.7)	1 (1.0)	16 (16.3)	98 (100.0)	70 (72.9)	3 (3.1)	23 (24.0)	96 (100.0)
Items read aloud	66 (68.8)	9 (9.4)	21 (21.9)	96 (100.0)	52 (55.3)	12 (12.8)	30 (31.9)	94 (100.0)
Items read aloud in native language	27 (28.1)	22 (22.9)	47 (49.0)	96 (100.0)	16 (17.0)	33 (35.1)	45 (47.9)	94 (100.0)
Glossary	8 (8.4)	38 (40.0)	49 (51.6)	95 (100.0)	6 (6.5)	47 (51.1)	39 (42.4)	92 (100.0)
Bilingual Dictionary	30 (31.6)	22 (23.2)	43 (45.3)	95 (100.0)	23 (25.0)	30 (32.6)	39 (42.4)	92 (100.0)
Dictionary	8 (8.4)	45 (47.4)	42 (44.2)	95 (100.0)	5 (5.4)	50 (53.8)	38 (40.9)	93 (100.0)
Electronic translator	9 (4.5)	42 (44.2)	44 (46.3)	95 (100.0)	4 (4.3)	53 (57.0)	36 (38.7)	93 (100.0)

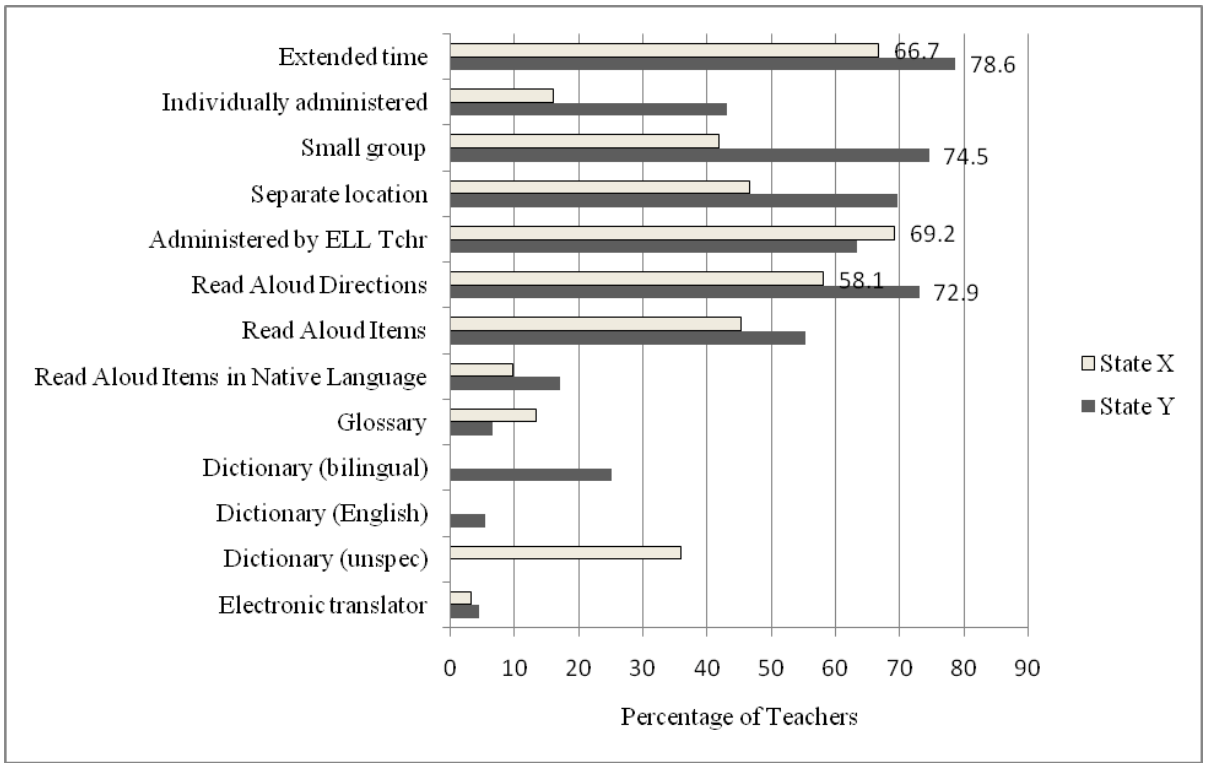

Figure 1. Percentage of teachers reporting the use of accommodations in Grade 8 standardized math assessments by state. Language of dictionary was unspecified for State X.

Accommodations During Instruction

Both previous research and the state policies emphasize that the selected accommodations for the state testing should be the ones with which students are familiar through instruction. That is, students should have opportunities to use accommodations as part of instructional practice. In order to examine the instructional uses of accommodations, teachers were asked to indicate the extent to which a given accommodation was provided to ELL students during classroom tests and instructional tasks, on a 6-point scale with 1 meaning "never used" and 6 meaning used "every day."

Table 7 displays the means and standard deviations of the scale of how often teachers provided accommodations to ELL students during math classroom assessments. Teachers in both states reported "extended time" most frequently, followed by "read aloud of directions." Similarly, results for accommodations provided to ELL students during math class to complete tasks or problems, as shown in Table 8, indicate "extended time" followed by "read aloud of problems" as the most frequently reported in both states.

Table 7

Accommodations Provided to ELL Students for Grade 8 Math Classroom Tests by State.

Accommodation	State X		State Y	
	Mean	*SD*	Mean	*SD*
Extended time	4.37	1.18	3.51	1.14
Individual testing	1.96	1.19	2.01	1.03
Small groups	2.00	1.27	2.26	1.15
Directions read aloud	3.37	1.67	3.37	1.53
Items read aloud	3.00	1.66	2.79	1.47
Items read aloud in native language	1.33	0.88	1.23	0.62
Glossary	2.59	1.76	1.78	1.51
Bilingual Dictionary*	–	–	1.51	1.23
Dictionary	2.22	2.00	1.65	1.41
Electronic Translator	1.30	1.03	1.14	0.69

Note. Rating scale, 1 (*never*) to 6 (*everyday*). *Language of dictionary was unspecified for State X.

Table 8

Accommodations Provided to ELL Students to Complete Tasks During Grade 8 Math Class by State.

Accommodation	State X		State Y	
	Mean	*SD*	Mean	*SD*
Extended time	5.33	0.91	4.74	1.16
Work one-on-one w/teacher	3.78	1.50	4.12	1.39
Small groups	4.07	1.30	5.24	0.70
Problems read aloud	4.85	1.31	5.42	0.91
Problems read aloud in native language	2.10	1.34	1.42	1.03
Glossary	3.11	1.78	3.22	1.72
Bilingual Dictionary*	–	–	2.22	1.68
Dictionary	2.29	1.65	2.46	1.61
Electronic Translator	1.15	0.49	1.36	1.20

Note. Rating scale, 1 (*never*) to 6 (*everyday*). *Language of dictionary was unspecified for State X.

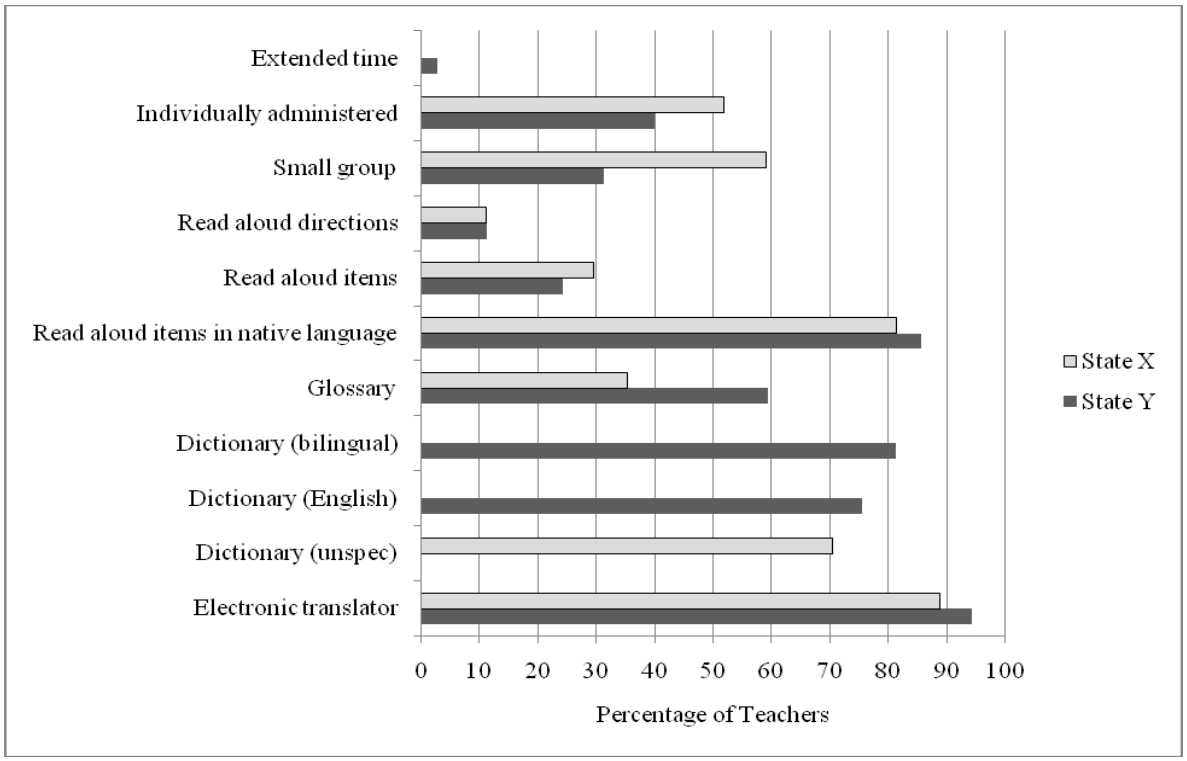

Figure 2. Percentage of teachers reporting "Never" providing accommodations to ELL students during Grade 8 math classroom assessments. Language of dictionary was unspecified for State X.

Figure 2 demonstrates accommodations reported as "Never" having been provided by teachers during classroom assessments. There were higher percentages of "Never" reported for some accommodation types, such as use of dictionary and glossary. Providing a dictionary for classroom math assessments, for example was reported as "Never" provided by roughly three quarters of both State X and State Y sample teachers (See Appendix A for more detail).

Use of Read Aloud Accommodation

As described earlier, reading aloud an entire test (i.e., orally administering a test) was one of the specific accommodations on which this study focused. One contrast in policy of this accommodation between the two states was that State X did not have a published script whereas State Y provided a published script (from the test developer) in which teachers were required to read the script to the students exactly as printed. However, both states prohibit the reading aloud of certain numbers or symbols on the math assessment because they were part of content knowledge to be measured. State X teachers (or schools) needed to make their own decisions about which numbers and symbols not to read. In State Y, this decision was made by the test developer by providing a script to read verbatim.

