Accessible Textbooks and Instructional Materials For Students with Visual Impairments

A TOOL KIT FROM THE AFB SOLUTIONS FORUM

AMERICAN FOUNDATION FOR THE BLIND
TEXTBOOKS AND INSTRUCTIONAL MATERIALS SOLUTIONS FORUM
Revised June 2003
A collaborative national effort on behalf of children who are blind or visually impaired

ACCESSIBLE TEXTBOOKS TOOL KIT

American Foundation for the Blind
Textbooks and Instructional Materials Solutions Forum

“More than at any other time, when I hold a beloved book in my hand my limitations fall from me, my spirit is free.”

~Helen Keller - Midstream, 1930

Design and Production Provided by the Utah Schools for the Deaf and the Blind
INTRODUCTION AND ACKNOWLEDGEMENTS

Recognizing that information leads to solutions, the AFB Textbooks and Instructional Materials Solutions Forum has prepared this portfolio for individuals to share information about this important issue. The Accessible Textbooks Tool Kit contains fact sheets, news releases and articles from various stakeholders.

Feel free to make copies as needed of any of the contents and share with individuals who influence decisions about textbooks or who might help lead the way in developing solutions.

For more information about the AFB Textbooks and Instructional Materials Solutions Forum, or to submit information that may be appropriate to add to this portfolio, contact:

Mary Ann Siller
Director, National Education Program
AFB Solutions Forum Project Director
American Foundation for the Blind
260 Treadway Plaza
Dallas TX 75235
214-352-7222, ext. 15
E-mail: siller@afb.net

You can also find up-to-date information about the AFB Solutions Forum at www.afb.org/education.asp or at www.tsbvi.edu.

Please note the following about the contents of the Tool Kit:

- each article includes a footer to identify its location within the portfolio,
- each article carries a date stamp to indicate when it was published as part of this portfolio,
- some articles have been scanned and may contain typographical errors;
- consult the original source if you have questions about the information, and periodically, new information or changes to the Tool Kit will be available at www.afb.org/education.asp.

Acknowledgements

The AFB Textbooks and Instructional Materials Solutions Forum is the work of many stakeholders interested in this vital topic (see list of stakeholders in section I). The Communication and Collaboration work group appreciates the efforts of all these stakeholders, but we especially want to acknowledge those who contributed to this portfolio. Each article in the portfolio indicates its original source, and we appreciate that the authors and publications gave permission for us to reprint the information for your use.
The AFB Solutions Forum would like to thank the following individuals for their hard work in making this resource portfolio possible: Lorri Quigley and Carol Granquist, Utah Schools for the Deaf and the Blind; Marie Amerson, Georgia Academy for the Blind; and Mary Ann Siller, American Foundation for the Blind.

We’d like to give special recognition to Marie Amerson, Georgia Academy for the Blind, and facilitator of the Communication and Collaboration work group for her dedicated leadership in developing the Tool Kit’s format, coordinating the development of the contents and leading the editing process to refine the resource portfolio.

We wish to extend our sincere thank you to Lorri Quigley, director of the Educational Resource Center at the Utah Schools for the Deaf and the Blind for her steadfast commitment in assisting the AFB Solutions Forum in delivering a quality product. The creative talents of Carol Granquist, graphic art specialist, in designing the art work and handling all of the graphic formatting provided an extraordinary Tool Kit for the AFB Solutions Forum. We are extremely grateful for her dedication to this project.

Special appreciation goes to Lee Robinson, superintendent of the Utah Schools for the Deaf and the Blind for providing the creative design, production and printing of the resource portfolio. He provided the key link to bringing this critical information to constituents across the United States.

Thank you!!!
June 2002

Dear Reader:

As you know, the Association of American Publishers (AAP) is concerned with equity in educational opportunity, giving all American students access to high quality instructional materials, and promoting reading and literacy. Reading and literacy are fundamental to learning.

We at AAP feel this tool kit will provide a needed resource for school districts and publishers. The American Foundation for the Blind’s Textbooks and Instructional Materials Solutions Forum created this portfolio of materials in order to assist you and other state leaders in understanding the issues surrounding the provision of accessible instructional media for students who are blind or have low vision. We know the information highlighting the “right book at the right time” will provide more information specific to making materials accessible.

The publishing industry together with the blindness field are making a difference for students with visual impairments. We know this packet of information will provide you with new resources to assist with developing a plan to provide textbooks and instructional materials in a timely manner and in the medium needed by students with visual impairments.

