Participation Rates and Review of Research on Kansas Testing Accommodations

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Abstract

In response to questions raised by the Kansas Technical Advisory Committee, the recent empirical literature was reviewed for information about testing accommodations commonly used on the Kansas state assessments. The most frequently used accommodation was oral presentation of test items. This accommodation has been studied fairly extensively over the past decade. The literature review produced 18 studies that found support for this accommodation for some disadvantaged or at-risk groups, such as students with disabilities or those with poor reading skills, over and above any benefits provided to average student groups. Four additional studies found no differential benefit for at-risk students or equal benefits for all students. One of these included a meta-analysis of other studies and concluded that reading test items aloud is potentially helpful to younger students but has no benefit for older students. Five studies examined the psychometric properties of tests administered with and without a read-aloud accommodation. Of those studies, the three that used analysis of factor stability found no threats to score comparability with accommodation tests, while two that used DIF analysis found significant differences between accommodated and unaccommodated tests. The preponderance of the literature favors the use of this accommodation for students who need it and supports score comparability. The literature review is preceded by a summary of participation rates for this and other common accommodations on the Kansas state assessments.

Introduction

This summary of accommodations participation rates and relevant literature review are intended to address questions raised by the Kansas Technical Advisory Committee (TAC) in February, 2009, regarding the appropriate use of accommodations on Kansas assessments. While the original accommodations questions were posed about accommodations on the science assessment, this review is not restricted to science. The majority of empirical studies related to the read-aloud accommodation used in Kansas addresses oral presentation of mathematics test items with other subjects occasionally included.

In this review, Kansas accommodation participation rates for both the general assessment and Kansas Assessment of Modified Measures (KAMM) will be summarized. Science assessments from 2008 are included as they were the original source of questions about accommodation participation rates. Participation rates for the 2009 Reading, Math, and Science assessments are included. Following a discussion of the accommodations is a literature review of empirical studies published in peer reviewed journals about the most frequent accommodations used in Kansas.

Accommodations Permitted in Kansas

Accommodations used on the 2009 Kansas state assessments in reading, mathematics, and science are listed in Table 1 and numbered according to their Kansas codes. Tables showing the actual numbers and percentages for each subject, grade, and accommodation are attached to this document as Appendices A through H.

Table 1. Accommodations used in Kansas in 2009.

Kansas Code	Description of Accommodation	Type of Accommodation
0.	if a separate, quiet, or individual setting is provided	Setting
1.	if frequent breaks during the assessment are provided	Setting
2.	if a Braille edition of the assessment is provided	Presentation
3.	if a large print edition of the assessment is provided	Presentation
4.	if a student used visual magnification	Presentation
5.	if a student dictated his/her answers to a scribe	Response
6.	if the assessment is read to the student	Presentation
7.	if student used a communication device	Assistive Devices
8.	if the student received read-aloud accommodation in a group	Presentation
9.	if some other accommodation is used	
10.	if directions were signed to student	Presentation
11.	if student signed responses	Response
12.	if student used a Braille writer or slate and stylus	Response
13.	if KAMM assessment given using paper and pencil*	Presentation
14.	if the student read the assessment to a tape recorder and played it back to himself	
15.	if student used a translation dictionary	

*This accommodation was new in 2009; the previous accommodation for this code was additional time.

The two read-aloud accommodation options (#6 and #8) were not allowed for the reading passages on either the general assessment or the KAMM. Guidelines for use of the read-aloud accommodation and forms to be completed when it is used are available on the website of the Kansas State Department of Education (KSDE). Professional development materials regarding the use of the read-aloud accommodation are also available on the website. In an attempt to make use of the read-aloud accommodation more standardized, this year a script was provided for all forms of the general assessment and KAMM where the read-aloud accommodation could be used. Districts also had the option of purchasing a computer voice to be used for the read-aloud accommodation. The read-aloud provided by the computer voice and script were exactly matched, and participation rates for these two options have been combined.

Calculator use is not an accommodation on the Kansas General and KAMM Math Assessments. Both the General Assessment and KAMM state math assessments are arranged so that any student may use a calculator on all but one section, which is specifically designated as a non-calculator section. Use of a calculator is not considered to be an accommodation, but rather an appropriate mathematical skill for the sections on which calculators are allowed. Use of a

calculator on the non-calculator section is not allowed, and, if used, will result in the student counted as not having been tested.

Accommodation Participation Rates

Science 2008

The most commonly used accommodations on science assessments in 2008 are shown in Table 2. All other accommodations were used by 1% or fewer of students with disabilities (SWD). The use of all accommodations was higher by SWD than by students without disabilities (SWOD).

Table 2. Participation rates for high-frequency accommodations on science tests in spring 2008 by test and student group.

Description of Accommodation	Range of use by SWOD on general assessments	Range of use by SWD on general assessments	Range of use by SWD on KAMM
Quiet/individual setting	0% to 4%	25% to 38%	30% to 46%
Frequent breaks	0% to 1%	7% to 16%	10% to 25%
Dictate answers to scribe	0%	1% to 2%	2% to 4%
Read aloud to individual student	0% to 2%	15% to 25%	26% to 45%
Read aloud to group of students	0% to 2%	7% to 14%	6% to 15%
Other accommodations	0%	1% to 2%	2% to 3%

Reading, Math and Science 2009

The most commonly used accommodations on reading, mathematics and science assessments in 2009 are shown in Table 3. All other accommodations were used by 1% or fewer of students with disabilities (SWD).

Table 3. Participation rates for high-frequency accommodations on reading, mathematics, and science tests in spring 2009 by test and student group.

Description of Accommodation	Range of use by SWOD on general assessments	Range of use by SWD on general assessments	Range of use by SWD on KAMM
Quiet/individual setting	1% to 8%	25% to 48%	28% to 62%
Frequent breaks	0% to 2%	10% to 26%	10% to 34%
Dictate answers to scribe	0%	1% to 2%	1% to 4%
Read aloud to individual student	0% to 6%	16% to 36%	27% to 55%
Read aloud to group of students	0% to 4%	4% to 17%	6% to 24%
Other accommodations	0%	0% to 3%	1% to 5%

The most heavily used presentation accommodations include quiet or individual settings, frequent breaks, and reading test directions and test items aloud to students either individually or in small groups. Reading aloud is not permitted as a testing accommodation on reading passages on reading tests, so these read-aloud figures refer to reading test items and answer choices aloud on reading tests as well as math tests.

It is interesting to note that reading aloud to groups of students was used as frequently by SWD on the 2008 general science assessments as it was on the KAMM science assessments. This raises the question of whether this was simply an easier accommodation for teachers to give to groups of SWD rather than to individual students, and thus the choice of accommodation was made on the basis of teacher preference rather than student need.