In order to investigate how the different policies on the read-aloud accommodation were implemented in practice in each state, the survey questions first included whether teachers administered read aloud accommodation to ELL students during the 2007–2008 state math assessment and what portions of the text (e.g., directions, questions, answer choices) the teachers read aloud. More elaborated responses about the use of read aloud were obtained from interviews. Table 10 presents the frequency and percentage of the survey teachers who administered the read-aloud accommodation to students during the state math assessment. In general, the sample ELL teachers were more likely to report having administered a read aloud rather than the math teachers.

Table 10

Teachers Who Administered Read Aloud of Math Assessment by Teacher Type and by State

	State X		State Y	
Administered	Math (%)	ELL (%)	Math (%)	ELL (%)
Yes	4 (17.4)	3 (60.0)	2 (22.2)	18 (78.3)
No	19 (82.6)	2 (40.0)	7 (77.8)	5 (21.7)
Total	23 (100.0)	5 (100.0)	9 (100.0)	23 (100.0)

Table 11 presents the results of the portion of the text being read aloud based on both the survey and interview teachers who responded to this question (only teachers with previous experience reading aloud were able to respond to this question). Results indicate that there is a great variation in the portions of text that are read aloud, according to teachers. Overall, directions were reported as being read by all teachers. The most frequent combination of read-aloud text was the directions, test questions, and answer choices including numbers or symbols. Regarding numbers and symbols, the teachers' report varied in both states.

Table 11

Portions of Text That Teachers Read Aloud by State and Teacher Type

Portion	State X			State Y		
	Math (%)	ELL (%)	Total (%)	Math (%)	ELL (%)	Total (%)
Directions only	3 (37.5)	4 (30.8)	7 (33.3)	2 (50.0)	3 (15.8)	5 (21.7)
Directions & test questions	1 (12.5)	0 (0.0)	1 (4.8)	0 (0.0)	3 (15.8)	3 (13.0)
Directions, test questions, & answer choices	2 (25.0)	3 (23.1)	5 (23.8)	1 (25.0)	8 (42.1)	9 (39.1)
Directions & test questions, but no numbers/symbols	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (5.3)	1 (4.3)
Directions, test questions, answer choices, but no numbers/symbols	0 (0.0)	5 (38.5)	5 (23.8)	1 (25.0)	2 (10.5)	3 (13.0)
Directions, test questions, answer choices, & some numbers/symbols	2 (25.0)	1 (7.7)	3 (14.3)	0 (0.0)	2 (10.5)	2 (8.7)
Total	8 (100.0)	13 (100.0)	21 (100.0)	4 (100.0)	19 (100.0)	23 (100.0)

During the interview, teachers were asked three questions with respect to the administration of the read-aloud accommodation for the state math assessment. These three questions included the portion of text that was read aloud, the guidelines for the read-aloud accommodation, and training that was provided for teachers who administered the read-aloud accommodation. The following excerpt shows one of the variations in reading aloud the math test to ELL students:

> State Y (District S) ELL Teacher: For math we were allowed to read the directions and the items, but not the answers. So we couldn't read like the multiple choice answers. We couldn't read those….On some of the items if there was a content vocabulary word that might—I guess, it sees that the testers feel that the students should know no matter what language they speak, I'm not supposed to say that word and I have to blank it out. I literally have to stop and then continue….Sometimes we read symbols. I can remember reading like—I'm thinking, like place a "greater than" symbol or "less than" symbol between the numbers. I don't remember saying things like that: "equals," "greater than," "less than," but, you know, words that stick out, like I can't say like "graph" and I can't say "hyperbole," you know things like that.

Teachers who administered the read aloud were also asked about guidelines or rules for reading aloud. One of the most frequent responses concerned whether they were allowed to read the symbols and numbers. State Y teachers tended to be more consistent with each other in their statements, referring to the script as in the following excerpt:

> State Y (District V) ELL teacher: It's pretty much a set transcript of the test that you read from. The only thing that it doesn't have are like some of the numerical values, like there's times when you're supposedly like say like exactly what, but like "insert number here" basically or something like that. Usually for fractions and things that might be a little bit, most of the whole numbers we're allowed to read…

Interview data revealed that there seemed to be a lack of systematic training for how the read-aloud accommodation should have been implemented in both states. Teachers often remarked that they learned about the read aloud by reading the test manual, rather than having formal training. State X teachers who did not have a read-aloud script generally expressed confusion with the read aloud while State Y teachers were more likely to make some specific comments about the process. State X teachers informed us that they had to replace numbers and symbols with the word "symbol." For example, an ELL teacher in District 2 stated, "…this year, we could not read symbols, we had to say…'symbols'…We had to change that to say 'symbols,' you know, like '6 symbol 4.'"

The following excerpt demonstrates one State X teacher's confusion about what to replace with the parts that they should not read (i.e., numbers and symbols):

> State X (District 1) ELL teacher: What happens is the principal selects a testing coordinator and this year it happens to be a math teacher, Mr. N-. And he goes to the meeting and then he comes back and trains the rest of the staff. We're given a primer, a testing primer which talks about, you know, and I normally take it home and kind of tab it with little sticky tabs, what I'm supposed to read, what I'm not supposed to read, directions. You know. Kind of, what I'm going to read. It's just for my information. And it did not have specific directions for the testing administrator, me or whatever teacher. How to really, if you want, if you were given read aloud accommodations how to go about that. And when I asked, he says, "Well, you can read any of these [numbers in the item] and you have to read 'symbol, symbol, symbol'," and I think I heard some special ed teachers ask, actually, "So if it's problem number one, I go 'Problem...symbol?'" [And the answer was,] "Yeah." So, any numerals became symbols. Any, you know, signs, any nonlinguistic representations became "symbol." …This whole thing with the symbol symbols was very confusing to me. I don't think that we got the appropriate training…

Another teacher from State X talked about how she and another teacher decided on how to read the test aloud to students because of the absence of district or school training on the read-aloud accommodation:

> State X (District 1) ELL teacher: No. I guess if we were to choose to do [the read aloud], [the other ELL teacher] and I would sit down and figure out, "Okay, what are we going to do when we come to a number or a symbol?" And we would decide, "Okay, we'll say blank or we won't say anything and we'll pause or we'll..." Yeah, so I guess that would be a decision she and I would come up with.

Because State X did not provide a script for teachers for the read aloud accommodation, when the teacher above read aloud the test, she "just used a copy of the students' test" and "just read it from that." These two excerpts above illustrate the lack of systematic training for administering the read aloud accommodation in State X.

In State Y, teachers generally reported having trainings on how to administer the read aloud and the state provided a script for teachers to read verbatim. For example, a teacher from State Y reported, that because the script is secured material, they only had 24 hours to review it and prepare for the read aloud, which they did at her school:

> State Y (District V) Math teacher: Yes, there have been and there's always a meeting every year where we go through and we train anyone new. There hasn't been anyone new in years. We know it, but we always review it. A group of us always goad students that are available to read through it to see if there are any glitches. So when we have the twenty-four hour window you make sure you get your eyes on that test. So if you can spot any problems, you know about them ahead of time…[to] look for errors or look for things that cause you problems in reading the test. Go through the test. Go through the script, because the script is secured material as well…A good oral administrator just takes that time....And same thing with—you plan out your speaking rate... practice that speaking rate because it's even different than your classroom speaking rate, because it's a test, and your enunciation, and your clarity, and the fact that you want the kids to follow along with their fingers, all this kind of stuff…

Another teacher from a different district in State Y described read aloud training:

> State Y (District S) ELL teacher: They actually went through and we had to practice with a partner, or read the oral items, make sure that we were doing it right.

Because a script was available to administer a read aloud in State Y, there appeared to be a degree of clarity and uniformity in the process. Although formal training sessions varied based on whether a school or district chose to hold one, it seems teachers at least were able to review the script 24 hours prior to the test administration, if they chose to do so.

Math teachers were also asked during the interview whether they read aloud math problems in the classroom, either for classroom tests or for tasks. Table 12 shows the use of read aloud during classroom tests or tasks as reported by math teachers during interviews, by state. Math teachers interviewed in State Y had a tendency to report reading aloud during classroom tests or tasks.

Table 12

Use of Read Aloud During Math Classroom Tests/Tasks by State

Use of Read Aloud	State X (%)	State Y (%)
Yes	8 (53.3)	16 (88.9)
No	7 (46.7)	2 (11.1)
Total	15 (100.0)	18 (100.0)

Uses of Dictionary/Glossary Accommodation

Along with the read-aloud accommodation, the use of dictionary/glossary was another particular focus of this study. As displayed in Tables 5 and 6 earlier, dictionary and glossary were reported as one of the least common accommodations used for the state math assessment among the surveyed teachers in both states. Further information about the use of dictionary/glossary was obtained through interview.

Although the interview questions included both dictionary and glossary uses, the responses mostly pertained to dictionary use because a glossary was seldom used. As for glossary, teachers indicated some use of a glossary during instruction because math textbooks typically included a built-in glossary ("in the back of the book") to highlight the key mathematical terms and concepts of each unit. However, the textbooks' glossaries served a different purpose than a glossary accommodation, in that the latter should include no mathematical terms relevant to the construct being assessed. Thus, we report teachers' responses on the dictionary use here.

As for dictionary use, teachers were asked what types of dictionaries were permitted or used for the state math assessment. Broadly speaking, two types of dictionaries were mentioned; one was a regular dictionary containing full definitions, and the other was "word-to-word" translations containing no examples. Teachers responded regardless of whether they had personally provided the dictionary during the state math assessment. Across both states, most of the 21 teachers who responded reported that "word-to-word" dictionaries were

provided to ELL students, which is consistent with the state policies. Only three teachers among the respondents reported that the permitted dictionary contained full definitions, which they reported with some reservations and uncertainty.

Teachers were also asked who provided the dictionaries to use for the state math assessment. Most teachers responded that the school, including the school's ELL department, provided the dictionaries. Some teachers in State Y also referenced an "approved list" that the school chose from. Three teachers stated that the dictionaries were "already here" in their classrooms when they began teaching. Several teachers remarked that they personally sought out dictionaries themselves for purchase, as part of the school budget, such as an ELL teacher in State Y (District S), who said, "I found mine in a catalog. The librarian has catalogs. I get inundated with catalogs every year. That's just part of my budget here is to order dictionaries, because kids will go through it." One ELL teacher in State X (District 1) stated that there was no budget from the district to purchase dictionaries and that they had to "sell food to buy books" including dictionaries. However, another teacher from the same district, but different school, remarked being able to "special order" dictionaries in less common languages directly from the district. The results suggest that there was not a systematic way of providing dictionaries in the state testing situations.

Teachers were also asked whether they observed students actually using the dictionary during the state math assessment. Many teachers commented that students did not use them. For example, an ELL teacher in State X (District 2) remarked, "What I observed was that in the beginning, they did. But then they kind of just ignored it after a while." Some teachers discussed how only students who are literate in their native language and/or are a highly motivated student take advantage of dictionaries. For example, a math teacher in State Y (District V) remarked, "The more academically motivated they are, the higher their language skills are in their native language, the more likely they are to use [the dictionary]."

