



Accommodations to Improve Instruction and Assessment of Students Who Are Deaf or Hard of Hearing



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Background/Introduction

Raising academic standards for all students and measuring student achievement to hold schools accountable for educational progress are central strategies for promoting educational excellence and equity in our schools. The No Child Left Behind Act of 2001 (NCLB) was designed to support state efforts, establish challenging standards, develop aligned assessments, and build accountability systems for districts and schools that are based on educational results. As stated by Case (2003):

Requirements for including all Students With Disabilities (SWD) in assessments stem from a number of federal laws, including Section 504 of the Vocational Rehabilitation Act of 1973 (Section 504), Title II of the Americans with Disabilities Act of 1990 (ADA), Title I of the Elementary and Secondary Education Act (ESEA), and the Individuals with Disabilities Education Act of 2004 (IDEA 2004). Both NCLB, which reauthorized and amended Title I of ESEA, and IDEA 2004 require that students with disabilities be provided accommodations, when appropriate and documented on the student's Individualized Education Plan (IEP) or Section 504 plan. Since assessment is often associated with direct individual benefits (e.g., promotion, graduation) and is an integral part of accountability systems, it is an imperative for researchers to look closely at the accommodations allowed in instruction and assessment. (p. 2)

Accommodations in assessment and instruction are especially important to students who are deaf or hard of hearing because they do not have ready access to standard English as they enter school. As a result, their educational progress is

often delayed. To understand the appropriate selection of accommodations for this population, we need to understand the implication of being deaf or hard of hearing and how it affects education.

Deafness and Hardness of Hearing: Variables Affecting Education

Hearing loss is described as prelingual (before acquiring language) or postlingual (after acquiring language). Hearing loss is also categorized by severity (a continuum of mild to profound). There are also some people who have no hearing at all—those people who are deaf. The remainder of this section deals with students who are deaf and students with severe to profound hearing loss.

In the following observation, Mountry (2001) aptly summarizes the primary reason that this student population faces distinct challenges with regard to assessment:

At the heart of this difficulty is the reality that often English functions as a nonnative language within this population. Because English is auditorily based, deaf and hard of hearing individuals do not have full access to it across situations.

To paraphrase Rudner (1978; cited in Gordon and Stump, 1996), standardized, high-stakes testing presumes a certain level of English proficiency that is not necessarily appropriate for students who are deaf or severely hard of hearing. The presumption of a certain level of verbal language ability presents several problems for these students, including the following:

- difficulties with English
- diverse modalities of communications
- deficient reading skills
- culturally-related experiential differences
- test validity and reliability (p. 236)

Difficulties with English

Students who are deaf or severely hard of hearing are precluded from understanding speech and aural communication without some type of accommodation. Students born with hearing loss or who lose hearing at a very early age miss out on crucial developmental milestones and experiences that benefit students without hearing loss. The result is that they enter school developmentally delayed in learning English, lagging in language development, and lacking knowledge of English. Because high-stakes tests have a highly verbal

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aspect, students who have restricted language skills are at a distinct disadvantage. Those learning sign language are, in essence, learning English as a second language. When one also considers the expressive and receptive modalities of deaf or hard of hearing students, which differ significantly from those of English-based hearing students, the need for accommodations becomes even more apparent.

Diverse Modalities of Communication

A student who is deaf or hard of hearing is taught with a wide variety of modalities depending on his or her individual needs, the area of the county in which he or she lives, the school's capacity, and the student's individual abilities. These modalities of approach to teaching include the following:

- oral,
- sign language, or
- total communication programs.

The **oral approach**, also known as the auditory-oral approach, includes teaching the deaf to speak and read lips but is based on the student's having some hearing (or corrected hearing). The **sign language approach** includes the use of American Sign Language¹ (ASL), Signed Exact English, Signed English,² Manually Coded, Cued Speech, Esperanto, and Pidgen Signed English. Of these types of sign language, ASL is the most common sign language approach in use. The **total communication** approach is a combination of oral language and ASL.

Each approach has supporters, benefits, and limitations. The diversity of these modalities makes development of assessments for students who are deaf or hard of hearing significantly challenging. The need for accommodations is paramount for both expressive and receptive communication.

¹ ASL is a linguistically complete language sharing no grammatical similarities to English. For instance, "missing the boat" in English translates to "train go sorry" in ASL and "blond" translates to "hair yellow."

² Unlike ASL, Signed English resembles regular English in that words have ending markers, such as -s, -ed, and -ly.

Although we can use a variety of methods to communicate face to face, we use English for reading and writing because there is not an accepted written language for ASL. Further, grammar and structure differ for those students who use ASL compared with how English is taught in schools for the general population.