Sincerely,

Pat Schroeder
President & CEO
June 2002

Dear Reader:

One of the greatest challenges for textbook administrators, school district leaders, teachers, and parents is identifying appropriate instructional materials for the students served in their region. Ensuring that all students can actually access those materials sometimes poses an even greater problem. Students with visual impairments understand this all too well. Acquiring assigned textbooks and reading materials in braille, audio, or enlarged print formats at the same time as their sighted classmates is not yet a reality for these schoolchildren. Since literacy marks the first step to learning, improving the situation is imperative.

We at the American Foundation for the Blind (AFB) are pleased to offer a resource to address this problem on a national level. AFB’s Textbooks and Instructional Materials Solutions Forum created this packet of materials to support your efforts to deliver the right books at the right time to blind and visually impaired students in your community. Our intent is to provide you with a template of the major issues surrounding textbook acquisition for visually impaired students, allowing you to improve the lives of these children and educate others with similar concerns.

The current document will evolve over time as progress is made and producing accessible textbooks becomes less problematic. Much of the content can also be found by following links on the following web sites: www.afb.org/education.asp or www.tsbvi.edu.

We encourage you to share information from this portfolio with others who make decisions about the selection of textbooks and instructional materials. For more information, contact Mary Ann Siller (AFB National Education Program) at siller@afb.net.

Sincerely,

Carl R. Augusto
President & CEO
American Foundation for the Blind
ACCESSIBLE TEXTBOOKS AND INSTRUCTIONAL MATERIALS FOR STUDENTS WITH VISUAL IMPAIRMENTS
A TOOL KIT FROM THE AFB SOLUTIONS FORUM

I. AFB Textbooks and Instructional Materials Solutions Forum
   a. Introduction to the AFB Textbooks and Instructional Materials Solutions Forum
   b. AFB Textbooks and Instructional Materials Solutions Forum Partners
   c. AFB Textbooks and Instructional Materials Solutions Forum: Background and History
   d. AFB Textbooks and Instructional Materials Solutions Forum: Work Groups’ Statement of Purpose

II. General Information
   a. Alphabet Soup: Common Acronyms Used When Speaking About Accessible Textbooks
   b. Official Resolution of the Association for Education and Rehabilitation of the Blind and Visually Impaired: AER Resolution 2000-09
   c. Dear Dot
   d. Surpassing Gutenberg: A Historic Opportunity in Access to Published Information for Blind Readers
   e. Web Site Resources for Education
   f. Organizational Contact List
   g. States with Textbook Adoption Process
   h. AAP School Division State Braille Laws Summary (K-12)

III. Issues
   a. Textbook Creation: From Electronic File to Print Pupil Edition
   b. Production of Braille Textbooks
   c. Flowchart for Working with Publishers’ Files
   d. Why Does it Take so Long?
   e. Owning the Problem
   f. Textbooks on Time: Will it Ever Happen for the Blind?
   g. Blind Students Want Faster Access to Books – Federal Law is Sought to Speed Up the Process of Adapting Textbooks for Visually Impaired People
   h. Lack of Brailled Textbooks Leaves Blind Students in a Bind
   i. Accessibility Benefits All Students: Electronic Textbooks Poised to Provide Universal Access
   j. Statewide Training Project of the National Association of State Directors of Special Education (NASDSE) and the Council of Schools for the Blind (COSB)
   k. What is ASCII: An Outdated Computer File System, an Outmoded Communications Medium, an Outgoing Accessibility Tool
l. Information from the AFB Textbooks and Instructional Materials Solutions Forum Surveys
   1. Use of Multimedia Presentation and Technology from the Results of the National Survey
   2. Production and Delivery of Specialized Materials
   3. Training and Availability of Braille Transcribers