The instructional use of the dictionary accommodations was further probed during the interview. In the classroom, where dictionaries are available and accessible to students, teachers noted that many students do not take advantage of them. A math teacher in State X (District 2) remarked, "Well, I have Spanish-English dictionaries in my classroom. But I've never had anyone ask me [for them] at all." A math teacher in State Y (District K) made a similar comment, "I do have a couple kids who have grabbed them before, but not really. They don't seem to use them unless I specifically ask them to find something." This poses the question of whether ELL students, despite accessibility, have adequate familiarity with dictionaries to utilize them on state assessments.

Recording of Accommodation Use

To examine how the state policies regarding the accommodation documentation were undertaken in schools, information on how teachers kept records of the accommodations given to each ELL student during the 2007–2008 state math assessment was collected during the interview. A series of questions regarding the recording practices included teachers' familiarity with accommodation data records, recording procedures, personnel in charge of recording and maintaining the accommodation, and the data accessibility to teachers. Overall, ELL teachers in both states reported being familiar with state recording practice, as shown in Table 13. It also appears that more State Y teachers overall reported familiarity, whereas State X teachers were more evenly split.

Table 13

Familiarity with Accommodation Data Recording by State and Teacher Type

	State X			State Y		
Familiarity	Math (%)	ELL (%)	Total (%)	Math (%)	ELL (%)	Total (%)
Familiar/some what familiar	2 (16.7)	14 (73.7)	16 (51.7)	11 (47.9)	15 (93.8)	26 (74.3)
Not familiar	10 (83.3)	5 (26.3)	15 (48.3)	8 (42.1)	1 (6.2)	9 (25.7)
Total	12 (100)	19 (100.0)	31 (100.0)	19 (100.0)	16 (100.0)	35 (100.0)

One of the recording procedure questions was related to the personnel who kept record of the accommodations given to individual ELL students during the state math assessment. Although an ELL teacher or the school's ELL department was predominantly responsible for the accommodation records in State X, many math teachers in State Y reported that they were involved in the record keeping procedure. As described in the State Y policy, math teachers were required to document an individualized accommodation plan for ELL students for their math instruction, by a specific date prior to the state math assessment. Subsequently, math teachers in State Y had a tendency to consider themselves as the record keeper for the state math assessment. However, when prompted, they were often not aware of what happened with the documentation plans after the plans left their hands.

Teachers were unclear about procedures regarding the maintenance and accessibility of accommodation data. Although about half of the ELL teachers in State X referred to their state's official accommodations record form, some of them were uncertain whether those paper forms were later transferred to any electronic data base. Similarly, in State Y, teachers'

reports on the procedures were uncertain and sometimes conflicting. For example, although many math teachers mentioned that they were the record keeper of the accommodation data, some ELL teachers at the same schools stated that there was a second step where other personnel or testing department or ELL teacher/department managed the accommodation records for the state math assessment. One ELL teacher in State Y (District A) explained the recording procedure in the following way: "So we do it by teacher first, right? And then we do it by department. So ESL department has to fill—gather all of those names and fill it out. We give it to the testing coordinator." The conflicting information can imply either a non-systematic way of maintaining accommodation records, or, limited knowledge about the process.

Communication Channel

The interview also focused on how teachers were informed of state and school accommodation policies, assuming that the quality and means of communication could have a great influence on the use of actual accommodations. In particular, two questions were asked regarding familiarity with state policy, the clarity in which information on accommodation policies were distributed to teachers, and the ways in which accommodation policy information was delivered to the teachers. Table 14 presents the frequency and percentage of the teachers reporting whether they were familiar with their schools' policies on accommodations. Overall, teachers reported that they were familiar with their school's accommodation policies. More ELL teachers reported being familiar with the policies than math teachers in State X.

Table 14

Familiarity with Accommodation Policies by State and Teacher Type

	State X		State Y	
Familiarity	Math (%)	ELL (%)	Math (%)	ELL (%)
Familiar/somewhat familiar	14 (70.0)	21 (95.5)	17 (89.5)	16 (100.0)
Not familiar	6 (30.0)	1 (4.5)	2 (10.5)	0 (0.0)
Total	20 (100.0)	22 (100.0)	19 (100.0)	16 (100.0)

With respect to whether information on accommodation policies was made clear to teachers, many teachers expressed reservations. A math teacher in State Y commented on the lack of clarity:

> State Y (District B) Math teacher: Last year I feel like it was a hodgepodge. I don't think it was really clear...I just don't want to reflect badly on people. But I think it wasn't clear what options were possible, how to make sure those people got them, and all that was.

In order to explore how the communication channel was set up to distribute the accommodation policies, teachers were asked what ways they received accommodation information for the state math assessment. Many teachers in both states mentioned that they had meetings prior to testing and typically received a testing manual including accommodation information. However, it is unclear whether a discussion occurred specific to the accommodation policy for ELL students. An ELL teacher in State Y remarked that the 2007–2008 school year was the first year the state's Department of Education a separate accommodations manual specific to ELL students, separate from students with disabilities:

> State Y (District M) ELL teacher: [The State Department of Education] puts out—last year I think was the first year they did this. They put out an accommodations manual for ELL students. So in the past it had kind of been part of the regular accommodations manual. And last year was the first year that they did it separately. And it's extensive documents. It's sixty something pages and there's charts for every conceivable situation of an ELL student in their previous instruction, whether it was in English or native language and whether they were literate in their native language or not. So it gets pretty complex.

State Y math teachers also consistently commented that they received the accommodation information in the beginning of the school year to begin to plan the accommodations. They attributed this practice to the State Y policy requirement of documenting the accommodation plan by a specific date prior to the testing as well as for content instruction.

Perceptions on the Helpfulness of Accommodations

The third research question explored teachers' perceptions on the helpfulness or usefulness of accommodations, and in particular, of read aloud and dictionary/glossary. In the survey, teachers were given a list of accommodations and asked to rank each one on a scale of 1 to 4, with 1 meaning "not very helpful" and 4 meaning "extremely helpful." In order to examine whether ELL and math teachers possessed different perception about the helpfulness of accommodations, the responses were also grouped by teacher type. Table 14 shows results by state. Due to the small number of ELL teachers in State X, the descriptive

statistics for ELL teachers was not reported for State X. Note that dictionary cannot be compared across states because teachers in State X were not given the option of "Bilingual Dictionary" in addition to "Dictionary." For teachers in State X, "Dictionary" may refer to either bilingual or English only.

Table 14

Teachers' Perception on the Helpfulness of Accommodations for ELL Students by State and Teacher Type

	State X	State Y	
	Math	Math	ELL
	n = 22-23	*n* = 44-68	*n* = 7-27
Accommodation	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Extended time	3.27 (0.77)	2.85 (0.85)	2.78 (0.93)
Test individually administered	2.73 (0.99)	2.82 (0.87)	2.50 (0.82)
Test administered in a small group	2.70 (0.88)	2.91 (0.80)	3.21 (0.93)
Test administered by an ELL teacher	3.09 (0.90)	2.80 (0.93)	3.36 (0.76)
Directions read aloud in English	3.00 (0.85)	2.81 (0.80)	3.15 (0.91)
Test items read aloud in English	2.96 (0.98)	2.55 (0.92)	3.08 (0.88)
Test items read aloud in native language	3.05 (1.09)	2.85 (1.01)	3.14 (1.03)
Glossary	2.55 (0.80)	2.06 (0.94)	1.71 (0.95)
Dictionary	2.61 (0.99)	1.87 (0.88)	1.75 (0.89)
Bilingual dictionary	–	2.35 (0.95)	2.39 (0.70)
Electronic translator	2.55 (1.22)	2.14 (1.05)	1.88 (0.99)

Note. State X ELL teachers are not presented because the sample size was 5 for each category. Dictionary cannot be compared across states, because State X teachers did not have the option of Bilingual dictionary. Score scale of 1 (*not very helpful*) to 4 (*extremely helpful*).

Results for State X indicate that teachers reported "Extended time" as the most helpful, followed by "Test administered by an ELL teacher," then by "Directions read aloud in English." State X teachers reported Glossary and Electronic translator the lowest in terms of helpfulness.

Results for State Y indicate that teachers reported "Test administered in a small group" as the most helpful, followed by "Test administered by an ELL teacher," then by "Test items

read aloud in native language." State Y teachers reported Dictionary and Glossary lowest. Results by teacher type for State Y indicate that math teachers reported "Test administered in a small group" as the most helpful and that ELL teachers reported "Test administered by an ELL teacher" as the most helpful. Math teachers and ELL teachers both reported (English) dictionary and glossary accommodations relatively low in terms of helpfulness

Across both states, "Test items read aloud in English" was consistently rated higher than Dictionary, Glossary, or Bilingual dictionary. The following subsections include more elaboration from the interview on why teachers thought of reading aloud test items or dictionary/glossary as helpful or not.

Perceptions on the Helpfulness of Read Aloud

During the interview, teachers were asked to give their personal opinion of the helpfulness of the accommodation of reading-aloud items for ELL students in a math assessment. Table 15 presents the results based on whether teachers' perceptions were positive, negative, or mixed. Mixed responses refer to when teachers' opinions on read aloud were expressed with some conditions. For example, some teachers felt reading aloud was beneficial to certain levels of ELL students, such as lower level ELL students, and not beneficial to more proficient speakers of English. Most teachers in both states responded positively. Math teachers tended to respond more positively than ELL teachers.

Table 15

Teachers' Perception on the Helpfulness of Reading Aloud Math Test Items for ELL Students by State and Teacher Type

Perception	State X			State Y		
	Math (%)	ELL (%)	Total (%)	Math (%)	ELL (%)	Total (%)
Positive	7 (77.8)	13 (65.0)	20 (69.0)	9 (60.0)	9 (56.3)	18 (58.1)
Negative	1 (11.1)	3 (15.0)	4 (13.8)	1 (6.7)	2 (12.5)	3 (9.7)
Mixed	1 (11.1)	4 (20.0)	5 (17.2)	5 (33.3)	5 (31.3)	10 (32.3)
Total	9 (100.0)	20 (100.0)	29 (100.0)	15 (100.0)	16 (100.0)	31 (100.0)

Positive Perceptions. ELL and math teachers alike underscored the differences between oral (or auditory) proficiency and reading proficiency in relation to the benefits of read aloud. They pointed out that it would be easier to process spoken form than written form of

language because ELL students tended to be more proficient in oral language than in written language, as suggested in the following excerpts:

> State X (District 2) Math teacher: ...if they know what the concept is but they don't know what the words look like because a lot of my kids...they can speak Spanish and English, but they're not fluent in either one, so they have difficulty reading English. They have difficulty reading Spanish… But they can speak it, so I can speak it to them, then they remember what it was all about.