Deficient Reading Skills

With the lack of ease of access to English that many of these students face, students who are deaf or hard of hearing lag behind general education students in reading and mathematics—but especially in reading. Typically, students who are deaf/hard of hearing are several years behind their general education peers. For example, students in the eighth grade tend to function at the third or fourth grade level in reading (Traxler, 2000). Because reading is auditorily based, learning to read is especially problematic for the deaf and the hard of hearing.

Culturally-Related Experiential Differences

Hearing loss and deafness are more than functional issues—they are cultural as well. The use of sign language as well as other cultural elements sets students who are deaf or hard of hearing apart from general education students (Moore, 2002). This difference occurs because, “in general, students with significant hearing loss encounter great difficulty in comprehending and using the English language than do their peers” (Luetke-Stahlman, 1998, p. 316). Further, deaf children may begin to learn to read in the same ways as their hearing peers do, but “literacy development typically does not proceed at a pace considered average for hearing students” (Schirmer, 2001, p. 74).

Test Validity and Reliability in High-Stakes Assessment

With the advent of universal design, more and more states and test developers are considering the needs of students who are deaf or hard of hearing, specifically their needs regarding item development, test construction, and accommodations. The *Standards for Educational and Psychological Testing* (AERA, APA, and NCME, 1999) has long addressed the issues of bias and sensitivity. However, few states include students who are deaf or hard of hearing in standardization research studies during the development of assessments, or too few students are included in studies because of low incidence. This situation, along with the issues mentioned above, has an impact on the assessment of students who are deaf or hard of hearing.

Accommodations to Improve Instruction, Learning, and Assessment

The 2004 reauthorization of IDEA contains the mandate that all children with disabilities should participate in statewide and district-wide assessments. It states that “children with disabilities are included in general state and district-wide assessment programs with appropriate accommodations, where necessary”

(IDEA, 2004, p. 118). The legislation does not clarify what “appropriate” means. Furthermore, the legislation and common practice use the term “accommodations” interchangeably.

How Accommodations and Modifications Differ

The term “accommodation” has been used interchangeably with the term “modification,” and there is a lack of consensus as to their formal meaning (Thurlow, Hurley, Spicuzza, and El Sawaf, 1996). That is, what is deemed an accommodation in one state may be considered a modification in another. In an attempt to clarify the two concepts psychometrically, Hollenbeck, Tindal, Harniss, and Almond (1999) built on the theories of Phillips (1993, 1994) to define the two as separate and distinct concepts.

Accommodations are changes made in the test presentation or response method so that students can demonstrate what they know about the content without changing the construct of the content being measured, the grade level, or the performance requirements. Phillips (1994) also posited that there must be a differential boost or differential access. Fuchs (1999) noted that an accommodation is justified when students with disabilities perform higher because of the test alteration than students without disabilities receiving the same alteration.

Modifications are defined as a change in the test (how it is given, completed, or what construct is being measured) that works equally well for all students. The resulting modified score would not be interpreted in the same way as a score would be when the test is given under standardized conditions. A frequently used example concerns a case in which the general population student is asked to read a passage by himself/herself and then answer questions about the story. A modification would be that the story is read aloud to the child, which changes the construct from silent reading comprehension to a listening comprehension measure.

Frequently, confusion arises in making the distinction between which changes made to an assessment qualify as accommodations and which changes qualify as modifications. A major source of this confusion is the policy differences between states. For example, some states allow students who are deaf or hard of hearing to sign their answers, whereas other states do not. Some states may allow a student to be administered the assessment with a computer, but other states may consider this change to be a modification of the construct being measured by the assessment. Typically, the decision of whether a change is considered an accommodation or a modification depends on the importance of reading and decoding in the construct being measured. Some states decide that the student has to read the test; other states agree that the student may have the passage signed to him/her, if necessary. Every state sets its own policy on these issues. Another

source of confusion is IDEA 2004, which uses the terms interchangeably. Regardless, the definitions given above are the ones used psychometrically.

Selecting Accommodations and Modifications

Currently, members of the Individualized Education Plan (IEP) committee are charged with determining the accommodation(s) or modification(s) that a student with a disability requires and may use during classroom instruction and assessments. Often, the decisions are made without adequate training of the IEP team members. Further, there is a lack of consistency in selection of accommodations/modifications from school to school and district to district. To rectify this situation, the U.S. Department of Education has charged each state with developing a decision-making model that provides a prescriptive approach for choosing appropriate accommodations and modifications, and requires training for administrators and teachers in utilizing the approach. A major challenge is for each state to create a decision-making model/process that helps IEP team members decide which is appropriate—an accommodation (testing alterations that are based on the needs of the child) or modifications (testing alterations that change the content or performance level of what is being assessed). Another challenge is for IEP teams to know whether a particular accommodation works for a specific student.