Reading aloud was also a fairly common accommodation for SWOD, a group for whom it should not have been necessary. In some cases, over 2% of SWOD obtained this accommodation on the 2008 science tests and up to 6% of students obtained it in 2009. This rate is definitely a red flag about the possible misuse of this accommodation.

It is also interesting to see that a quiet or individual setting was used fairly frequently, for up to 4.5% of nondisabled students, on the general science assessments. This accommodation would probably not be considered to interfere with the construct validity of the assessment so should not raise objections. Furthermore, this accommodation would be reasonable for individuals with attention or emotional difficulties who have no need for special education services. Nevertheless, that amounts to a sizeable number of individuals without disabilities who chose (or were chosen) to be tested in a quiet or separate location.

Accommodation participation rates increased, in general, from 2008 to 2009. This is probably due to more accurate reporting as a result of stricter guidance from KSDE on the 2009 assessments. For the 2009 assessments, CETE attempted to verify the actual use of read-aloud accommodations by cross-checking the coding of those accommodations with requests for scripts and requests for audio tests, which require specific computer software to run the computer-generated voice. For these tables, audio test rates were added to the coded general assessment rates, so that option has been fully included. Additional codes were generated by CETE to represent students who had marked a read-aloud accommodation but who did not request a script and students who requested a script but did not have the corresponding accommodation coded. Interestingly, more students had the accommodation coded without obtaining a script (about 2.7% of all students) than the other way around (about 2.2%), suggesting that the error in the count for this accommodation was about one-half percent in favor of over-reporting. This is a reassuring indication of the accuracy of these coded accommodation participation rates.

Research on Test Accommodations

Several methods are used to determine whether test accommodations should result in score comparability with unaccommodated test administration. The first is evidence that only targeted students obtain an advantage from the accommodation while others do not. This type of outcome suggests that the accommodation is only effective when needed by an individual

student and does not provide an unfair advantage over students without the target condition because they would not benefit from the accommodation if it were available. Examples of these accommodations include eyeglasses, Braille test forms, or physical supports such as wheelchairs or headrests. Because of their individual nature, these accommodations are used consistently for instruction for individuals who need them and only by such individuals. Furthermore, they are usually responses to obvious physical and sensory disabilities and hence do not tend to raise questions about need (Phillips, 1994). They may not even be enumerated as accommodation options. These accommodations are usually not considered to change the construct being measured.

The premise that only students with specific conditions or characteristics should benefit from an accommodation is the concept of the interaction hypothesis (Sireci, Scarpati, & Li, 2005) or differential boost (Meloy, Deville, & Frisbie, 2002). An interaction between student group and accommodation versus no accommodation would suggest a greater advantage for targeted students using the accommodation than the advantage demonstrated for non-targeted students, if one exists. This argument has been applied to accommodations such as extended time that tends to benefit all students with more frequently demonstrated benefit to SWD and little effect on test score comparability (Sireci, Scarpati, & Li, 2005; Zenisky & Sireci, 2007). Extended time is less controversial when used with an accommodation like a Braille test form that takes longer to read than a print test form, but it becomes controversial when used by individuals whose disability is covert. Phillips (1994) pointed out that not only do claims of less visible disabilities, such as specific learning disabilities, create skepticism about their actual existence, but they also confound test performance in ways that are more complex than physical or sensory disabilities do. A boost for SWD greater than the improvement for SWOD becomes an argument that the accommodation mitigates the effect of the disability on test performance for students who need it.

Two additional methods for demonstrating score comparability involve psychometric analysis of test characteristics. If a test can be shown to measure the same construct in both accommodated and unaccommodated administrations one could argue that the accommodation did not interfere with or alter the constructs measured on the test. One demonstration of construct stability is to compare the factor structures of tests administered to populations with and without accommodations. Second, the analysis of DIF can be useful at both the item and the overall test level. At the item level, DIF analyses can be used to compare specific test items for populations of students. If an item shows DIF for a particular population of students without an accommodation in place, that population may be disadvantaged and accommodations may be necessary to reduce the disadvantage. Conversely, if DIF is not present for SWD, then they are not disadvantaged, as a group, on that item, and accommodations may not be warranted. When the overall number of items showing DIF increases when a test is administered with accommodations, it suggests that the accommodations are causing inequity.

This summary was not intended as an exhaustive review of the literature. All of the following studies were published in peer reviewed journals or were provided in reports produced by the National Center on Educational Outcomes or the National Center on Education Statistics. Dissertations, conference presentations, and non-peer-reviewed publications were not included.

Reading Aloud

Reading tests or test items aloud has been studied many times, sometimes with inconsistent results. The first 17 studies reviewed here sought to determine whether the accommodation was effective for the target group of students and provided evidence for a differential boost.

In an early study of 9th and 10th grade SWOD, students with middle and low reading ability scored better with a taped oral accommodation while high readers performed better without it (Harker & Feldt, 1993). In a study with 4th graders, Tindal, Heath, Hollenbeck, Almond, and Harniss (1998) found a significant interaction between group and test presentation when SWD obtained a boost from a read-aloud accommodation while SWOD did not.

Helwig, Rozek-Tedesco, Heath, Tindal, and Almond (1999) found that 4th graders with low mathematics and reading skills performed better on a video read-aloud version of a math test than 4th graders with good math skills, though the differences were small. On an individual item level, students with good math skills but weaker reading skills also obtained a benefit for a video read-aloud presentation of six linguistically difficult items. The score difference between the two presentations for the overall group of students was not significant, suggesting that the read-aloud accommodation achieved its intended benefit only when needed by subgroups of students and implying that the presentation didn't affect interpretation of the outcome of the assessment.

Johnson (2000) evaluated 115 4th grade students with and without disabilities on standard and accommodated math performance tests. SWD performed better with the reading accommodation while there were no differences for SWOD. There were no differences for either group when divided by reading ability.

Fuchs, Fuchs, Eaton, Hamlett, and Karns (2000) found that reading aloud was an effective accommodation for SWD on some CBM probes but not on a standardized assessment. They also found that teachers tended to provide many more accommodations than were necessary or helpful to SWD.

Kosciolek and Ysseldyke (2000) examined an audiocassette read-aloud accommodation for 32 3rd to 5th grade students on a reading test. Students enrolled in special education got a moderate and almost significant boost with the read-aloud version while general education students had a very small increase. Though the small sample size precluded findings of statistical significance, this outcome is an example of the differential boost effect. Special education students were more likely to state that they preferred the oral version while general education students typically said that they preferred to go at their own pace, which was faster than the audio version.

Elliott, Kratochwill and McKevitt (2001) administered performance items to students with and without disabilities to evaluate individual responses to packages of accommodations including extra time and reading directions and/or test items. Accommodations boosted the scores of SWD almost a full standard deviation compared to not having accommodations. Accommodations packages benefitted 75% of SWD but also 55% of SWOD. Since these were

mixed packages of accommodations, some of the resulting improvement in scores may have been due to extra time and encouragement as well as reading items aloud.