> State Y (District P) ELL teacher: I think it can be really helpful for English Language learners who are still—There are a lot of times that they get hung up on is trying to figure out what the words are. And if you read it for them, and they were able to "Oh! I know that word." It takes the reading part out of the math. And we really are assessing their math abilities….Because they are not so busy reading. That has been taken off the plate and really focus on the math part.

One ELL teacher from State X provided an example of a word that can be read in two different ways.

> State X (District 2) ELL teacher: Well, oftentimes the child, even though they know what the vowel or know the word attack, the intonations or your accents are sometimes not known to the child reading the word, and you know, like "produce" [*verb form, spoken with accent on second syllable*] and "produce" [*noun form, spoken with accent on first syllable*], that could make a difference in their comprehension on a question. So if you read it aloud, it's more fluent, you have your commas in the proper places, your pauses, your stops, and it makes more sense, then, to the child whose listening than for the child to read it themselves and not have that knowledge when they're reading it.

Another ELL teacher from State Y also emphasized the possibility of students' misinterpretation when they are reading by themselves.

> State Y (District K) ELL teacher: I think it's really helpful. I think that often times the students, regardless of what level they are, misreading a word can change the whole interpretation of what they're supposed to do.

***Negative Perceptions*.** Teachers who felt negatively toward read aloud were concerned about lack of time, students' lack of familiarity, and potential lack of effectiveness by distracting other students who were not at the same pace of solving each item.

> State X (District 1) ELL teacher: I was uncomfortable doing it, which was weird. It was just like, OK, I don't...the kids aren't even listening to me, they're…some kids are moving on, and we weren't really strict about that. I mean, it took us a long time and I don't really...some kids followed along with us, and…So I don't...in the end, I don't

think it was really helpful…it just didn't make sense to me because it's not something we normally do during class, in the classroom.

A math teacher from State Y felt that a read aloud negatively affects students' motivation.

State Y (District R) Math teacher: I don't know if I agree with it. Within my classroom, I don't use a whole lot of oral [reading] because I want my ELL students to be challenged with learning it on their own. And if they're constantly hearing me read it then they're going to rely on that versus relying on themselves.…I think that students feel like they're being treated like they're dumb or they're not smart enough when the oral [presentation] happens. I think probably clarification would be a better word to use for them and that if a student just asks for clarification then you could read it to them. But what happens to them is that these students end up being put in groups and the test ends up getting orally [read] to them. But for the most part, even the low ELL learner has some idea of context, clues of clues of the language and things that go on in the test. But they're expected to sit and listen even if they do understand. So I think that probably distracts them and, you know, makes them a little more unmotivated.

Mixed Perceptions. Teachers with mixed responses to read aloud tended to feel that read aloud would be helpful depending on ELL students' language proficiency.

State X (District 1) ELL teacher: I think if they are nearing proficient, it's really not necessary for them and it can be annoying. But for the lower language learners, the ones that are just learning, I think it's really beneficial for them. I don't know if it proves to be beneficial test score-wise, but at least their feelings of apprehension goes down, so we can find out what they know about the content instead of the reading part. And I just personally I think that if you're going to test them on math and make them read a test, you should call it a reading test.

State Y (District P) ELL teacher: I think so much of that depends on the students. For some students, I think it's helpful. For other students, first of all, I think it depends on what kind of learner the students is, you know, and auditory learner versus and non-auditory learner. Plus, I also think that it depends on the level of language, you know, of course is it being read in English or in their native language. So there are just so many facets to that question. But again, I think it's really independent to the student. You know, for some kids I think it helps them. But for some kids, it could be extremely distracting and difficult.

The excerpts above illustrate teachers who felt read aloud is more helpful for ELL students with lower levels of English proficiency. However, an ELL teacher from State Y felt the opposite. This teacher felt that newcomer students whose English proficiency levels are

very low would not benefit from a read aloud at all, and that higher levels of ELL students would benefit more.

> State Y (District K) ELL teacher: I think it can be helpful for those—for maybe advanced or intermediate students whose reading and writing skills—I don't think it's really helpful for the newcomers or beginners, most beginners because it's just they don't understand any of it anyways. The language is just too difficult. For those who are a little bit higher, I think…can be helpful.

A math teacher from the same school in State Y felt similarly, in that students with very low English proficiency would not benefit from read aloud.

> State Y (District K) Math teacher: the hearing part, that's a big deal, because sometimes they get the hearing, but the reading they don't understand or the other way around as well. But for students who have low English skills it's not going to matter, you know. They basically need to be translated to get it.

In general, both math and ELL teachers from both states felt that reading aloud math tests is useful or helpful for ELL students. Teachers added caveats to the administration of read aloud. Read aloud should be administered in a small group, and administered with students of similar levels so that the pacing can be the same. Or, read aloud should occur by request of the student on specific items, and not the entire test.

Perceptions on the Helpfulness of Dictionary/Glossary

Teachers were also asked, during the interview, to give their personal opinion on the helpfulness of dictionaries or glossaries for ELL students in math assessment and instruction settings. Table 16 presents the results based on whether teachers' perceptions were positive, negative, or mixed. Like the read-aloud subsection earlier, mixed responses refer to when teachers' opinions on dictionaries/glossaries were expressed with some conditions.

Table 16

Teachers' Perception on the Helpfulness of Dictionary or Glossary for ELL Students

Perception	State X			State Y		
	Math (%)	ELL (%)	Total (%)	Math (%)	ELL (%)	Total (%)
Positive	5 (50.0)	6 (42.9)	11 (45.8)	8 (47.1)	2 (18.2)	10 (35.7)
Negative	2 (20.0)	5 (35.7)	7 (29.2)	3 (17.6)	3 (27.3)	6 (21.4)
Mixed	3 (30.0)	3 (21.4)	6 (25.0)	6 (35.3)	6 (54.5)	12 (42.9)
Total	10 (100.0)	14 (100.0)	24 (100.0)	17 (100.0)	11 (100.0)	28 (100.0)

In State X, teachers generally responded positively toward providing students dictionaries or glossaries for ELL students, meaning they felt dictionaries or glossaries were useful or helpful for students. In State Y, teachers tended to respond with mixed responses toward providing students dictionaries or glossaries during math tests. ELL teachers in State Y tended to have mixed responses more than the math teachers did. Below are quotes from teachers expressing perceptions on the providing dictionaries or glossaries.

Positive Perceptions. Teachers with positive perceptions on providing dictionaries discussed a dictionary as a powerful tool to boost students' confidence and comfort as well as to help understand vocabulary.

> State Y (District R) Math teacher: I think it's very helpful. I think if a student understands that they can always go to that resource. That's a powerful tool for a student, because a lot of the times students get stuck they need to understand the various strategies that are available to them when they get stuck because there's not always going to be somebody there to help them along. So I think it's extremely important to allow those kind of things.

> State Y (District K) Math teacher: I think it's wonderful [because] I work heavily on vocabulary, even my regular students can't understand why I give vocabulary tests in mathematics. That's for language arts and I keep saying, no, it's for the language of math. [And] I think they should be able to look up everything. It's helping them—it helps them take in a language that's foreign to them, putting it into their language so that they can understand and come in back to the language that is foreign to them. Communicate. So I think it's important that they be afforded the opportunity for that.

Negative Perceptions. Teachers with negative perceptions remarked that using dictionaries becomes an extra burden for students, citing motivation and time issues:

> State X (District 2) ELL teacher: No. They don't utilize it very much because it takes up a huge amount of time…It exhausts them.

> State Y (District P) Math teacher: I don't think it would help a lot, especially with the grade level we work at. They're not that motivated.

Teachers remarked that dictionaries may be an extra burden because students have difficulty understanding how to utilize them, or students are not familiar with using them:

> State X (District 1) ELL teacher: And all I can think of is stumbling, a stumbling block. Because it's another, another thing to have, to look at, to look through, to become familiar with, to be able to use, unless the students have used that glossary before.

Teachers remarked that bilingual dictionaries are not helpful because students may not know the word in their native languages either:

> State Y (District K) ELL teacher: By the time they're in advanced [ELL] I don't really think that the word-to-word dictionaries are very helpful. The kids pretty much know the language by then and if they don't it English they don't know it in their native language either.

Mixed Perceptions. Teachers with mixed perceptions felt that the dictionaries and glossaries are helpful to students but with certain caveats. They cited reasons similar to the teachers who responded positively or negatively to the question, but addressed both the positive and negative aspects of providing a dictionary or glossary. A common concern was timing, in that teachers felt students required more time to use a dictionary or glossary which could slow down their test-taking process.

> State X (District 2) ELL teacher: They slow them down. But sometimes if you [are] stuck on the meaning, and you need to clarify for yourself something, you know, it is either the teacher who can explain [to] you the meaning of the word or [it is] the dictionaries that can help you understand something.

Other teachers also mentioned students' language proficiency and instructional practice of using a dictionary as factors that affect the usefulness for students.

> State Y (District M) ELL teacher: Well, the first I think is that they have to understand how to use it. And they have to understand that they don't need to understand every single tiny word because they can be there for days looking everything up. So it's kind of—it definitely depends on the amount of instruction that they're given and the amount of practice that they have before they're going to use it. I think that makes a world of a

> difference. And it depends on their proficiency level because if they feel that they don't understand anything then they're going to look up every word and that's a daunting task I think most students will just start guessing… It's pretty overwhelming, so I think, their background understanding of the dictionary, practice with the dictionary, and then if it's appropriate for their fluency level.

In general teachers felt that students would benefit from a dictionary if their level of home language proficiency was higher than their level of English language proficiency, and if students were familiar with using dictionaries and knew how to utilize them. Teachers also felt that students needed enough time to use a dictionary. Students also may have low motivation to look up words in a dictionary, and so a tool that is easier to use and less of a burden, but still provides that same vocabulary support, may be more helpful. A couple of teachers did feel that a glossary would be more helpful than dictionary because it contains fewer words and more concise information. Teachers also frequently observed students not using dictionaries (as mentioned earlier), which led them to believe that dictionaries are not helpful.

Figure 3 presents a summary of teachers' general opinions on the helpfulness of read aloud and dictionary/glossary.

	Read-aloud items	Dictionary/Glossary
Positive	✓ Students' uneven language proficiency (more proficient in spoken language than in written language) ✓ Easier process of spoken language than written language	✓ Boosting students' confidence and reducing anxiety ✓ Supporting vocabulary knowledge
Negative	✓ Lack of time to administer ✓ Students' lack of familiarity ✓ Distracting other students at a different pace	✓ Extra burden ✓ Students' lack of motivation ✓ Students' lack of familiarity
Mixed	✓ Depending on students' language proficiency	✓ Depending on students' language proficiency ✓ Depending on students' familiarity with using a dictionary/glossary ✓ Depending on availability of extra time

Figure 3. Summary of teacher opinions on the helpfulness of read aloud and dictionary/glossary

Discussion

This case study investigated how the state accommodation policies were transferred to schools and implemented in practice, with the purpose of identifying important validity issues to consider in the use of accommodations for ELL students. Furthermore, the study aimed to provide useful information to help policymakers understand the actual practice and improve their accommodation policies. We also examined what teachers thought of accommodations provided to ELL students in a math assessment. This investigation not only provided information on teachers' understanding of the accommodations in a small sample of schools, but also draws attention to important factors to consider for the appropriate use of accommodations.

