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assessment report

# A Primer on Assessing the Visually Impaired

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December 2005

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## Introduction

The *No Child Left Behind Act* of 2001 (NCLB)—which is the most recent reauthorization of the *Elementary and Secondary Education Act* of 1965 (ESEA)—requires that in order to get federal funds, states must hold schools and districts accountable for the achievement of their students as measured by standardized achievement tests. A central mandate of NCLB is that *every* student be included in these accountability assessments. This change is significant for students with disabilities whose participation in state testing programs has been inconsistent; in the past, many states have excluded students with disabilities from their accountability systems (Ekstrom, 2001; Fuchs, Fuchs, Eaton, Hamlett, Binkley, and Crouch, 2000; McDonnell, McLaughlin, and Morison, 1997). This exclusion has come to be seen as denying students with disabilities the benefits that assessment provide, such as educational opportunities and data about the quality of the education they receive (Ekstrom, 2001; Koenig and Bachman, 2004). Subsequently, the participation of students with disabilities in educational testing has been mandated by a series of federal legislation, including NCLB, the *Americans with Disabilities Act* of 1990 (ADA), and the 2004 reauthorization of the *Individuals with Disabilities Education Act* (IDEA 2004) (Bowen and Ferrell, 2003; Ekstrom, 2001; Koenig and Bachman, 2004; Phillips, 1994).

Pearson Education, Inc. (Pearson) is dedicated to producing assessments that enable students with disabilities to participate in testing programs in accordance with these laws. This report focuses on Pearson's use of Braille—a system of writing that is read by touch and is universally accepted as the standard format for blind readers (Barraga, 1983)—to produce assessments for students with visual impairments. Topics discussed in this report include the nature of visual impairment, approaches to accommodating disabilities generally, and an overview of Pearson's process for designing, developing, and producing Braille forms of the highest quality.

## Understanding Visual Impairment

Affecting approximately 1 in 1000 students, visual impairment is one of the most prominent low-incidence disabilities (Erin, 2003). Visual impairment is frequently cited as a disability that impacts the way in which a student participates in education (Phillips, 1994). Hence, it is now widely agreed (and mandated by law)



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that a student with a visual impairment should have the same opportunity to learn and demonstrate achievement as a student with regular vision (Koenig and Bachman, 2004). However, the way in which education is provided to a student with a visual impairment varies widely depending on the unique nature of his or her disability. Four primary classifications of visual impairment are (Allman, 2004):

- total blindness – the student does not have the ability to see and must use other senses for learning
- legal blindness – the student’s better eye has either a specific visual acuity of 20/200 or less after correction or a visual field of 20 degrees or less
- partially sighted – the student’s visual acuity is between 20/70 and 20/200 after correction
- low vision – the student has one or more of a wide variety of vision problems that cannot be corrected with glasses and that limit his or her ability to perform everyday activities

Other terms and definitions used to describe visual impairment exist, but the above definitions account for the majority of cases. Clearly, students with visual impairments will have different needs depending on their degree of sight ability (Erin, 2003).

### Accommodations for Students with Visual Impairment

In accordance with IDEA 2004, a student with a disability must have an *individualized education program* (IEP) that accounts for his or her unique needs in the classroom. The IEP is designed to structure the goals and curriculum of an individual student with a disability and outline the process for monitoring his or her progress (Hopper, 2002; Koenig and Bachman, 2004; McDonnell et al., 1997). With the passage of NCLB and IDEA 2004, the IEP must also detail how the student will be included in the state accountability assessments in which all students must participate. This goal is achieved by providing *accommodations* for the student while taking the regular assessment, making *modifications* to the regular assessment, or using an *alternate assessment* (McDonnell et al., 1997).

Accommodations are changes in the way that an assessment is administered that do not affect the validity of the results. By compensating for challenges in the accessibility of an assessment, accommodations can help a student with a disability demonstrate knowledge and skills on an equal footing with regular students (Koenig and Bachman, 2004; McDonnell et al., 1997). Accommodations



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for students with disabilities are typically classified into four categories (Bowen and Ferrell, 2003; Hopper, 2002; McDonnell et al., 1997):

- Presentation – the materials used to administer the assessment are changed to a format most appropriate for the student.
- Response – the student is allowed to respond to assessment items in the way in which he or she is best able.
- Timing or Scheduling – changes are made to the timing or scheduling of the assessment, such as providing more time to complete the assessment or allowing breaks during administration.
- Setting – changes are made to the environment or location of the administration, such as administering the test to the student in a different room or in a small group.