Helwig, Rozek-Tedesco and Tindal (2002) found that 4th and 5th graders with learning disabilities received a boost from oral administration of a math test on a video monitor while SWOD performed better on the standard administration. This outcome was not replicated at 7th grade, however, where there was no differential boost from the oral administration for SWD. There was no significant difference in overall scores from either presentation format at either elementary or middle school level, suggesting again that the oral presentation does not affect outcomes in general.

Weston (2003) compared the performance of students with and without disabilities on two forms of a mathematics assessment based on NAEP items, one with an oral reading accommodation and one without. Both groups of students showed increased scores with SWD benefiting most, with a significant interaction effect. For SWD, as their reading ability improved, the benefits from the accommodation decreased, while there was no relationship between reading ability and accommodation benefit for SWOD. SWD also showed greater gains on word problems than on computation problems.

Huynh, Meyer and Gallant (2004) investigated standard and oral presentation of a large-scale mathematics test. They used a retrospective analysis of state assessment data to compare three groups of 10th graders: SWD who took the oral version, SWD who took the standard version, and SWOD who took the standard version. They determined that a one-factor model fit all three groups, which is evidence that the construct being measured was the same in each case. They found that SWD who took the oral version outperformed SWD who took the standard version once several background characteristics, including math and reading ability, were controlled, and that the oral presentation provided a small but significant boost to the students with more severe disabilities. Furthermore, the SWD who took the standard test were disadvantaged when compared with SWOD, once background variables were controlled, suggesting that those students might have benefited from accommodations to equalize their performance.

Crawford and Tindal (2004) evaluated reading a reading comprehension test aloud for elementary students with the perspective that reading and listening comprehension both measure the unitary construct of comprehension. SWD, Title I students, and nondisabled students received both accommodated and unaccommodated test forms, with the reading accommodation presented by video along with the printed test materials. All students performed better with the video accommodation, and SWD received the largest boost. SWD obtained a large effect, SWOD a small effect, and Title I students almost no effect from the accommodation. This study demonstrated that SWD had the most to gain from an oral accommodation when the test construct of comprehension was not confounded with other tested content. Students with weak reading but adequate vocabulary and comprehension skills, gained presumably through other activities involving listening and experience, benefited from oral administration. The authors pointed out that young students who are developing reading skills are most likely to benefit from listening to content rather than reading, while the benefit of listening tends to go down with age.

Dolan, Hall, Banerjee, Chun, and Strangman (2005) found that computerized oral presentation helped learning disabled students significantly on long reading passages required on NAEP US History and Civics tests. The sample size was very small (9 students) and no SWOD were tested.

Fletcher et al. (2006) showed an interaction effect for a package of accommodations for students with reading disabilities on a reading comprehension test from the Texas Assessment of Knowledge and Skills (TAKS). Accommodations included multiple test sessions, reading of proper nouns, and reading of comprehension stems. These accommodations were designed to mitigate the effects of poor reading decoding on reading comprehension without providing oral reading of entire passages. Students with reading disabilities obtained a large effect from the accommodations while students without reading problems showed no benefit. This study demonstrated the potential benefits of controlled oral presentation on tests that directly assess reading outcomes. A subsequent experimental study in 2007 by Fletcher et al. included middle school SWD as well as students identified with dyslexia. The same procedure of one- or two-day testing plus oral administration of proper nouns and item stems and responses was followed. Main effects for group (poor readers v. average readers) and administration condition (standard, one-day accommodated, two-day accommodated) were significant but the interaction was not significant. A chi-square analysis of pass rates for the TAKS showed a significant effect in favor of the accommodations for both poor and average readers. However, poor readers received an additional boost from the two-day time accommodation while average readers did not.

Bolt and Thurlow (2006) evaluated item sets from statewide assessments. In this study, a read-aloud accommodation for math tests was evaluated at 4th and 8th grades on item sets categorized as easy or hard for both math and reading. As hypothesized, 4th graders with reading disabilities performed better on the read-aloud accommodation only for hard-to-read item sets when overall test performance was controlled. On the easy-to-read item sets, students in the unaccommodated condition performed better. At 8th grade, students receiving the read-aloud accommodation showed better performance on hard to read but mathematically easy items than did students without the accommodation, when overall performance was controlled.

Bolt and Thurlow (2007) found a significant interaction between presentation and reading difficulty for 4th grade students when students performed slightly better with oral presentation for more difficult-to-read items than for easy-to-read items. At 8th grade, scores were lower for accommodated items across the board. This study echoes the findings of Helwig, Rozek-Tedesco and Tindal (2002) as well as Crawford and Tindal (2004), whose argument is that elementary students are more likely to benefit from listening comprehension than are older students.

Ketterlin-Geller, Yovanoff and Tindal (2007) evaluated the effects of a read-aloud accommodation and simplified language on a mathematics test for 3rd graders. Each item was identified as high or low difficulty for both reading and math and items were paired into testlets of high math/high reading, high math/low reading, low math/high reading, and low math/low reading items. Testlets were administered in standard, oral, and simplified language formats so that each student took one set of items in standard format and another set in a randomly assigned accommodated format. Students with lower reading ability as measured by an oral reading fluency test performed more poorly than better readers on all test types. All students performed

better on items of low math difficulty items than high math difficulty. No main or interaction effects were found for accommodation condition or for accommodation versus no accommodation. Overall scores were consistent for all versions of the test, suggesting that they were equivalent and that grouping scores together would be defensible. However, when students were separated by reading ability, lower readers (but not better readers) scored significantly higher for the read-aloud accommodation on items with high math/high reading difficulty, while the simplified language version had no effect.

All of the studies summarized above demonstrated greater improvement in scores for SWD and/or low reading ability with a read-aloud accommodation when compared to SWOD. Additional evidence for improvement in scores of SWD was provided by Calhoon, Fuchs, and Hamlett (2000), who investigated three different oral reading techniques, the teacher reading aloud, a computer audio read-aloud, and a computer read-aloud with additional video presentation, for mathematics performance items. All three significantly boosted scores for secondary students with learning disabilities over the standard administration. No comparison was made of SWOD, so this study only demonstrates that reading items aloud can be helpful for SWD.

Two additional studies found that reading tests aloud benefited both SWD and others without resulting in a significant interaction. Meloy, Deville, and Frisbie (2002) studied read-aloud accommodations (with extra time to accommodate reading aloud) on different types of content using ITBS tests with 4th graders. The main effect for the accommodation was significant for both groups. Students with reading disabilities obtained larger score gains with a read-aloud accommodation on all tests than did SWOD, but the interaction did not reach significance, so evidence for the interaction hypothesis was not found. The differential effect for the test of reading comprehension, a boost of about 3 NCEs for SWD compared to 2 NCEs for SWOD, was about the same as that for the math and language tests. The greatest differential effect, an NCE boost of 2:1, was on the science test, which contained scenarios that must be read in order to answer the questions.