Prior to discussing the key findings of the study, it is important to note the nature of the study and its limitations. Although the study was concerned with the statewide policies and their implementation in practice, findings cannot be generalized to the entire states. Rather, it is a case study of self-reported perspectives of volunteer teachers from a small sample of schools where we explored some of the accommodation policy and practice issues using two states' contexts. Irrespective of the limitations of the study, however, the findings of the study raise important issues for the appropriate and valid use of accommodations for ELL students. We discuss some key findings (noted in bullet points) in relation to the three research questions (RQ) posited in this study.

RQ1. How varied are the state and school policies within a given state on the use of accommodations for ELL students in the state's large-scale mathematics assessment?

- *A considerable variation was found across the schools of this study in terms of accommodation decision makers, selection criteria, and the types of accommodations allowed in a state's math assessment. This variation may be due to limited guidelines, limited communication of guidelines, and/or limited resources.*

We first found that there was a general consensus between the two states' accommodation policies. Both states suggested that a decision-making process of accommodation uses should entail a team-basis and a selection of accommodations specific to individual students' needs. Both states also recommended that one of the accommodation selection criteria should involve consistency with classroom practice. That is, accommodations used should be ones with which students are familiar, and those with which students are unfamiliar should not be provided during the state assessment. These policies are consistent with the recommendations from previous research, suggesting that the two states

took research findings into consideration in making accommodation policies for ELL students.

However, the lack of detailed, operationalized guidelines raised a concern as some teachers who were even involved as a decision maker reported that they had little knowledge on any systematic criteria to use in making accommodation decisions. Although both states strongly recommended the selection of accommodations based upon students' needs, what sources teachers utilized to find the students' different needs were not specified in the state guidelines. For example, given teachers' opinions of the importance of considering students' spoken and written language proficiency in English, the state guideline can include the use of the subsections of the English language proficiency test results as one of the criteria to use.

A striking variation was in fact noted in the criteria that teachers and/or school administrators used in deciding the accommodations for individual ELL students. Previous studies reviewing the states' policies indicated that various criteria were used across states, including students' language proficiency, academic performance, instructional service, parental input, and teacher observation, to name a few (Rivera et al., 2006; Wolf, Kao, Griffin, et al., 2008). The present study found that this variation occurred within the state, and often within the same district. This result was partly due to the states' policies of allowing the local districts and schools to determine their own accommodation rules for their needs. The state policy of selecting accommodations on an individual-need basis was not followed in some schools. Some teachers reported that a "blanket" accommodation administration was inevitable regardless of the status of ELL students. They elaborated on logistical challenges and cited strained resources as reasons for the difficulty of providing tailored and individualized accommodations for each student. For instance, teachers selected the accommodations of reading aloud directions and extended time for all students because they could be easily implemented without requiring any additional resources.

During the interviews, teachers often hinted at how the constraints of resources influenced their accommodation practices. For instance, several teachers commented on the difficulty of acquiring bilingual dictionaries in every possible language for their diverse students. Teachers in one school district in State Y surmised that dictionaries were not permitted at all throughout their school district for this particular reason. Thus, while states listed a number of allowable accommodations, at the school level, a smaller set of accommodations were permitted. For instance, some schools decided not to allow reading aloud test items because of difficulty of grouping a small number of students in separate rooms with different teachers to read aloud.

- *Despite the varied practice of accommodation uses found at the school level, general patterns also emerged, reflecting state-specific policies.*

Although the results suggested that the accommodation policies and practices were varied among the schools in this study, it was evident that states' policies still had a clear impact on the accommodation uses in schools. State Y, on their public Web site, released an extensive accommodation manual for the testing year, which dealt with numerous aspects of accommodation decisions. One of the policy stipulations included a strict requirement for documenting individual accommodation plans for instruction and assessment with specific dates prior to the state testing. As a result, a recurring trend was observed in the aspects of the teachers' policy familiarity, accommodation decision-making, and accommodation data recording procedures: The sample math teachers in State Y tended to report more familiarity with accommodation policies for ELL students and more involvement in accommodation uses and data recording procedures, as compared to the sample State X math teachers. The absence of this requirement in State X seemed to lead to a greater communication gap between ELL and math teachers on the accommodation uses for the state math assessment, which can subsequently result in a gap between the instructional uses and testing uses of accommodations.

Another example was found in the different patterns of accommodation decision makers. State X accommodation document states that decision makers include "teacher or school administrator most familiar with students' ELA" whereas State Y document states "teacher primarily responsible for delivery of instruction in the content area being assessed." Our finding demonstrated that in State X sample schools, ELL teachers were prevalently reported as a sole decision maker whereas in State Y sample schools, both ELL and math teachers were reported as decision makers.

RQ2. How do teachers accommodate ELL students for their state's large-scale mathematics assessment? Particularly, how are the read-aloud and glossary accommodations used for ELL students in a state's mathematics assessment?

- *While some general patterns emerged in terms of most prevalently used accommodations, wide variation was also noted across schools in terms of the actual provision of accommodations.*

The most frequently used accommodations reported by the teachers of this study in both states were extended time and directions read aloud. This result suggests that the ease of implementation, that is, feasibility and practicality most likely played a key role in selecting accommodations. Extended time and read-aloud directions can be relatively easily provided

to all students without physically separating any specific ELL student, or requiring additional resources.

According to the survey respondents, the next frequently used accommodation were test administration by an ELL teacher and test administration in small group in both states. Although indirect linguistic support was more prevalently used than direct linguistic support among the surveyed schools, both survey and interview data indicated that multiple accommodations were often provided simultaneously. For instance, reading aloud the test was often used with test administration by an ELL teacher in small group. This multiple accommodation administration is interesting considering the previous research finding of the effectiveness of a combined use of accommodations such as glossary with extended time (Abedi et al., 2003). Empirical research on discovering the effective combination of accommodations for ELL students warrants continuous investigation to help the policymakers and practitioners establish an effective use of accommodations.

It should be also noted that the use of other types of accommodations varied widely depending on schools and teachers. The results showed that read aloud of the test was reportedly used by half of the schools in one district, for instance, posing the question why some other schools in the same district did not provide the accommodation. This finding, if indeed true, is alarming in that one should exercise caution when examining the accommodated test scores. One may assume that ELL students who received a testing accommodation are less proficient in the English language than ELL students who did not. However, the results of this study indicate that it is not a safe assumption. The implementation of accommodations could be largely dependent on individual schools' context and teachers' decisions aside from the student characteristics.

On a related note, we found that teachers reported different permitted accommodations for the state math assessment even within the same district and within the same school. Surprisingly, a number of teachers reported that they were not sure whether certain types of accommodation were allowable for the state math assessment such as reading aloud the test in students' native language, glossary, and dictionary. Teachers' varied knowledge and familiarity with the policies seemed to have an effect on limiting the types of accommodations that they actually provided during the state math assessment.

- *There was lack of standardized ways of implementing read-aloud and dictionary/glossary accommodations across schools.*

A closer examination of the implementation of read aloud and dictionary/glossary raised some validity concerns including the comparability of accommodated test scores and

accessibility issues. The portion of the text being read aloud was inconsistent across teachers who reported that they performed the read aloud of the 2007–2008 state math assessment. Some of the inconsistency in the use of read aloud can be partly attributed to limited guidelines and training meetings.

The definition of each accommodation in the state policy documents was sometimes ambiguous and unclear without specific implementation procedures. For instance, directions read aloud is one of the most frequently stated accommodations in states' documents as well as from teachers interviews; however, which portion/text were considered as directions for a math assessment was not clearly defined anywhere. Despite the existence of a published script for reading aloud the test, some State Y teachers also had mixed responses about the portion of text being read. This result raises an issue of communicating the policy to teachers who administer the test with a script. This point will be discussed further later.

With respect to dictionary/glossary, unsystematic usage of this accommodation was also found. Again, this may be partly due to the lack of specific guidelines on the type of dictionary, approved/suggested list of existing dictionaries, and the provider/supplier of dictionaries. Teachers also point to the lack of resources. This is aligned with findings by Abedi et al. (2005), as mentioned previously, on the feasibility of implementing dictionaries. Interestingly, one of biggest gaps between the instructional and testing accommodations was found in the dictionary accommodation. Although many teachers indicated that they provided a dictionary during the state math assessment, a considerable number of teachers expressed that they seldom used a dictionary during math instruction. And even among math classrooms where dictionaries were available to students, teachers reported students seldom using them. Although reading aloud the problems was a common instructional strategy in math classroom, asking students to look up a word in a dictionary appeared to be an atypical strategy in math. This finding suggests again that teachers should be explicitly communicated and informed of the allowable accommodations for ELL students for math instruction and assessment and be encouraged to give ELL students more opportunities to use dictionaries in the classroom.

- *Lack of regular, systematic communication channels and training meetings for the use of accommodations may lead teachers to harbor misconceptions about the use of accommodations.*

As discussed above, the varied practice of the accommodation uses across schools is, to some extent, related to the fact that accommodations decisions were often made by individual teachers. The results of this study indicate that the information channel was not clearly

established across and within schools to communicate the use of accommodations as well as to keep track of accommodation record. While the variation of accommodation policies and practices across schools were inevitable due to the local decisions, the decisions should be made in a systematic way. In order to avoid the variation stemming from an unsystematic, random use of accommodations, both ELL and content teachers must be provided opportunities to engage in discussing the policies and practices of accommodations for ELL students.

RQ3. What are teachers' perceptions on the helpfulness of accommodations for ELL students?

- *Although there was mixed reaction to the helpfulness of a given accommodation, many teachers were cognizant of the possibility of different effects depending on students' characteristics.*

Teachers' perceptions on the helpfulness of accommodations for ELL students, obtained through both surveys and interviews, indicated mostly mixed degrees of helpfulness for specific accommodations. The helpfulness ratings obtained through the survey were roughly mid-point on average (on a scale of 1 to 4) for most of the accommodations. This suggests that there was no consistent consensus for any one particular accommodation, in terms of helpfulness. Interview results, which further probed the read-aloud and dictionary/glossary accommodations, gathered positive, negative, and mixed responses, with wider variation of responses for the dictionary/glossary.

One notable finding was that many teachers recognized that different individual students had different needs for accommodations, and thus it was difficult to evaluate the general helpfulness of accommodations. These reactions supported the state policies on individualized accommodations selection. Students' language proficiency either in English or in their native language was most frequently reported as a factor to consider the effective use of accommodations. There were contrasting thoughts about whether a given accommodation would be beneficial to relatively high or low English language proficient students. Teachers also pointed out the students' motivation and skills were factors in the accommodations' effectiveness. These opinions raise an important issue that the backgrounds of students and the contexts should be taken into consideration when investigating the effective types of accommodations.