Yet another challenge is that the effect of the accommodation must be empirically measured to meet the technical standards of NCLB. The burden of providing evidence falls on each state. Hence, it is important to use the psychometric definitions of accommodations and modifications.

Defining Accommodations for Students Who Are Deaf or Hard of Hearing

Pearson Education, Inc. (Pearson) has defined accommodations in concordance with Tindal and Fuchs (1999) as “changes in standardized assessment conditions to ‘level the playing field’ for students by removing the construct-irrelevant variance created by their disabilities. Valid accommodations produce scores for students with disabilities that measure the same attributes as standard assessments measured in non-disabled students” (p. 7).

Pearson's Accommodations Taxonomy

Pearson uses the accommodations taxonomy listed below, which was developed by the University of Minnesota National Center on Educational Outcomes (NCEO). Pearson has modified the taxonomy of timing/scheduling, setting, and administration as indicated by the footnotes.

Timing/Scheduling ³	Changes to when the assessment is given
Setting ⁴	Changes to where the assessment is given
Administration ⁴	Changes to how the assessment is given
Presentation Format	Changes to how the assessment is given
Response Format	Changes to how a student responds to the assessment
Other	Use of dictionaries/word lists/glossaries

An Empirical Basis for Defining Accommodations

In addition to using the taxonomy of accommodations, Pearson has utilized Tindal's (Tindal and Fuchs, 1999) classification of research approaches to examine the validity of test accommodations. The approaches are classified as descriptive, comparative, or experimental.

Descriptive Approach. With a descriptive approach, accommodations are analyzed logically to consider the disability along with the characteristic of the assessment. According to Tindal and Fuchs (1999), large print is considered to be valid for a student with visual disabilities because it allows access to printed information and lets the student demonstrate what he or she knows by preserving the meaningfulness of the measured content (p. 9).

Comparative Approach. With this approach, extant databases containing test scores are analyzed to gain insight into how accommodations may affect students with disabilities. Koretz (1997) and Koretz and Hamilton (1999) used this

³ NCEO separates Timing and Scheduling, whereas Pearson combines them.

⁴ NCEO combines Setting and Administration, whereas Pearson separates them.

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approach. Both studies indicated that accommodations, at times, overestimated the academic competence of students with disabilities (Tindal and Fuchs, 1999, p. 10). Pearson has utilized this method of data review. Although the methodology permits interesting insights into the effects of accommodations, the approach often leaves unanswered important questions about the validity of specific accommodations.

Experimental Approach. In this approach, the effects of accommodations are examined with controlled research designs, which examine effects for students with and without disabilities, with and without accommodations (Tindal and Fuchs, 1999). Pearson reviewed the studies reported in Tindal and Fuchs (1999), Elliott (2001), Koretz and Hamilton (1999), and Thurlow, Elliott, and Ysseldyke (1998). In addition, Pearson is in the process of developing and conducting similar studies.

Valid Accommodations for Students Who Are Deaf or Hard of Hearing

When students who are deaf or hard of hearing use the following accommodations, the administration of the assessment to them is considered standard. In this situation, the scores that they receive from the assessment are considered to be valid and can be aggregated with those of general population students. Accommodations should be used in classroom instruction prior to testing to ensure that the construct measured is the content area rather than the student's ability to use the accommodation. Based on available evidence, most of the accommodations listed in Table 1 are considered to be "incidental to the construct intended to be measured by the test" (AERA, APA, and NCME, 1999, p. 101).

Note that in Table 1, when states differ on whether the change is an accommodation or modification (depending on the construct measured), both the "Standard Administration" and the "May Change Construct Measured" columns are marked.

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Table 1. Assessment Accommodations for Students Who Are Deaf or Hard of Hearing

Accommodations	Standard Administration	May Change Construct Measured
<p>Time/Scheduling</p> <ul style="list-style-type: none"> • Breaks between subtests X • Time of day most beneficial to students X • Frequent breaks within a subtest X 		
<p>Setting</p> <ul style="list-style-type: none"> • Test in a small group X • Test individually X • Test in a regular classroom X • Home/hospital setting X • Environmental modifications: special lighting, adaptive furniture, noise buffers, carrels, special location with minimal distractions. X • Change location to increase physical access (minimize noise) X • Change location to reduce distractions X 		
<p>Administration</p> <ul style="list-style-type: none"> • Sign language (ASL, cued speech) for directions <u>only</u> X • Audio amplification devices (hearing aids, FM systems, cochlear implants) for directions <u>only</u> X • Use of an interpreter for directions <u>only</u> X 		
<p>Presentation Format</p> <ul style="list-style-type: none"> • Repeating directions X 		X