McKevitt and Elliott (2003) evaluated the performance of 8th graders on a package of teacher recommended accommodations with and without a read-aloud accommodation on reading tests. While neither the main effect nor the interaction effect for the accommodations including reading items aloud was significant, the small improvement for accommodations including the read-aloud accommodation applied to students with and without disabilities equally.

Elbaum (2007) found a significant boost in favor of nondisabled students over students with LD in grades 6-10 who received oral presentation of math test items, though all students performed significantly better with the accommodation. Students with stronger math skills received a greater boost from the oral accommodation. In this article, a meta-analysis of oral accommodation for math tests showed that elementary SWD either received a benefit or were not affected by read-aloud accommodation of math items while secondary students with SWD performed more poorly or were not affected by oral presentation. This meta-analysis supports the hypothesis of Crawford and Tindal (2004) for the benefits of listening comprehension for younger students only. Elbaum (2007) also recommended the provision of accommodations,

including an oral accommodation, to all students who request them, if it serves to reduce the construct-irrelevant interference of reading ability on math items, thus providing a more accurate measure of mathematics skills. She noted that accommodations are not "uniformly benign" (p. 227) but have the potential to improve or interfere with student performance depending on individual characteristics such as reading ability, ability to stay on task, and processing speed.

One additional study found larger effects for SWOD on an accommodations package that included extra time and reading items aloud. Schulte, Elliott, and Kratochwill (2001) evaluated 86 4th grade students, half with disabilities, and provided matched groups of students with different packages of accommodations as well as unaccommodated tests. Oral presentation was a component of most of the accommodations packages. A majority of students from both groups performed better with accommodations. Accommodations consisting only of extra time and oral presentation did not result in significant benefit, though it had a larger effect size for the scores of SWOD than SWD. SWD benefited more than students who did not have disabilities from the accommodations packages on multiple choice items but not on performance items.

Three studies using psychometric methods to evaluate score and test comparability found support for construct equivalence in accommodation and non-accommodation versions. A study by Pomplun and Omar (2000) found factorial stability for large-scale mathematics assessments for students with learning disabilities who received a reading accommodation, students with learning disabilities who did not receive an accommodation, and SWOD. This finding supports the argument that the test measured the same constructs for both groups of students.

Huynh and Barton (2006) retrospectively compared the performance of 10th grade SWD with and without an oral reading accommodation on a large-scale reading test. An investigation of test factor invariance showed good fit for students with and without disabilities and for nondisabled students, indicating that the same construct was measured for all students. SWD who received the oral accommodation scored as well as unaccommodated SWD. This result is evidence that the oral accommodation improved parity among SWD, since the students who received the oral accommodation were likely to have had more severe reading disabilities than the SWD who did not receive it.

Finally, Kim, Schneider, and Siskind (2009) also found factorial stability using CFA for three groups of accommodated students: those who received any accommodations, those who received any accommodations except setting accommodations, and those who received oral presentation only; when compared to a demographically matched sample of students who did not receive accommodations. The strength of this study for the purposes of the Kansas assessment review is twofold. First, the study used large samples at three grade levels, grades 3-5. Second, the study involved science tests, which are the subject of question in Kansas.

In contrast to the factor analytic route, two studies using DIF analysis found no support for providing a read-aloud accommodation and found instead that the accommodation was not justified. Bielinski, Thurlow, Ysseldyke, Freidebach, & Freidebach (2001) used IRT and DIF to investigate test construct invariance. They found that reading items aloud on an 4th grade math test had no effect on DIF. Math tests measured the same construct with or without accommodation. Therefore, if students with reading disabilities are not disadvantaged by word

problems on a math test, there may be no rationale for providing an accommodation because there is no disadvantage to be overcome. On 3rd grade reading tests, unaccommodated administration for students with reading disabilities could not be interpreted to have the same construct as unaccommodated administration for SWOD because item difficulties were significantly greater for reading disabled students. Unexpectedly, item difficulties with a read-aloud accommodation were even greater than without accommodation, and the number of DIF-flagged items doubled. On re-analysis after the removal of three particularly difficult items, the measured construct for students with and without reading difficulties and without accommodation was the same, suggesting that reading aloud on a reading test is not warranted for students with reading problems because there is no disadvantage for those students to address. When accommodated tests were compared with unaccommodated tests after the three more difficult items were removed, the constructs were no longer equivalent, confirming that the read-aloud accommodation changed the measured construct for students with reading disabilities. This study found no support for reading items aloud on either math or reading tests.

Bolt and Ysseldyke (2006) found that reading/language arts tests showed greater DIF for a read-aloud accommodation, across grade levels, than did math tests. However, even though reading items aloud caused more score incomparability on reading tests than on math tests, as hypothesized, the read-aloud accommodation did not improve score comparability on either test.

The majority of studies summarized above showed a differential boost for SWD or students with low reading ability on accommodations packages in general and specifically for accommodations including oral presentation of test items. Several studies showed qualified improvement for some types of tests and for some grade levels. Many studies also found that SWOD also obtained some benefit from oral presentation. The studies using comparisons of factor structure or DIF were split on whether a read-aloud accommodation could be justified on a psychometric basis, with the three factor studies showing support for accommodated testing in terms of factorial invariance and the two DIF studies showing greater disadvantage for some groups with accommodated testing as well as reduced score comparability.

Sireci, Scarpati and Li (2005) concluded on the basis of their review that oral reading for mathematics tests met the criteria of the interaction hypothesis as a defensible accommodation for SWD. Similarly, they found that the administration of multiple accommodations, in which oral presentation is frequently included, was also more beneficial for SWD than for nondisabled students. They pointed out that because the accommodations they reviewed also delivered a boost in scores for SWOD, it may be that standardized testing demands are too stringent for most students. This would be an argument in favor of universal test design, the goal of which is to eliminate as many construct-irrelevant barriers as possible for all students, whether or not they have an identified disability.

Frequent Breaks and Quiet, Private or Individual Test Settings

In studies that evaluated frequent breaks and individual test settings, (e.g., Elliott et al., 1999; Schulte, Elliott, & Kratochwill, 2001), accommodations were provided in packages so they could not be evaluated in isolation. However, recent research on the number of students in an examination room revealed that students performed more poorly when more students were

present. Garcia and Tor (2009) found that test scores such as SATs decreased as the number of test-takers in the room increased. Putting students in smaller groups allowed them to improve their scores and work more quickly. While this study does not directly assess accommodations or SWD, it does suggest that smaller groups or individual test settings may be beneficial for many test-takers. No other current research could be located that focused on isolated test environments or frequent breaks.