- *Both direct and indirect support accommodations were highly regarded by teachers, with a preference for the use of combined accommodations.*

Although previous research suggested that linguistic modification or simplified English, by directly supporting the students' linguistic barriers, was one of the few effective types of accommodations (Abedi, Lord, & Hofstetter, 1998; Sireci et al., 2003), teachers reported that indirect linguistic support such as extended time and administration by an ELL teacher who is familiar with ELL student needs would reinforce the effective use of accommodations with direct linguistic support. Among the direct support accommodations, read aloud directions and test items were rated higher than dictionary/glossary. Again, further research on which accommodation would be more effective for the students still needs to be conducted.

Recommendations and Conclusions

As stressed earlier, the purpose of the study was not to generalize the findings to the entire states, but to explore critical accommodation issues in practice within two state contexts. The small sample of schools and districts and the teachers participated in this study was not representative of each state given that the participation of the study was voluntary.

Yet, the findings from this study raised some important validity issues to consider in using the accommodations for ELL students. The wide range of variation found between the policies and practices even within this sample of the study draws attention to the comparability issue of accommodated and non-accommodated test scores among ELL students. Furthermore, it brings up equity and accessibility issues in that some students were excluded from receiving accommodations for reasons unrelated to their needs. For instance, some schools could not afford to provide individualized accommodations due to lack of resources. We acknowledge that the states in our study had made great, initial efforts to provide a systematic, principled way of using accommodations for ELL students, separate from students with disabilities. For instance, states created ELL accommodation documents including a list of allowable accommodations and explicit forms to keep track of the accommodation uses. However, we observed that the state policies were not fully implemented by the schools of this study. One promising change that we observed was State Y's continual modification of their ELL accommodations manual for their state test, which was updated for 2008–2009, the year after this study was conducted.

In this report, we discussed a number of possible reasons for teachers' reported difficulty in keeping up with state policies: (a) lack of clear guidelines in making accommodation decisions and implementing accommodations in a standardized way; (b) lack of or limited opportunities to receive information and communicate on accommodations among decision makers and teachers; and (c) limited resources and logistical difficulties.

Despite the study's limitation, we believe that findings suggest some initial, relatively easy steps that state policymakers and practitioners could implement to support the valid use of accommodations in their schools:

- States should provide a clear, operationalized guidelines (such as in a comprehensive manual) on the use of accommodations including the definition, selection criteria, allowable/prohibited accommodations, and details of the implementation procedures. For example, read aloud of directions should have definitions of "directions" and provide examples of text for the specific content assessment. Selection criteria should include a list of sources that teachers refer to. For example, the listening and reading sections of an English language proficiency test, native language proficiency, instructional experience consulted with content teachers can be specified in the guideline. As for the implementation procedure, read aloud, for example, can specify the portion of the text to be read aloud, the number of students to be in a room, a personnel to perform read aloud, etc.
- States or districts ought to monitor the use of guidelines regularly to ensure the adequate application of accommodation policies in practice.
- Regular professional development meetings should take place in order to communicate the policies and intended use of accommodations across the state, districts, and schools, as well as between ELL and content teachers.
- The types of accommodations provided to each individual student during the state's large-scale assessment should be accurately recorded and accessible to teachers as well as administrators. Establishing systematic recording practices for accommodations is essential for accurate reporting of results. Analyses of such data also can be an important source for evaluating the validity of accommodations as well as for monitoring, communicating, and improving accommodation policies and practices.

The intent of the study was to learn from the existing policies and practices to help policymakers in improving the accommodation guidelines and to inform practitioners of the current status of accommodation uses to consider important accommodation issues for ELL students. We hope the present report can be used as a resource to initiate dialogue among policymakers and practitioners. Additionally, we hope that the study findings highlight the significance of examining practices when evaluating the validity of accommodations.

References

Abedi, J., Courtney, M., Mirocha, J., Leon, S., & Goldberg, J. (2005). *Language accommodation for English language learners in large-scale assessments: Bilingual dictionaries and linguistic modification* (CSE Tech. Rep. No. 666). Los Angeles: University of California, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Abedi, J., Courtney, M., & Leon, S. (2003). *Research-supported accommodation for English language learners in NAEP* (CSE Tech. Rep. No. 586). Los Angeles: University of California, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Abedi, J. Courtney, M., Leon, S., Kao, J. C. , & Azzam, T. (2006). *English language learners and math achievement: A study of opportunity to learn and language accommodation* (CSE Tech. Rep. No. 702). Los Angeles: University of California, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Abedi, J., Hofstetter, C., Baker, E., & Lord, C. (2001). *NAEP math performance and test accommodations: Interactions with student language background* (CSE Tech. Rep. No. 536). Los Angeles: University of California, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Abedi, J., Hofstetter, C., & Lord, C. (2004). Assessment accommodations for English language learners: Implications for policy-based empirical research. *Review of Educational Research, 74*(1), 1–28.

Abedi, J., Lord, C., & Hofstetter, C. (1998). *Impact of selected background variables on students' NAEP math performance* (CSE Tech. Rep. No. 478). Los Angeles: University of California, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (1999). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association.

Francis, D. J., Rivera, M., Lesaux, N., Kieffer, M., & Rivera, H. (2006). *Practical guidelines for the education of English language learners: Research-based recommendations for the use of accommodations in large-scale assessments*. Portsmouth, NH: RMC Research Corporation, Center on Instruction. Retrieved November 21, 2006, from http://www.centeroninstruction.org/files/ELL3-Assessments.pdf

Koenig, J. A., & Bachman, L. F. (2004). *Keeping score for all: The effects of inclusion and accommodation policies on large-scale educational assessments*. Washington, DC: The National Academies Press.

No Child Left Behind Act of 2001, Pub. L. No. 107-110, 115 Stat. 1425 (2002).

Kopriva, R. J., Emick, J. E., Hipolito-Delgao, C. P., & Cameron, C. A. (2007). Do proper accommodation assignments make a difference? Examining the impact of improved decision making on scores for English language learners. *Educational Measurement: Issues and Practice*, *26*(3), 11–20.

Martinez, J.-F., Bailey, A. L., Kerr, D., Huang, B. H., & Beauregard, S. (2009, April). *Measuring opportunity to learn and academic language exposure for English language learners in elementary science classrooms*. Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA.

Rivera, C., & Collum, E. (Eds.) (2006). *State assessment policy and practice for English language learners: A national perspective*. Mahwah, NJ: Lawrence Erlbaum.

Rivera, C., Collum, E., Shafer Willner, L., & Sia, J. K., Jr. (2006). An analysis of state assessment policies regarding the accommodation of English language learners. In C. Rivera & E. Collum (Eds.), *State assessment policy and practice for English language learners: A national perspective* (pp. 1–173). Mahwah, NJ: Lawrence Erlbaum.

Shafer Willner, L., Rivera, C., & Acosta, B. (2008). *Descriptive study: State assessment policies for accommodating English language learners.* Arlington, VA: The George Washington University Center for Equity and Excellence in Education.

Sireci, S. G., Li, S., & Scarpati, S. (2003). *The effects of test accommodations on test performance: A review of the literature* (Center for Educational Assessment Research Report. No. 485). Amherst, MA: University of Massachusetts, School of Education.

Wolf, M. K., Kao, J., Griffin, N., Herman, J. L., Bachman, P., Chang, S. M., et al. (2008). *Issues in assessing English language learners: English language proficiency measures and accommodation uses—Practice review* (CRESST Report 732). Los Angeles: University of California, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Wolf, M. K., Kao, J., Herman, J., Bachman, L. F., Bailey, A., Bachman, P. L., et al. (2008). *Issues in assessing English language learners: English language proficiency measures and accommodation uses—Literature review* (CRESST Report 731). Los Angeles: University of California, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Wolf, M. K., Kim, J., Kao, J. C., & Rivera, N. M. (2009). *Examining the effectiveness and validity of glossary and read-aloud accommodations for English language learners in a math assessment* (CRESST Report 766). Los Angeles: University of California, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Appendix A

Summary Tables for Teacher Survey Responses

Background of Participating Teachers

Table A1

Teacher Assignment by State

Subject	State X (%)	State Y (%)
Math	29 (85.3)	74 (73.3)
ELL	5 (14.7)	27 (26.7)
Total	34 (100.0)	101 (100.0)

Table A2

Teachers Holding Certification Related to English as a Second Language

Certificate	State X (%)	State Y (%)
Yes	6 (17.6)	26 (25.7)
No	28 (82.4)	75 (74.3)
Total	34 (100.0)	101 (100.0)

Table A3

Number of Years Teaching Students with ELL Classes

Experience	State X (%)	State Y (%)
< 2 years	7 (20.6)	18 (17.8)
3–5 years	7 (20.6)	34 (33.7)
6–10 years	8 (23.5)	28 (27.7)
11–24 years	11 (32.4)	20 (19.8)
> 25 years	1 (2.9)	1 (1.0)
Total	34 (100.0)	101 (100.0)

Note. Includes part-time teaching.

Table A4

Number of Years Teaching Math

Experience	State X (%)	State Y (%)
< 2 years	7 (20.6)	27 (26.7)
3–5 years	15 (44.1)	39 (38.6)
6–10 years	6 (17.6)	19 (18.8)
11–24 years	6 (17.6)	11 (10.9)
> 25 years	0 (0.00)	2 (2.0)
Total	34 (100.0)	101 (100.0)

Note. Includes part-time teaching.

Table A5

Teachers Who are Proficient in a Language Other Than English

Bilingual	State X (%)	State Y (%)
Yes	6 (14.6)	26 (25.7)
No	28 (82.4)	75 (74.3)
Total	34 (100.0)	101 (100.0)

Professional Development Experience

Table A6

Hours in Staff Development for Teaching Math Attended by Teachers During the 2007–2008 School Year by State and Teacher Type

	State X			State Y		
Experience	Math (%)	ELL (%)	Total (%)	Math (%)	ELL (%)	Total (%)
None	0 (0.0)	0 (0.0)	0 (0.0)	2 (11.8)	15 (88.2)	17 (100.0)
< 6 hours	4 (80.0)	1 (20.0)	5 (100.0)	14 (73.7)	5 (26.3)	19 (100.0)
6–15 hours	7 (70.0)	3 (30.0)	10 (100.0)	18 (75.0)	6 (25.0)	24 (100.0)
16–35 hours	17 (100.0)	0 (0.0)	17 (100.0)	19 (95.0)	1 (5.0)	20 (100.0)
> 35 hours	11 (91.7)	1 (8.3)	12 (100.0)	21 (100.0)	0 (0.0)	21 (100.0)

Note. Includes professional meetings and conferences, workshops, and college or university courses in math or teaching of math.