IV. Solutions
a. American Printing House for the Blind (APH)
   1. Information from the American Printing House for the Blind
   2. Accessible Textbooks Initiative Collaboration (ATIC) Project
b. More Accessibility for Math Students
c. Verizon and AFB National Campaign for Literacy, Textbooks, Transcribers and Technology
   1. Verizon Partners with AFB for Three-Year National Campaign
   2. AFB and Verizon Reads National Campaign Components
   3. AFB & Verizon Call To Action Fact Sheet
d. New Career - Braille Textbook Transcriber
   1. Northwest Vista College Transcriber Program
   2. Braille Transcriber Q & A
e. Braille Production the DAISY Way
f. WGBH/NCAM
   1. eDescription Project
   2. Making Educational Software Accessible
   3. MAGpie
g. Association of Instructional Resource Centers for the Visually Handicapped (AIRCVH)
h. DAISY Consortium: Information Technology for the World’s Blind and Print-Disabled Population – Past, Present, and into the Future
i. Guidelines to Structured Markup for the DAISY Digital Talking Book
j. National Library Services for the Blind and Physically Handicapped: Digital Plans and Progress
k. Digital Talking Book Standards Developed by NLS and Partners Under NISO Auspices
l. Recording for the Blind & Dyslexic (RFB&D)
   1. RFB&D: Questions and Answers
   2. Using Digital Talking Books in Schools: RFB&D’s Top Project
m. Center for Applied Special Technology (CAST)
   1. CAST at a Glance
   2. About CAST
   3. Thinking Readers: Helping Students Take Charge of Their Learning
   4. Testimony to Committee on Appropriations, Subcommittee on Labor, Health and Human Services, and Education: Hearing on Educational Technology, July 25, 2001
   5. National File Format Advisory Panel
   6. National File Format
n. The Universal Learning Center: Helping Teachers – and Parents – Find Accessible Electronic Learning Materials for Students with Disabilities
o. Association of American Publishers (AAP): Publisher Contact List for Braille-Related Materials and Questions
p. Conversion Vendors
q. National Standard for Digital Talking Books Brings Powerful, Flexible Reading System for the Print Disabled
r. Joint Technology Task Force (JTTF): Electronic File Format Analysis
s. Training Manual for Braille Textbook Transcribers
t. Instructional Materials Accessibility Act (IMAA)
  1. IMAA – Summary of Key Areas
  2. IMAA – Section by Section
  3. Supporters of the Instructional Materials Accessibility Act
u. Bill Would Get Books to Blind Students More Quickly
v. New Bill Would Give Blind Students Equal Access to Textbooks
w. Get Caught Reading National Campaign
x. Braille2000 Product Information
y. Duxbury Systems, Inc.
INTRODUCTION TO THE AFB TEXTBOOKS AND INSTRUCTIONAL MATERIALS SOLUTIONS FORUM

The AFB Textbooks and Instructional Materials Solutions Forum addresses one of the most serious issues affecting the education of students with visual impairments today. Despite everyone’s best efforts and advancements in technology, many visually impaired students do not receive textbooks and other instructional materials in braille, large print, audio, or other needed special media at the same time as their sighted classmates.

Children who are blind or visually impaired have the same right to a quality education as any other child. This right is guaranteed by the Individuals with Disabilities Education Act (IDEA). Unfortunately, these students do not receive their classroom materials at the same time as their sighted classmates. Braille, large-print, or audio recorded instructional materials routinely arrive long after classes begin or, too frequently, not at all. Students with visual impairments compete on a par with their sighted classmates, but without the benefit of equal and timely access to textbooks or instructional materials. The American Foundation for the Blind (AFB) initiated this national campaign to define solutions to this challenge, based on the principle that the technology available today, advance planning, and timely distribution of tools for learning can eliminate these barriers to a student’s progress.

The AFB Solutions Forum is a collaborative national effort of agencies and organizations involved in the production and distribution of textbooks and instructional materials. Textbook publishers, producers of specialized media, assistive technology specialists, educators, Instructional Materials Resource Centers, parents, consumers, and others are examining the multifaceted process of producing and delivering educational materials in accessible media to students who are blind or visually impaired. The AFB Solutions Forum is a direct result of issues identified in Goal #7 of the National Agenda for the Education of Children and Youths with Visual Impairments, Including Those With Multiple Disabilities.

The goal of the AFB Solutions Forum is to develop a coordinated action plan for ensuring equality of access to instructional materials for students who are blind or visually impaired. Five work groups have taken the initiative to improve the delivery of textbooks in the appropriate media. Information posted on the AFB Solutions Forum web page highlights the activities of the following five work groups: Electronic Files and Research and Development, Legislative and Policy-Making, Production Process, Training and Other Needs, and Communication and Collaboration.

The AFB Solutions Forum will address the:

- Lack of standardization of electronic file formats provided by textbook publishers.
- Inaccessibility of multimedia textbooks, especially those delivered via the Internet and CD-ROM.
Variation in state textbook regulations regarding accessible instructional materials.

Expense of producing specialized materials and lack of fiscal incentives to develop new technologies.

Shortage of qualified braille transcribers and production resources. Barriers to communication and collaboration, including duplication of efforts.

Additional information may be found on the web site of the Texas School for the Blind and Visually Impaired at www.tsbvi.edu/textbooks/index.htm and the Association of American Publishers at www.publishers.org.

Work Groups:

- Electronic Files & Research and Development
- Legislative and Policy-Making
- Production Process
- Training and Other Needs
- Communication and Collaboration

AFB Solutions Forum Coordinator:

Mary Ann Siller
Director, National Education Program
AFB Solutions Forum Project Director
American Foundation for the Blind
260 Treadway Plaza
AFB Southwest
Dallas, TX 75235
Phone: 214-352-7222 ext. 15
Fax: 214-352-3214
E-mail: siller@afb.net
The following appears on web pages of the AFB Solutions Forum and is used with permission.