Overall, extended time has proven to be a beneficial accommodation for most students, particularly for students with disabilities (Sireci, Scarpati, & Li, 2005; Zenisky & Sireci, 2007). It seems likely that frequent breaks and individual test settings, both of which might tend to co-occur with extended time, would not show additional effects. It is probable that conditions that require other accommodations along with frequent breaks or an individual testing environment, such as reading test items aloud, using assistive technology, or having the assistance of a reader or scribe, would have greater impact on test scores than the setting variables alone. Current research seems to suggest that smaller testing environments are beneficial for some students, and that accommodations in general are beneficial for some students, especially SWD.

Conclusions

While research on testing accommodations has always been mixed and inconsistent, the current literature regarding oral presentation of items seems to be positive for SWD, particularly for younger students. Elbaum's (2007) meta-analysis summarized the potential benefit for elementary students and the possible detriment for secondary students of oral test presentation, along with benefits to some SWOD as well. Her conclusion that accommodations are not benign but may cause interference as well as assistance is worth remembering. Her recommendation that accommodations be available to any student who selects them speaks to the potential value of adopting universal test design principles rather than selecting accommodations on the basis of presumed benefit to students who display certain characteristics. When this is left to teacher judgment, teachers tend to over-prescribe accommodations and are not good judges of which accommodations will be of benefit to SWD (Fuchs, Fuchs, Eaton, Hamlett, & Karns, 2000). Testing accommodations may not be matched to instructional accommodations or to student need and may not be documented on IEP or Section 504 plans (Horvath, Kampfer-Bohach, & Kearns, 2005). Sireci, Scarpati and Li's (2005) argument that testing conditions may be too stringent for many students, not just those with disabilities, may explain why accommodations may also improve scores for SWOD. Those students may not have an identified disability but may have reading, attention, or other difficulties that interfere with test performance and would benefit from access to accommodations. Or, as Ketterlin-Geller, Yovanoff and Tindal (2007) point out, the fluid developmental characteristics of students may impact the accessibility of test content as they mature, resulting, for example, in the differential influence of listening comprehension for younger students whose decoding skills are emerging versus older students who have mastered basic reading skills and are continuing to develop comprehension.

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Appendix A

Participation rates and percentage of students without disabilities (SWOD) and students with disabilities (SWD) by grade on the 2008 general assessment in science.

Number and percentage of students receiving accommodations on 2008 general assessment in science						
Total tests administered to SWOD ➔			31,432	31,519	47,001	39,646
Total tests administered to SWD ➔			3,950	3,234	3,906	3,437
Accommodation		Student type and statistic	4th Grade	7th Grade	Life Science	Physical Science
ACCD0	Quiet/individual setting	SWOD	1,413	380	84	66
		SWD	1,312	1,241	1,014	855
		% SWOD	4	1	0	0
		% SWD	33	38	26	25
ACCD1	Frequent breaks	SWOD	346	112	33	27
		SWD	617	498	277	249
		% SWOD	1	0	0	0
		% SWD	16	15	7	7
ACCD2	Braille edition	SWOD	0	0	0	1
		SWD	3	5	8	9
		% SWOD	0	0	0	0
		% SWD	0	0	0	0
ACCD3	Large print	SWOD	6	4	5	1
		SWD	13	3	14	20
		% SWOD	0	0	0	0
		% SWD	0	0	0	1
ACCD4	Visual magnification	SWOD	3	2	0	0
		SWD	2	3	2	2
		% SWOD	0	0	0	0
		% SWD	0	0	0	0
ACCD5	Dictated answers	SWOD	17	2	4	1
		SWD	76	57	52	37
		% SWOD	0	0	0	0
		% SWD	2	2	1	1
ACCD6	Read-aloud - individual	SWOD	742	226	42	32
		SWD	972	675	570	515
		% SWOD	2	1	0	0
		% SWD	25	21	15	15
ACCD7	Communication device	SWOD	1	11	0	0
		SWD	4	8	2	3
		% SWOD	0	0	0	0
		% SWD	0	0	0	0
ACCD8	Read-aloud - group	SWOD	657	178	29	32
		SWD	366	453	288	251
		% SWOD	2	1	0	0
		% SWD	9	14	7	7

ACCD9	Other accommodation	SWOD	33	7	8	7
		SWD	88	37	62	46
		% SWOD	0	0	0	0
		% SWD	2	1	2	1
ACCD10	Signed directions	SWOD	1	1	0	2
		SWD	1	2	5	7
		% SWOD	0	0	0	0
		% SWD	0	0	0	0
ACCD11	Signed responses	SWOD	2	0	1	0
		SWD	1	0	0	0
		% SWOD	0	0	0	0
		% SWD	0	0	0	0
ACCD12	Braille writer	SWOD	0	0	0	0
		SWD	1	1	4	3
		% SWOD	0	0	0	0
		% SWD	0	0	0	0
ACCD13	Additional time*	SWOD	277	134	45	41
		SWD	569	643	662	559
		% SWOD	1	0	0	0
		% SWD	14	20	17	16
ACCD14	Student-used tape recorder	SWOD	1	2	4	2
		SWD	6	23	30	16
		% SWOD	0	0	0	0
		% SWD	0	1	1	0
ACCD15	Translation dictionary	SWOD	19	25	13	14
		SWD	0	1	0	0
		% SWOD	0	0	0	0
		% SWD	0	0	0	0

*Additional time is not a necessary accommodation as these tests are administered under untimed conditions. The number of students who were coded as having received additional time probably reflects the number of students whose IEPs or Section 504 plans includes that accommodation on tests. The additional time accommodation code was last used in 2008.

Appendix B

Participation rates and percentage of students with disabilities (SWD) by grade on the 2008 Kansas Assessments of Modified Measures in science.