Table A7

Hours in Staff Development for Teaching English as a Second Language Attended by Teachers during the 2007–2008 School Year by State and Teacher Type

	State X			State Y		
Experience	Math (%)	ELL (%)	Total (%)	Math (%)	ELL (%)	Total (%)
None	9 (100.0)	0 (0.0)	9 (100.0)	15 (100.0)	0 (0.0)	15 (100.0)
< 6 hours	13 (100.0)	13 (100.0)	13 (100.0)	35 (100.0)	8 (100.0)	43 (100.0)
6–15 hours	3 (75.0)	1 (25.0)	4 (100.0)	11 (55.0)	9 (45.0)	20 (100.0)
16–35 hours	3 (100.0)	0 (0.0)	3 (100.0)	7 (50.0)	7 (50.0)	14 (100.0)
> 35 hours	1 (20.0)	4 (80.0)	5 (100.0)	6 (66.7)	3 (33.3)	9 (100.0)

Note. Includes professional meetings and conferences, workshops, and college or university courses in English as a Second Language.

Accommodation Selection Criteria

Table A8

Accommodation Selection Criteria by State and by Teacher Type

Criteria	State X			State Y		
	Math (%)	ELL (%)	Total (%)	Math (%)	ELL (%)	Total (%)
ELP level only	4 (100.0)	0 (0.0)	4 (100.0)	8 (72.7)	3 (27.3)	11 (100.0)
Student IEP only	5 (100.0)	0 (0.0)	5 (100.0)	7 (100.0)	0 (0.0)	7 (100.0)
ELP level & student IEP	3 (75.0)	1 (25.0)	4 (100.0)	14 (70.0)	6 (30.0)	20 (100.0)
ELP level & student IEP & state test score	2 (100.0)	0 (0.0)	2 (100.0)	1 (33.3)	2 (66.7)	3 (100.0)
ELP level & other	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	5 (100.0)	5 (100.0)
ELP level & student IEP & other	0 (0.0)	0 (0.0)	0 (0.0)	5 (100.0)	1 (50.0)	6 (100.0)
ELP level & student IEP & state test score & other	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	1 (50.0)	2 (100.0)
Student IEP & other	1 (100.0)	0 (0.0)	1 (100.0)	4 (44.4)	5 (55.6)	9 (100.0)
Blanket accommodation	1 (25.0)	3 (75.0)	4 (100.0)	3 (60.0)	2 (40.0)	5 (100.0)
Other only	0 (0.0)	0 (0.0)	0 (0.0)	7 (77.8)	2 (22.2)	9 (100.0)
Don't know	7 (87.5)	1 (12.5)	8 (100.0)	23 (100.0)	0 (0.0)	23 (100.0)

Note. Other criteria include: Instructional uses, teacher recommendations, teacher observations, based on individual student need, performance on other assessments, other types of educational plans, or based on what students received the prior year, or anything that is allowable by the state.

Teacher Familiarity with School Accommodation Policies

Table A9

Familiarity with Accommodation Policies by State and Teacher Type

	State X		State Y	
Familiarity	Math (%)	ELL (%)	Math (%)	ELL (%)
Familiar/somewhat familiar	14 (70.0)	21 (95.5)	17 (89.5)	16 (100.0)
Not familiar	6 (30.0)	1 (4.5)	2 (10.5)	0 (0.0)
Total	20 (100.0)	22 (100.0)	19 (100.0)	16 (100.0)

Accommodation Decision Makers

Table A10

Decision Makers for Selecting Accommodations by State

Decision Maker	State X (%)	State Y (%)
ELL teacher only	7 (25.9)	9 (9.1)
Math teacher only	0 (0.0)	7 (7.1)
ELL & Math team	4 (14.8)	53 (53.5)
ELL & other team	2 (7.4)	2 (2.0)
Math & other team	1 (3.7)	6 (6.1)
Principal only	1 (7.4)	1 (1.0)
Other team	1 (3.7)	1 (1.0)
Other single source	0 (0.0)	3 (3.0)
Don't know	10 (37.0)	17 (17.2)
Total	27 (100.0)	99 (100.0)

Note. ELL & Math team includes both math and ELL teachers. ELL & other team and Math & other team include some personnel and ELL teacher, some personnel and math teacher, respectively. Other includes special education teacher, testing coordinator, assistant principal, district personnel, parent, and student.

Accommodations Permitted and Used for State Math Assessment

Table A11

Permitted and Used Accommodations for the State Math Assessment in State X.

	Permitted				Used			
Accommodation	Yes (%)	No (%)	Not sure (%)	Total (%)	Yes (%)	No (%)	Not sure (%)	Total (%)
Extended time	27 (79.4)	2 (5.9)	5 (14.7)	34 (100.0)	22 (66.7)	6 (18.2)	5 (15.2)	33 (100.0)
Individually administered	12 (35.3)	2 (5.9)	14 (41.1)	34 (100.0)	5 (16.1)	14 (45.1)	12 (38.7)	31 (100.0)
Small group	16 (47.1)	7 (20.6)	11 (32.4)	34 (100.0)	13 (41.9)	8 (25.8)	10 (32.6)	31 (100.0)
Separate location	18 (52.9)	8 (23.5)	8 (23.5)	34 (100.0)	14 (46.7)	10 (33.3)	6 (20.0)	30 (100.0)
Administered by ELL teacher	22 (78.6)	0 (0.0)	6 (21.4)	28 (100.0)	18 (69.2)	1 (3.8)	7 (26.9)	26 (100.0)
Read-aloud directions	24 (70.6)	6 (17.6)	4 (11.8)	34 (100.0)	18 (58.1)	7 (22.6)	6 (19.4)	31 (100.0)
Read-aloud items	17 (50.0)	7 (20.6)	10 (29.4)	34 (100.0)	14 (45.2)	8 (26.7)	9 (30.0)	31 (100.0)
Read-aloud items in native language	4 (11.8)	17 (50.0)	13 (38.2)	34 (100.0)	3 (9.7)	16 (51.6)	12 (38.7)	31 (100.0)
Glossary	9 (26.5)	13 (38.2)	12 (35.3)	34 (100.0)	4 (13.3)	15 (50.0)	12 (40.0)	31 (100.0)
Dictionary[a]	10 (35.7)	6 (21.4)	12 (42.9)	28 (100.0)	9 (36.0)	4 (16.0)	12 (48.0)	25 (100.0)
Electronic translator	2 (5.9)	16 (47.1)	16 (47.1)	34 (100.0)	1 (3.2)	16 (51.6)	14 (45.2)	31 (100.0)

Note. *In State X, the language of dictionary (i.e., bilingual, English) was not specified in the survey.

Table A12

Permitted and Used Accommodations for the State Math Assessment in State Y

	Permitted				Used			
Accommodation	Yes (%)	No (%)	Not sure (%)	Total (%)	Yes (%)	No (%)	Not sure (%)	Total (%)
Extended time	89 (90.8)	1 (1.0)	8 (8.2)	98 (100.0)	77 (78.6)	4 (4.1)	17 (17.3)	98 (100.0)
Individually administered	58 (61.1)	11 (11.6)	26 (27.4)	95 (100.0)	39 (42.9)	21 (23.1)	31 (34.1)	91 (100.0)
Small group	81 (82.7)	5 (5.1)	12 (12.2)	98 (100.0)	73 (74.5)	9 (9.2)	16 (16.3)	98 (100.0)
Separate location	72 (75.0)	5 (5.2)	19 (19.8)	96 (100.0)	66 (69.5)	7 (7.4)	22 (23.2)	95 (100.0)
Administered by ELL teacher	72 (74.2)	4 (4.1)	21 (21.6)	97 (100.0)	60 (63.2)	12 (12.6)	23 (4.2)	95 (100.0)
Read-aloud directions	81 (82.7)	1 (1.0)	16 (16.3)	98 (100.0)	70 (72.9)	3 (3.1)	23 (24.0)	96 (100.0)
Read-aloud items	66 (68.8)	9 (9.4)	21 (21.9)	96 (100.0)	52 (55.3)	12 (12.8)	30 (31.9)	94 (100.0)
Read-aloud items in native language	27 (28.1)	22 (22.9)	47 (49.0)	96 (100.0)	16 (17.0)	33 (35.1)	45 (47.9)	94 (100.0)
Glossary	8 (8.4)	38 (40.0)	49 (51.6)	95 (100.0)	6 (6.5)	47 (51.1)	39 (42.4)	92 (100.0)
Dictionary	8 (8.4)	45 (47.4)	42 (44.2)	95 (100.0)	5 (5.4)	50 (53.8)	38 (40.9)	93 (100.0)
Bilingual dictionary	30 (31.6)	22 (23.2)	43 (45.3)	95 (100.0)	23 (25.0)	30 (32.6)	39 (42.4)	92 (100.0)
Electronic translator	9 (4.5)	42 (44.2)	44 (46.3)	95 (100.0)	4 (4.3)	53 (57.0)	36 (38.7)	93 (100.0)

Accommodations Used in Classroom Assessments

Table A13

Accommodation Used in Classroom Assessments in State X

Accommodation	Never (%)	1–2 times a year (%)	Once a month (%)	Once a week – every day (%)	Total (%)	Mean (*SD*)[a]
Extended time	0 (0.0)	0 (0.0)	8 (29.6)	19 (70.4)	27 (100.0)	4.37 (1.18)
Individually administered	14 (51.9)	5 (18.5)	3 (11.1)	5 (18.5)	27 (100.0)	1.96 (1.19)
Small group	14 (51.9)	5 (18.5)	3 (11.1)	5 (18.5)	27 (100.0)	2.00 (1.27)
Read-aloud directions	3 (11.1)	9 (33.3)	1 (3.7)	14 (51.9)	27 (100.0)	3.37 (1.67)
Read-aloud items	8 (29.6)	4 (14.8)	1 (3.7)	14 (51.9)	27 (100.0)	3.00 (1.66)
Read-aloud items in native language	22 (81.5)	3 (11.1)	1 (3.7)	1 (3.7)	27 (100.0)	1.33 (0.88)
Glossary	12 (35.4)	2 (7.4)	5 (18.5)	8 (29.6)	27 (100.0)	2.59 (1.76)
Dictionary[b]	19 (70.4)	0 (0.0)	1 (3.7)	7 (25.9)	27 (100.0)	2.22 (2.00)
Electronic translator	24 (92.3)	1 (3.8)	1 (3.8)	0 (0.0)	26 (100.0)	1.30 (1.03)

[a]Ratings of 4 (*once a week*) to 6 (*everyday*) were similar and grouped together for report purposes. Mean was computed based on a scale of 1 (*never*) to 6 (*everyday*).

[b]Language of dictionary was unspecified in State X.