The combination of accommodations that a student with a disability receives is determined by the team which develops his or her IEP. One of the most commonly cited examples of a presentation accommodation is the use of Braille test forms by students with visual impairments (Bowen and Ferrell, 2003; Hopper, 2002; Koenig and Bachman, 2004; McDonnell et al., 1997). Students with visual impairments also frequently require other accommodations, such as extended time due to the longer amount of time required to use Braille test materials effectively (Koenig and Bachman, 2004; McDonnell et al., 1997). Accommodations must therefore be individualized for each student with a disability (Ekstrom, 2001).

Ultimately, accommodations enable a student with a disability to accurately and fairly demonstrate knowledge and skills in a subject area. Hence, as Phillips (1994) observes, “A blind student who passes [a reading] test using the Braille edition has demonstrated competence in the intended skill of reading comprehension while not being penalized for the unrelated physical impairment of sight” (p. 102). When they do not change the construct being measured by the assessment, the use of accommodations is supported by both federal and case law, and the results from an assessment administered with accommodations may be compared with the results of regular students (Ekstrom, 2001; Fuchs et al., 2000; Hopper, 2002; Phillips, 1994).

In contrast to accommodations, *modifications* change the construct being tested or even the content of the assessment. An example is removing or omitting certain items that are considered biased against the student with a disability. Assessments with modifications produce results that are not directly comparable with the results from students who took the regular version of the assessment

(with or without accommodations), an important consideration as regards accountability legislation such as NCLB (Bowen and Ferrell, 2003; McDonnell et al., 1997).

## Producing Braille Test Forms

For students who are blind or have significant visual impairments, Braille is considered the most efficient code used for reading and is widely accepted as an accommodation that can preserve the validity of an assessment (Thurlow and Bolt, 2001; Erin, 2003). To publish assessments that are accessible to students with visual impairments, Pearson has had a formal policy for producing test materials in Braille since 2002. To implement this policy, Pearson relies on the services of certified Brailleists at outside organizations, such as the Region IV Education Service Center in Houston, Texas.

Pearson's policy follows the standards developed by the Braille Authority of North America (BANA) and the American Printing House for the Blind, Inc. (APH). Materials from the APH Accessible Tests Department and the Library of Congress's National Library Service for the Blind and Physically Handicapped were also consulted. To provide Braille versions of assessments for a wide range of academic subject areas, Pearson adheres to the most current versions of the following Braille codes developed and published by BANA:

- Braille Code for Chemical Notation
- Braille Code for Columned Materials and Tables
- Braille Formats: Principles of Print to Braille Transcription
- Code for Computer Braille Notation
- English Braille, American Edition
- Guidelines for Linear Braille Format
- Literary Braille Code (uncontracted, formerly grade 1 Braille)
- Literary Braille Code (contracted, formerly grade 2 Braille)
- Music Braille Code
- Nemeth Code for Mathematics and Science Notation



Although Pearson follows the most recent standards and policies for Braille, some assessment content may be difficult to provide in a Braille format. For example, certain mathematical items and certain types of charts, graphs, and diagrams require special consideration during the Braille process (Bowen and Ferrel, 2003; Ekstrom, 2001). Tactile graphics can be used to make this content accessible to students with visual impairments, but some items may not be reproducible in Braille. However, Pearson considers the issue of Braille suitability well in advance of the production of a Braille version of the test. Throughout the development of an assessment, Pearson applies the principles of *universal design*. In universal design, the widest possible range of students who will take the test are considered at every stage of the test development process (Allman, 2004). Items with content that may prove difficult to Braille, or that may be biased against or less accessible to any student, are identified during the development of the regular assessment. By using this approach, Pearson produces assessments that are more amenable to accommodations, reducing the likelihood of the need for modifications (such as removing an item from the Braille version that appears in the regular version) that will affect the validity of the assessment's results.

### Overview of Pearson's Procedure for Braille

Pearson's procedure for producing a Braille version of a test is summarized below. Braille forms typically require 6 to 8 weeks to develop, proof, and manufacture. Specific details for each of stage in this process, as well as specific policies regarding the adaptation of test items, are available in Pearson's *Procedures and Specifications for Creating Braille Versions of Tests* (Case, 2003).

1. Three months in advance of administration, program management collects orders for Braille test materials from districts and schools.
2. The production specialist meets with the program director, manufacturing specialist, and project director to review the requirements of the Braille program, including the grades and subject areas to be tested and the product print quantities.
3. A development and review team is established consisting of the customer representative or team, a content specialist, an educator of the visually impaired, a Braille transcriptionist, and a Braille proofreader. A Braille graphics expert and psychometrician may also be required.
4. The team reviews all items on the assessment for bias against students with visual impairments, determines item suitability for Braille, and



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identifies any items which require modification or omission. Graphics are reviewed to determine the most appropriate method of transcription (tactile graphics or description in Braille). The need for ancillaries is determined and transcriber notes are produced.