Number and percentage of students receiving accommodations on 2008 KAMM in science						
Total tests administered to SWD ➔			740	850	1006	915
Accommodation		Student type and statistic	4th Grade	7th Grade	Life Science	Physical Science
ACCD0	Quiet/individual setting	SWD	343	356	342	274
		% SWD	46	42	34	30
ACCD1	Frequent breaks	SWD	187	139	102	87
		% SWD	25	16	10	10
ACCD2	Braille edition	SWD	1	2	2	1
		% SWD	0	0	0	0
ACCD3	Large print	SWD	9	0	7	10
		% SWD	1	0	1	1
ACCD4	Visual magnification	SWD	0	0	2	2
		% SWD	0	0	0	0
ACCD5	Dictated answers	SWD	27	24	20	14
		% SWD	4	3	2	2
ACCD6	Read-aloud - individual	SWD	330	261	268	235
		% SWD	45	31	27	26
ACCD7	Communication device	SWD	0	3	0	0
		% SWD	0	0	0	0
ACCD8	Read-aloud - group	SWD	107	124	64	55
		% SWD	14	15	6	6
ACCD9	Other accommodation	SWD	20	19	30	17
		% SWD	3	2	3	2
ACCD10	Signed directions	SWD	2	4	4	13
		% SWD	0	0	0	1
ACCD11	Signed responses	SWD	1	0	1	1
		% SWD	0	0	0	0
ACCD12	Braille writer	SWD	0	0	0	0
		% SWD	0	0	0	0
ACCD13	Additional time*	SWD	175	222	220	185
		% SWD	24	26	22	20
ACCD14	Student-used tape recorder	SWD	2	9	24	11
		% SWD	0	1	2	1
ACCD15	Translation dictionary	SWD	0	5	1	0
		% SWD	0	1	0	0

*Additional time is not a necessary accommodation as these tests are administered under untimed conditions. The number of students who were coded as having received additional time probably reflects the number of students whose IEPs or Section 504 plans includes that accommodation on tests. The additional time accommodation code was last used in 2008.

Appendix C

Participation rates and percentage of students without disabilities (SWOD) and students with disabilities (SWD) by grade on the 2009 general assessment in science.

Number and percentage of students receiving accommodations on 2009 general assessment in science						
Total tests administered to SWOD ➔			31994	31308	44106	36511
Total tests administered to SWD ➔			3796	3117	3071	3071
Accommodation		Student type and statistic	4th Grade	7th Grade	Life Science	Physical Science
ACCD0	Quiet/individual setting	SWOD	1780	560	124	118
		SWD	1482	1158	902	779
		% SWOD	6	2	0	0
		% SWD	39	37	29	25
ACCD1	Frequent breaks	SWOD	463	149	61	64
		SWD	748	519	363	313
		% SWOD	1	0	0	0
		% SWD	20	17	12	10
ACCD2	Braille edition	SWOD	7	1	0	0
		SWD	10	3	4	2
		% SWOD	0	0	0	0
		% SWD	0	0	0	0
ACCD3	Large print	SWOD	3	0	2	2
		SWD	4	4	5	5
		% SWOD	0	0	0	0
		% SWD	0	0	0	0
ACCD4	Visual magnification	SWOD	1	1	0	0
		SWD	4	2	5	2
		% SWOD	0	0	0	0
		% SWD	0	0	0	0
ACCD5	Dictated answers	SWOD	28	3	3	2
		SWD	57	26	26	25
		% SWOD	0	0	0	0
		% SWD	2	1	1	1
ACCD6	Read-aloud - individual	SWOD	1367	428	57	53
		SWD	1202	805	582	502
		% SWOD	4	1	0	0
		% SWD	32	26	19	16
ACCD7	Communication device	SWOD	0	1	1	1
		SWD	17	4	1	1
		% SWOD	0	0	0	0
		% SWD	0	0	0	0
ACCD8	Read-aloud - group	SWOD	829	207	10	9
		SWD	411	403	139	120
		% SWOD	3	1	0	0
		% SWD	11	13	5	4

ACCD9	Other accommodation	SWOD	42	22	1	0
		SWD	76	40	65	8
		% SWOD	0	0	0	0
		% SWD	2	1	2	0
ACCD10	Signed directions	SWOD	0	0	0	0
		SWD	8	2	1	8
		% SWOD	0	0	0	0
		% SWD	0	0	0	0
ACCD11	Signed responses	SWOD	0	0	0	0
		SWD	0	1	0	0
		% SWOD	0	0	0	0
		% SWD	0	0	0	0
ACCD12	Braille writer	SWOD	0	0	0	0
		SWD	2	1	1	0
		% SWOD	0	0	0	0
		% SWD	0	0	0	0
ACCD13	KAMM pencil and paper*	SWOD	26	17	2	4
		SWD	67	64	79	87
		% SWOD	0	0	0	0
		% SWD	2	2	3	3
ACCD14	Student-used tape recorder	SWOD	2	1	0	0
		SWD	9	6	21	27
		% SWOD	0	0	0	0
		% SWD	0	0	1	1
ACCD15	Translation dictionary	SWOD	28	27	21	31
		SWD	2	2	3	3
		% SWOD	0	0	0	0
		% SWD	0	0	0	0

*This accommodation code had been used for additional time through 2008. Because the KAMM is not taken by SWOD, the small number of codes for this accommodation by SWOD probably represents coding for additional time by teachers who did not notice that the code had changed.

Appendix D

Participation rates and percentage of students with disabilities (SWD) by grade on the 2009 Kansas Assessments of Modified Measures in science.

Number and percentage of students receiving accommodations on 2009 KAMM in science						
Total tests administered to SWD ➔			826	910	954	512
Accommodation		Student type and statistic	4th Grade	7th Grade	Life Science	Physical Science
ACCD0	Quiet/individual setting	SWD	469	420	266	275
		% SWD	57	46	28	54
ACCD1	Frequent breaks	SWD	218	235	98	102
		% SWD	26	26	10	20
ACCD2	Braille edition	SWD	0	0	1	1
		% SWD	0	0	0	0
ACCD3	Large print	SWD	0	2	0	1
		% SWD	0	0	0	0
ACCD4	Visual magnification	SWD	2	0	0	0
		% SWD	0	0	0	0
ACCD5	Dictated answers	SWD	26	13	10	13
		% SWD	3	1	1	3
ACCD6	Read-aloud - individual	SWD	421	322	256	260
		% SWD	51	35	27	51
ACCD7	Communication device	SWD	1	0	0	0
		% SWD	0	0	0	0
ACCD8	Read-aloud - group	SWD	165	176	56	60
		% SWD	20	19	6	12
ACCD9	Other accommodation	SWD	18	24	11	16
		% SWD	2	3	1	3
ACCD10	Signed directions	SWD	5	5	6	4
		% SWD	1	1	1	1
ACCD11	Signed responses	SWD	1	1	0	0
		% SWD	0	0	0	0
ACCD12	Braille writer	SWD	0	0	0	0
		% SWD	0	0	0	0
ACCD13	KAMM pencil and paper	SWD	63	63	15	21
		% SWD	8	7	2	4
ACCD14	Student-used tape recorder	SWD	2	2	4	11
		% SWD	0	0	0	2
ACCD15	Translation dictionary	SWD	4	5	2	4
		% SWD	0	1	0	1

Appendix E

Participation rates and percentage of students without disabilities (SWOD) and students with disabilities (SWD) by grade on the 2009 general assessment in math.