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Accommodations	Standard Administration	May Change Construct Measured
• Simplifying directions	X	X
• Audio amplification devices	X	
• Calculator with programming capability disabled (allowed for mathematics problem solving at some grade levels)	X	
• Amplified audio recordings/audio (except on decoding and reading comprehension)	X	
• Video or streaming video of sign language (any type), except for decoding and reading comprehension tests	X	
• DVD with video or without video	X	X
• Amplified audio recordings/audio		X
• Video or streaming video of sign language (any type)		X
Response Format		
• Visual aids (graph paper, templates, rulers)	X	
• Special pencil, pen, pencil grip	X	
• Auditory aids	X	
• Nu Vue-Cue (cued speech approach)	X	
• Use of approach used by student (e.g., auditory, visual, ASL, Signed English)	X	
• Response in sign language with a scribe	X	X
• Computer-administered testing		X
Other		
• Augmentative, assistive, or adaptive technology	X	X
• Computer-based testing*	X	X
• Computer-assisted testing*	X	X

Notes on Presentation Format Accommodations for Students Who Are Deaf or Hard of Hearing

Over the years, the Gallaudet Research Institute has developed tips for administering assessments to students who are deaf or hard of hearing.⁵ The following material is from the Administration Procedures for the *Stanford Achievement Test Series*, 9th Edition.

Many deaf and hard of hearing students do poorly on achievement tests, not because they lack skills necessary to make correct test item responses, but because they do not understand the tasks that they are required to perform. Communicating the intent of the tasks required for the tests is of paramount importance.

The method of communication to be used in the administration of the test is the method normally used in the instructional context with the students being tested (e.g., speech only, a combination of speech and signs, sign only, etc.). Throughout the directions for administering at each test level, directions such as “say,” “dictate,” “listen carefully,” “read,” etc., are meant to be interpreted within the context of this “usual method” of communication used with the students being tested.

Although flexibility is allowed in communicating the test instructions to students, they do not alter the individual test items in any way. Thus, you should not give individual assistance to students after the testing has begun. For dictated subtests, you should try to stay as close as possible to the format of the item as it is presented in the teacher’s directions.

The following comments will alert you to some of the important issues related to administering dictated subtests (some of these comments pertain only to situations in which signs are used as the mode of communication).

- In dictated spelling tests, do not fingerspell the target word.
- Certain words and phrases, used mainly in the mathematics items, may cause special problems for students who are deaf or hard of hearing. These words and phrases may include the following:

⁵ Accommodations for administration are a major heading in NCEO’s taxonomy, presented in Table 1.

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- “left” or “left over” (e.g., “How many are left?”)
- “many more” (e.g., “How many more?”)
- “odd number,” “family of facts,” etc.

When previewing the test, you should consider carefully how these concepts will be best communicated to your students.

- It is recommended that for the mathematics tests—and for other subtests with a special vocabulary—the teacher of that subject administers the test.
- Verb tense is a potential source of confusion in dictated items. Understanding a time sequence may be important to solving a problem. For example, in the following item, the understanding of tense is crucial to the understanding of the problem:

*Jane’s cat had 5 kittens. Jane gave 3 kittens away.
How many kittens does Jane have now?*

Here again, you should consider carefully how to communicate these test items.

- Some dictated test items contain words in the item stems which, if signed, reveal the correct answer to the student. This situation is especially true in mathematics problem solving tests. Words such as “circle,” “triangle,” and “square” should be communicated in such a way that they do not reveal the correct answer.
- Technical terms, such as words that refer to the metric system—e.g., “millimeter,” “grams,” “liter,” etc.—should also be communicated in such a way that they do not reveal the correct answer.
- Idioms, figures of speech, and metaphorical expressions appear occasionally throughout dictated items. These expressions are commonly understood by hearing children at very young ages, but they may not be familiar to students who are deaf or hard of hearing. These items need to be presented in a way that ensures that the students understand the idiomatic content of the expressions.

In a dictated mathematics test, there are long sentences with subordinate clauses and phrases. One must consider carefully how these relationships might be best communicated to the students using the mode which they normally use (i.e., ASL, Signed English).

Summary

Assessing students who are deaf or hard of hearing has significant challenges in addition to the ones associated with testing in general. Confounding factors for testing students who are deaf or hard of hearing include proficiency in English, the test administrator's knowledge of the approach the student uses to communicate, and the communication skill level of the test taker.

Accommodations are a way of leveling the playing field on high-stakes assessments. If chosen wisely, accommodations provide students with access to showing what they know without affecting the validity of the test results. This article recommends teacher training and accommodations of students who are deaf or hard of hearing.

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