5. A prototype test that meets BANA conventions is developed and reviewed by a blind certified proofreader. All Braille materials are transcribed into contracted Braille unless specific BANA rules or the state education agency requires presentation in uncontracted form.
6. The Braille version of the test is reviewed to determine if it produces non-standard assessment results, and the specifications for scoring the assessment are established by Pearson and the state education agency. Options for scoring the Braille version of the test may include giving credit for items omitted, rescaling the test, prorating the student's score for items attempted, or Brailleing and scoring all items. Any rescaling of the Braille version of the test is accomplished by the psychometrician and reported in the assessment's technical manual.
7. The program director completes the manufacturing requisition form and submits it to the production specialist. Electronic versions of the regular forms, once approved by the project director and production specialist, are sent to the Braille vendor.
8. Preview copies of the Braille test booklets and accompanying notes from the Braille transcriber are sent to the state education agency for review. The agency may send their comments and suggested changes directly to the Braille vendor. Final corrections are made to the Braille test booklets.
9. Manufacturing of the Braille test materials begins. Each Braille version of the test will be accompanied by a "materials needed" list, a print version of the directions for administering (DFA), transcriber's notes, ancillaries, and a print version of the regular test (if required by the education agency).
10. The materials are shipped to the schools and districts. Pearson typically recommends that each student receive an individualized package containing all of the materials required for administration of the test.

### **Conclusion**

Providing an educational assessment in Braille is clearly an intense and challenging undertaking. However, the resources and research supporting the use

of assessments in Braille have long been well established. It is incumbent on the publishers of educational assessments to use these resources to accommodate students with visual impairments; today, Pearson contributes significant resources toward producing high-quality Braille assessments. By taking leadership in the accommodation of students with disabilities, test publishers make a significant contribution to the education of students who face the greatest challenges in the classroom. Additionally, the quality of regular educational assessments can only be improved through this process, thereby creating a benefit for all students.

## References

- Allman, C. (2004). *Making tests accessible for students with visual impairments: A guide for test publishers, test developers, and state assessment personnel*. (2nd ed.). Louisville, KY: American Printing House for the Blind, Inc.
- American Educational Research Association (AERA), American Psychological Association (APA), & National Council on Measurement in Education (NCME). (1999). *Standards for educational and psychological testing*. Washington, DC: Author.
- Barraga, N. (1983). *Visual handicaps and learning*. Austin, TX: Pro-Ed, Inc.
- Bowen, S. K. & Ferrell, K. A. (2003). *Assessment in low incidence disabilities: The day-to-day realities*. *Aural Special Education Quarterly*, 22(4), 10–19.
- Case, B. J. (2003). *Procedures and specifications for creating Braille versions of tests*. San Antonio, TX: Pearson Education, Inc.
- Ekstrom, R. B. (2001). Equity issues in the assessment of individuals with visual or hearing impairments. In G. R. Walz & J. C. Bleuer (Eds.). *Assessment: Issues and challenges for the millennium*. Greensboro, NC: Caps Press.
- Erin, J. N. (2003). *Educating students with visual impairments*. Arlington, VA: The Council for Exceptional Children.
- Fuchs, L. S., Fuchs, D., Eaton, S. B., Hamlett, C., Binkley, E., & Crouch, R. (2000). Using objective data sources to enhance teacher judgments about test accommodations. *Exceptional Children*, 67(1), 67–81.
- Hopper, M. F. (2002). *The implications of accommodations in testing students with disabilities*. Azusa, CA: Azusa Pacific University. Retrieved from <http://www.eric.ed.gov> on September 20, 2005.
- Koenig, J. A., & Bachman, L. F. (Eds.). (2004). *Keeping score for all: The effects of inclusion and accommodation policies on large-scale educational assessments*. Washington, DC: National Academy Press.

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- McDonnell, L. M., McLaughlin, M. J., & Morison, P. (Eds). (1997). *Educating one and all: Students with disabilities and standards-based reform*. Washington, DC: National Academy Press.
- Phillips, S. E. (1994). High-stakes testing accommodations: Validity versus disabled rights. *Applied Measurement in Education*, 7(2), 93–120.
- Thurlow, M & Bolt, S. (2001). *Empirical report for accommodations most often allowed in state policy. Synthesis report*. Minneapolis, MN: National Center on Educational Outcomes. Retrieved from <http://www.coled.umn.edu/NCEO> on September 20, 2005.

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