Number and percentage of students receiving accommodations on 2009 general assessment in math									
Total tests administered to SWOD ➔			32396	31899	31793	31167	31389	31623	40035
Total tests administered to SWD ➔			3712	3612	3485	3017	3047	3022	4283
Accommodation		Student type and statistic	3rd Grade	4th Grade	5th Grade	6th Grade	7th Grade	8th Grade	11th Grade
ACCD0	Quiet/individual setting	SWOD	2577	2417	2144	1401	738	586	227
		SWD	1472	1660	1665	1433	1428	1314	1392
		% SWOD	8	8	7	4	2	2	1
		% SWD	40	46	48	47	47	43	33
ACCD1	Frequent breaks	SWOD	580	611	525	288	177	124	129
		SWD	739	901	879	694	601	495	512
		% SWOD	2	2	2	1	1	0	0
		% SWD	20	25	25	23	20	16	12
ACCD2	Braille edition	SWOD	12	9	5	0	0	1	0
		SWD	10	10	12	4	2	4	2
		% SWOD	0	0	0	0	0	0	0
		% SWD	0	0	0	0	0	0	0
ACCD3	Large print	SWOD	5	3	5	4	0	3	0
		SWD	6	3	3	1	7	5	5
		% SWOD	0	0	0	0	0	0	0
		% SWD	0	0	0	0	0	0	0
ACCD4	Visual magnification	SWOD	4	1	2	2	0	3	0
		SWD	4	3	2	1	2	3	6
		% SWOD	0	0	0	0	0	0	0
		% SWD	0	0	0	0	0	0	0
ACCD5	Dictated answers	SWOD	29	29	14	11	3	2	4
		SWD	63	65	70	53	28	33	57
		% SWOD	0	0	0	0	0	0	0
		% SWD	2	2	2	2	1	1	1
ACCD6	Read-aloud - individual	SWOD	1834	1737	1420	1029	600	461	141
		SWD	1240	1316	1268	1073	961	954	989
		% SWOD	6	5	4	3	2	1	0
		% SWD	33	36	36	36	32	32	23
ACCD7	Communication device	SWOD	2	1	5	3	2	1	1
		SWD	16	14	22	2	4	2	6
		% SWOD	0	0	0	0	0	0	0
		% SWD	0	0	1	0	0	0	0
ACCD8	Read-aloud - group	SWOD	1228	1042	988	414	273	250	43
		SWD	384	421	421	345	510	390	209
		% SWOD	4	3	3	1	1	1	0
		% SWD	10	12	12	11	17	13	5

ACCD9	Other accommodation	SWOD	107	97	57	57	15	39	5
		SWD	96	76	57	33	54	45	122
		% SWOD	0	0	0	0	0	0	0
		% SWD	3	2	2	1	2	1	3
ACCD10	Signed directions	SWOD	0	2	0	0	0	0	0
		SWD	6	7	6	6	3	3	2
		% SWOD	0	0	0	0	0	0	0
		% SWD	0	0	0	0	0	0	0
ACCD11	Signed responses	SWOD	0	0	0	0	0	0	0
		SWD	1	1	0	1	1	0	0
		% SWOD	0	0	0	0	0	0	0
		% SWD	0	0	0	0	0	0	0
ACCD12	Braille writer	SWOD	0	0	0	1	1	0	0
		SWD	2	0	1	1	1	2	2
		% SWOD	0	0	0	0	0	0	0
		% SWD	0	0	0	0	0	0	0
ACCD13	KAMM pencil and paper*	SWOD	42	48	29	46	34	13	3
		SWD	80	62	50	64	53	47	140
		% SWOD	0	0	0	0	0	0	0
		% SWD	2	2	1	2	2	2	3
ACCD14	Student-used tape recorder	SWOD	15	2	3	0	6	5	1
		SWD	9	11	7	6	7	11	52
		% SWOD	0	0	0	0	0	0	0
		% SWD	0	0	0	0	0	0	1
ACCD15	Translation dictionary	SWOD	11	26	30	44	46	57	18
		SWD	0	2	1	4	4	1	2
		% SWOD	0	0	0	0	0	0	0
		% SWD	0	0	0	0	0	0	0

*This accommodation code had been used for additional time through 2008. Because the KAMM is not taken by SWOD, the small number of codes for this accommodation by SWOD probably represents coding for additional time by teachers who did not notice that the code had changed.

Appendix F

Participation rates and percentage of students with disabilities (SWD) by grade on the 2009 Kansas Assessments of Modified Measures in math.

Number and percentage of students receiving accommodations on 2009 KAMM in math									
Total tests administered to SWD ➔			844	982	1009	948	1045	947	1281
Accommodation		Student type and statistic	3rd Grade	4th Grade	5th Grade	6th Grade	7th Grade	8th Grade	11th Grade
ACCD0	Quiet/individual setting	SWD	486	596	623	522	582	499	420
		% SWD	58	61	62	55	56	53	33
ACCD1	Frequent breaks	SWD	259	314	345	279	299	208	153
		% SWD	31	32	34	29	29	22	12
ACCD2	Braille edition	SWD	2	0	7	2	1	3	2
		% SWD	0	0	1	0	0	0	0
ACCD3	Large print	SWD	4	2	0	2	1	2	2
		% SWD	0	0	0	0	0	0	0
ACCD4	Visual magnification	SWD	3	3	2	1	0	1	1
		% SWD	0	0	0	0	0	0	0
ACCD5	Dictated answers	SWD	24	37	38	21	20	31	14
		% SWD	3	4	4	2	2	3	1
ACCD6	Read-aloud - individual	SWD	465	530	491	413	411	400	378
		% SWD	55	54	49	44	39	42	30
ACCD7	Communication device	SWD	6	0	7	1	1	4	5
		% SWD	1	0	1	0	0	0	0
ACCD8	Read-aloud - group	SWD	158	202	223	157	256	204	107
		% SWD	19	21	22	17	24	22	8
ACCD9	Other accommodation	SWD	35	24	19	30	32	18	22
		% SWD	4	2	2	3	3	2	2
ACCD10	Signed directions	SWD	8	7	5	6	4	5	2
		% SWD	1	1	0	1	0	1	0
ACCD11	Signed responses	SWD	7	1	0	3	0	0	1
		% SWD	1	0	0	0	0	0	0
ACCD12	Braille writer	SWD	1	0	0	1	0	1	1
		% SWD	0	0	0	0	0	0	0
ACCD13	KAMM pencil and paper	SWD	95	100	130	108	93	86	50
		% SWD	11	10	13	11	9	9	4
ACCD14	Student-used tape recorder	SWD	4	5	11	4	4	3	10
		% SWD	0	1	1	0	0	0	1
ACCD15	Translation dictionary	SWD	6	4	4	4	4	5	1
		% SWD	1	0	0	0	0	1	0

Appendix G

Participation rates and percentage of students without disabilities (SWOD) and students with disabilities (SWD) by grade on the 2009 general assessment in reading.