Table A14

Accommodations Used in Classroom Assessments in State Y

Accommodation	Never (%)	1–2 times a year (%)	Once a month (%)	Once a week – every day[a] (%)	Total (%)	Mean[b] (*SD*)
Extended time	2 (2.9)	5 (7.1)	35 (50.0)	28 (31.6)	70 (100.0)	3.51 (1.14)
Individually administered	28 (40.0)	21 (30.0)	13 (18.6)	8 (11.4)	70 (100.0)	2.01 (1.03)
Small group	22 (31.4)	20 (28.6)	20 (28.6)	8 (11.4)	70 (100.0)	2.26 (1.15)
Read-aloud directions	8 (11.4)	13 (18.6)	20 (28.6)	29 (41.4)	70 (100.0)	3.37 (1.53)
Read-aloud items	17 (24.3)	15 (21.4)	17 (24.3)	21 (30.0)	70 (100.0)	2.79 (1.47)
Read-aloud items in native language	59 (85.5)	5 (7.2)	4 (5.8)	1 (1.4)	69 (100.0)	1.23 (0.62)
Glossary	41 (59.4)	11 (15.9)	12 (17.4)	5 (7.1)	69 (100.0)	1.78 (1.51)
Bilingual dictionary	56 (81.2)	3 (4.3)	4 (5.8)	6 (8.6)	69 (100.0)	1.51 (1.23)
Dictionary	52 (75.4)	6 (8.7)	4 (5.8)	7 (10.0)	69 (100.0)	1.65 (1.41)
Electronic translator	66 (94.3)	1 (1.4)	2 (2.9)	1 (1.4)	70 (100.0)	1.14 (0.69)

[a]Ratings of 4 (*once a week*) to 6 (*everyday*) were similar and grouped together for report purposes.

[b]Mean was computed based on a scale of 1 (*never*) to 6 (*everyday*).

Accommodation Used During Instructional Tasks in Math

Table A15

Accommodations used During Instructional Tasks in Math in State X

Accommodation	Never (%)	1–2 times a year (%)	Once a month (%)	Once a week – every day (%)	Total (%)	Mean (*SD*)[a]
Extended time	1 (4.8)	0 (0.0)	0 (0.0)	20 (80.0)	21 (100.0)	5.33 (0.91)
Work one-on-one with teacher	3 (11.1)	3 (11.1)	4 (14.8)	17 (63.0)	27 (100.0)	3.78 (1.50)
Small group	1 (3.7)	2 (7.4)	6 (22.2)	18 (66.7)	27 (100.0)	4.07 (1.30)
Read-aloud items	1 (5.0)	2 (10.0)	0 (0.0)	17 (85.0)	20 (100.0)	4.85 (1.31)
Read-aloud items in native language	10 (47.6)	4 (19.0)	0 (0.0)	7 (33.3)	21 (100.0)	2.10 (1.34)
Glossary	8 (29.6)	4 (14.8)	2 (7.4)	13 (48.1)	27 (100.0)	3.11 (1.78)
Dictionary[b]	11 (52.4)	3 (14.3)	1 (4.8)	6 (28.6)	21 (100.0)	2.29 (1.65)
Electronic translator	18 (90.0)	1 (5.0)	1 (5.0)	0 (0.0)	20 (100.0)	1.15 (0.49)

[a]Ratings of 4 (*once a week*) to 6 (*everyday*) were similar and grouped together for report purposes. Mean was computed based on a scale of 1 (*never*) to 6 (*everyday*).

[b]Language of dictionary was unspecified in State X.

Table A16

Accommodations used During Instructional Tasks in Math State Y

Accommodation	Never (%)	1–2 times a year (%)	Once a month (%)	Once a week – every day[a] (%)	Total (%)	Mean[b] (*SD*)
Extended time	1 (1.5)	2 (3.1)	5 (7.7)	57 (87.7)	65 (100.0)	4.74 (1.16)
Work one-on-one with teacher	4 (6.1)	6 (9.1)	7 (10.6)	49 (71.0)	66 (100.0)	4.12 (1.39)
Small groups	0 (0.0)	0 (0.0)	2 (3.0)	64 (97.0)	66 (100.0)	5.24 (0.70)
Read-aloud items	0 (0.0)	1 (1.5)	3 (4.5)	62 (94.0)	66 (100.0)	5.42 (0.91)
Read-aloud items in native language	53 (81.5)	5 (7.7)	2 (3.1)	5 (7.7)	65 (100.0)	1.42 (1.03)
Glossary	14 (21.5)	13 (20.0)	11 (16.9)	15 (41.5)	65 (100.0)	3.22 (1.72)
Bilingual dictionary	37 (54.4)	9 (13.2)	8 (11.8)	14 (20.6)	68 (100.0)	2.22 (1.68)
Dictionary	25 (38.5)	14 (21.5)	12 (18.5)	14 (21.5)	65 (100.0)	2.46 (1.61)
Electronic translator	52 (89.7)	1 (1.7)	1 (1.7)	4 (6.9)	58 (100.0)	1.36 (1.20)

[a]Ratings of 4 (*once a week*) to 6 (*everyday*) were similar and grouped together for report purposes.

[b]Mean was computed based on a scale of 1 (*never*) to 6 (*everyday*).

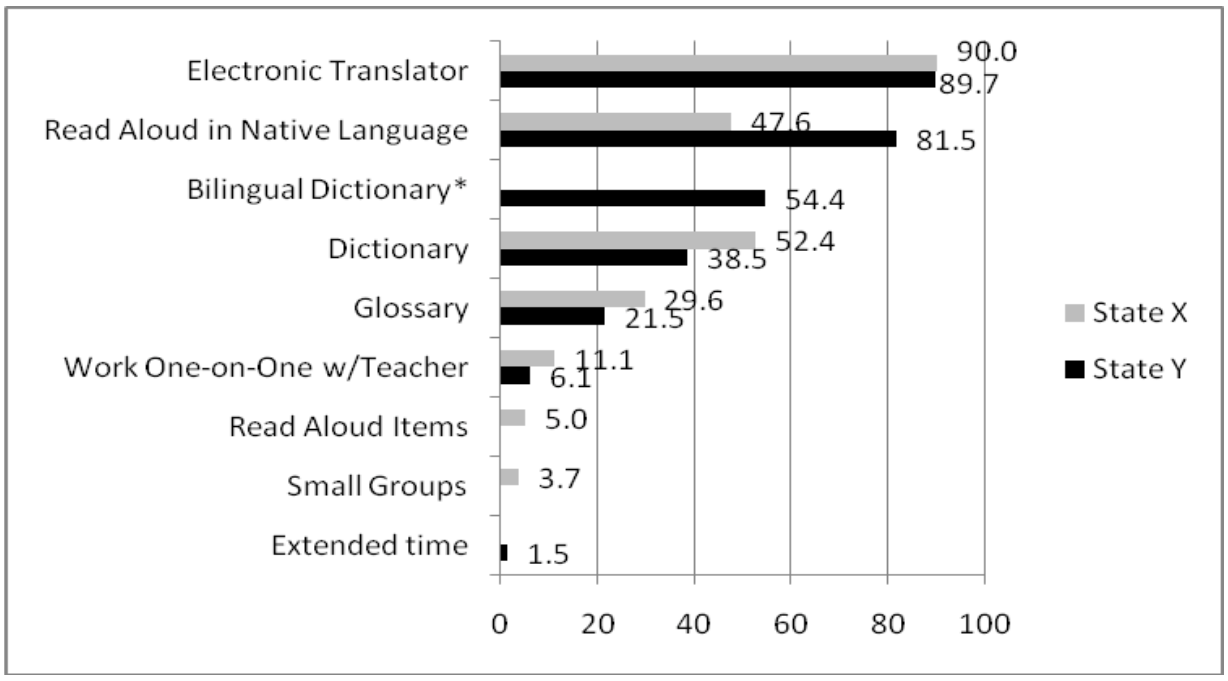

Figure A1. Percent of teachers reporting "Never" on providing accommodation strategies for ELL students in Grade 8 math to use to complete tasks or items.

*State X did not have *bilingual dictionary* as an answer choice, only *dictionary*. State Y teachers had both bilingual dictionary and dictionary choices.

The Use of Dictionary on Accommodation on State Math Assessments

Table A17

Teachers who Administered Dictionary Accommodation for Math Assessment by State and Teacher Type

	State X		State Y	
Administered	Math (%)	ELL (%)	Math (%)	ELL (%)
Yes	3 (23.1)	3 (100.0)	3 (33.3)	14 (60.9)
No	10 (76.9)	0 (0.0)	6 (66.7)	9 (39.1)
Total	13 (100.0)	3 (100.0)	9 (100.0)	23 (100.0)

The Use of Read Aloud Accommodation on State Math Assessments

Table A18

Teachers Who Administered Read Aloud of Math Assessment by Teacher Type

Administered	Math (%)	ELL (%)
Yes	6 (18.8)	21 (75.0)
No	26 (81.3)	7 (25.0)
Total	32 (100.0)	28 (100.0)

Table A19

Portions of Text That Teachers Read Aloud by State and Teacher Type

Portion	State X			State Y		
	Math (%)	ELL (%)	Total (%)	Math (%)	ELL (%)	Total (%)
Directions only	3 (42.9)	0 (0.0)	3 (30.0)	2 (50.0)	3 (15.8)	5 (21.7)
Directions & test questions	1 (14.3)	0 (0.0)	1 (10.0)	0 (0.0)	3 (15.8)	3 (13.0)
Directions, test questions, & answer choices	2 (28.6)	3 (100.0)	5 (50.0)	1 (25.0)	7 (36.8)	8 (34.8)
Directions & test questions, but no numbers/symbols	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (5.3)	1 (4.3)
Directions, test questions, answer choices, but no numbers/symbols	0 (0.0)	0 (0.0)	0 (0.0)	1 (25.0)	2 (10.5)	3 (13.0)
Directions, test questions, answer choices, & some numbers/symbols	1 (14.3)	0 (0.0)	1 (10.0)	0 (0.0)	1 (5.3)	1 (4.3)
Directions, test questions, answer choices, & other	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (5.3)	1 (4.3)
Directions, test questions, answer choices, some numbers/symbols, & other	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (5.3)	1 (4.3)
Total	7 (100.0)	3 (100.0)	10 (100.0)	4 (100.0)	19 (100.0)	23 (100.0)

Teachers' Perception on Helpfulness of Accommodations

Table A20

Teachers' Rating on Helpfulness of Accommodations for Math Assessment by State, Mean and Standard Deviation

Accommodation	State X			State Y		
	n	Mean	*SD*	*n*	Mean	*SD*
Extended time	27	3.33	0.78	95	2.83	0.87
Individually administered	27	2.59	0.97	76	2.75	0.87
Small group	28	2.75	0.84	90	2.99	0.84
Administered by an ELL teacher	28	3.21	0.88	89	2.96	0.92
Read-aloud directions	28	3.11	0.88	90	2.91	0.84
Read-aloud items	28	3.00	0.98	82	2.71	0.94
Read-aloud items in native language	27	2.89	1.12	60	2.92	1.01
Glossary	27	2.48	0.85	54	2.02	0.94
Dictionary	28	2.61	0.96	55	1.85	0.87
Bilingual dictionary[a]	–	–	–	64	2.36	0.88
Electronic translator	27	2.48	1.22	52	2.10	1.03

Note. Teachers rated items on a scale of 1 (*not very helpful*) to 4 (*extremely helpful*).

[a]Language of dictionary was unspecified in State X.