Number and percentage of students receiving accommodations on 2009 general assessment in reading									
Total tests administered to SWOD ➔			32466	31949	31878	31216	31419	31662	38156
Total tests administered to SWD ➔			3456	3428	3295	2910	2973	3051	4267
Accommodation		Student type and statistic	3rd Grade	4th Grade	5th Grade	6th Grade	7th Grade	8th Grade	11th Grade
ACCD0	Quiet/individual setting	SWOD	2434	2347	2070	1339	733	607	251
		SWD	1277	1496	1513	1379	1385	1375	1246
		% SWOD	7	7	6	4	2	2	1
		% SWD	37	44	46	47	47	45	29
ACCD1	Frequent breaks	SWOD	605	600	570	292	166	135	111
		SWD	661	832	865	680	599	559	483
		% SWOD	2	2	2	1	1	0	0
		% SWD	19	24	26	23	20	18	11
ACCD2	Braille edition	SWOD	14	10	5	1	0	0	0
		SWD	7	9	14	4	4	6	3
		% SWOD	0	0	0	0	0	0	0
		% SWD	0	0	0	0	0	0	0
ACCD3	Large print	SWOD	8	2	4	3	1	2	0
		SWD	8	4	2	2	8	6	5
		% SWOD	0	0	0	0	0	0	0
		% SWD	0	0	0	0	0	0	0
ACCD4	Visual magnification	SWOD	1	1	1	1	1	2	0
		SWD	4	3	2	2	2	4	2
		% SWOD	0	0	0	0	0	0	0
		% SWD	0	0	0	0	0	0	0
ACCD5	Dictated answers	SWOD	34	38	12	17	5	9	2
		SWD	53	63	72	52	26	37	49
		% SWOD	0	0	0	0	0	0	0
		% SWD	2	2	2	2	1	1	1
ACCD6	Read-aloud - individual	SWOD	1777	1623	1310	1054	649	521	178
		SWD	1070	1193	1138	1009	940	986	906
		% SWOD	5	5	4	3	2	2	0
		% SWD	31	35	35	35	32	32	21
ACCD7	Communication device	SWOD	6	12	6	0	3	1	2
		SWD	8	13	17	3	18	4	1
		% SWOD	0	0	0	0	0	0	0
		% SWD	0	0	1	0	1	0	0
ACCD8	Read-aloud - group	SWOD	1118	1011	911	342	214	207	74
		SWD	294	310	315	248	385	342	153
		% SWOD	3	3	3	1	1	1	0
		% SWD	9	9	10	9	13	11	4

ACCD9	Other accommodation	SWOD	155	111	90	68	22	49	7
		SWD	116	83	75	57	88	73	105
		% SWOD	0	0	0	0	0	0	0
		% SWD	3	2	2	2	3	2	2
ACCD10	Signed directions	SWOD	0	0	0	0	0	0	0
		SWD	4	10	3	6	3	3	3
		% SWOD	0	0	0	0	0	0	0
		% SWD	0	0	0	0	0	0	0
ACCD11	Signed responses	SWOD	0	0	1	0	0	0	0
		SWD	1	1	0	2	1	0	0
		% SWOD	0	0	0	0	0	0	0
		% SWD	0	0	0	0	0	0	0
ACCD12	Braille writer	SWOD	0	0	0	0	0	0	0
		SWD	0	0	1	1	1	3	0
		% SWOD	0	0	0	0	0	0	0
		% SWD	0	0	0	0	0	0	0
ACCD13	KAMM pencil and paper*	SWOD	66	56	50	55	62	24	3
		SWD	71	63	47	79	69	53	151
		% SWOD	0	0	0	0	0	0	0
		% SWD	2	2	1	3	2	2	4
ACCD14	Student-used tape recorder	SWOD	19	7	3	10	3	6	0
		SWD	13	14	6	3	11	12	32
		% SWOD	0	0	0	0	0	0	0
		% SWD	0	0	0	0	0	0	1
ACCD15	Translation dictionary	SWOD	11	31	51	55	87	84	12
		SWD	3	2	1	4	4	1	2
		% SWOD	0	0	0	0	0	0	0
		% SWD	0	0	0	0	0	0	0

*This accommodation code had been used for additional time through 2008. Because the KAMM is not taken by SWOD, the small number of codes for this accommodation by SWOD probably represents coding for additional time by teachers who did not notice that the code had changed.

Appendix H

Participation rates and percentage of students with disabilities (SWD) by grade on the 2009 Kansas Assessments of Modified Measures in reading.

Number and percentage of students receiving accommodations on 2009 KAMM in reading									
Total tests administered to SWD ➔			1085	1173	1209	1069	1119	941	1079
Accommodation		Student type and statistic	3rd Grade	4th Grade	5th Grade	6th Grade	7th Grade	8th Grade	11th Grade
ACCD0	Quiet/individual setting	SWD	608	678	715	531	564	465	338
		% SWD	56	58	59	50	50	49	31
ACCD1	Frequent breaks	SWD	339	360	400	296	312	224	143
		% SWD	31	31	33	28	28	24	13
ACCD2	Braille edition	SWD	6	1	7	1	0	2	3
		% SWD	1	0	1	0	0	0	0
ACCD3	Large print	SWD	3	0	0	2	3	2	0
		% SWD	0	0	0	0	0	0	0
ACCD4	Visual magnification	SWD	2	2	1	2	0	0	0
		% SWD	0	0	0	0	0	0	0
ACCD5	Dictated answers	SWD	28	31	34	26	23	34	23
		% SWD	3	3	3	2	2	4	2
ACCD6	Read-aloud - individual	SWD	551	621	595	434	452	433	313
		% SWD	51	53	49	41	40	46	29
ACCD7	Communication device	SWD	7	2	11	2	1	0	1
		% SWD	1	0	1	0	0	0	0
ACCD8	Read-aloud - group	SWD	200	216	271	168	199	157	89
		% SWD	18	18	22	16	18	17	8
ACCD9	Other accommodation	SWD	51	36	28	35	36	22	18
		% SWD	5	3	2	3	3	2	2
ACCD10	Signed directions	SWD	6	5	6	6	3	7	3
		% SWD	1	0	0	1	0	1	0
ACCD11	Signed responses	SWD	3	1	0	1	2	0	0
		% SWD	0	0	0	0	0	0	0
ACCD12	Braille writer	SWD	1	0	0	1	0	1	2
		% SWD	0	0	0	0	0	0	0
ACCD13	KAMM pencil and paper	SWD	129	106	150	98	73	68	55
		% SWD	12	9	12	9	7	7	5
ACCD14	Student-used tape recorder	SWD	3	3	0	4	3	7	15
		% SWD	0	0	0	0	0	1	1
ACCD15	Translation dictionary	SWD	3	4	3	6	7	10	7
		% SWD	0	0	0	1	1	1	1