The AFB Textbooks and Instructional Materials Solutions Forum is a collaborative national effort of agencies and organizations that produce and distribute textbooks and other instructional materials to ensure equal access to instructional materials for students who are blind or visually impaired. AFB Solutions Forum participants include textbook publishers; educators; access technology specialists; producers of braille, large-print and recorded textbooks; parents of children who are blind or visually impaired; and adults who are blind or visually impaired.

**AFB Textbooks and Instructional Materials Solutions Forum partners include:**

- Adaptive Technology Services, Texas A&M University at College Station
- Alternate Text Production Center of the California Community Colleges
- American Council of the Blind (ACB)
- American Foundation for the Blind (AFB)
- American Printing House for the Blind (APH)
- Association for Education and Rehabilitation of the Blind and Visually Impaired (AER)
- Association of American Publishers (AAP)
- Association of Instructional Resource Centers for the Visually Handicapped (AIRC-VH)
- Association of State Education Consultants for the Visually Impaired (ASECVI)
- Braille Authority of North America (BANA)
- Braille Institute of America, Inc.
- California Department of Education, Clearinghouse for Specialized Media and Technology
- California Transcribers and Educators of the Visually Handicapped (CTEVH)
- Center for Applied Special Technology (CAST)
- Computer Application Specialties
- Council for Exceptional Children, Division on Visual Impairments (CEC-DVI)
- Council of Schools for the Blind (COSB)
- Digital Audio-Based Information System Consortium (DAISY)
- Duxbury Systems, Inc.
- Glencoe/McGraw-Hill
- Hadley School for the Blind (HSB)
- Harcourt School Publishers
- Helen Keller Services for the Blind
- Houghton Mifflin Co.
- Library of Congress National Library Service for the Blind and Physically Handicapped (NLS)
- Louisiana School for the Visually Impaired (LSVI)
- Macmillan/McGraw-Hill
- McDougal Littel
National Association for Parents of Children with Visual Impairments (NAPVI)
National Braille Association (NBA)
National Braille Press (NBP)
National Center for Accessible Media (WGBH)
New Mexico State University, Department of Mathematical Sciences
Northwest Vista College (San Antonio, Texas)
Pearson Education
Pearson Learning
Recording for the Blind and Dyslexic (RFB&D)
Scholastic Inc.
Scott Foresman
TechAdapt, Inc.
Texas Education Agency (TEA)
Texas School for the Blind and Visually Impaired (TSBVI)
Verizon Communications
Visual Aid Volunteers
BACKGROUND AND HISTORY

The following appears on web pages of the AFB Solutions Forum and is used with permission.

Recognizing that timely provision of textbooks and instructional materials in the appropriate accessible media continues to be a major problem confronting students who are blind or visually impaired in America’s classrooms, the American Foundation for the Blind formed the Textbooks and Instructional Materials Solutions Forum. This collaborative national effort addresses one of the most serious issues affecting the education of students with visual impairments today. The AFB Solutions Forum is represented by agencies and organizations involved in the production and distribution of textbooks and instructional materials and has as its goal the development of a coordinated action plan for ensuring equality of access to instructional materials for students who are blind or visually impaired.

The AFB Solutions Forum is directly related to Goal #7 of the National Agenda for the Education of Children and Youths with Visual Impairments, Including those with Multiple Disabilities. The National Agenda identified timely access to textbooks and instructional materials as a critical issue needing direct solutions.

October 14, 1998--Louisville, KY--Initial Meeting of the AFB Textbooks and Instructional Materials Solutions Forum Held

Textbook publishers, producers of specialized media, assistive technology specialists, policymakers, educators, representatives from the Instructional Materials Resource Centers, parents, consumers, and others joined with AFB to identify the barriers impacting students who are blind or visually impaired from receiving accessible textbooks and instructional materials at the same time as their sighted peers and to initiate a coordinated plan of action for ensuring equal access to instructional materials for this population. Thirty-five representatives participated in the initial meeting. Five work groups were formed:

1. Electronic Files and Research and Development
2. Legislative and Policy-Making
3. Production
4. Training and Other Needs
5. Communication and Collaboration

Each of the five work groups was asked to examine the multifaceted process of producing and delivering educational materials in accessible media and to determine ways to improve the delivery of textbooks and instructional materials in appropriate media.
January 1999--Nationwide--Work Groups Held Teleconferences

Each work group held teleconference meetings to discuss the issue of accessible learning media and ways to address topics particular to their area of concern. Each of the five work groups began outlining a plan of action specific to the issues associated with their areas of concern.

March 6 & 7, 1999--Washington, DC--AFB Solutions Forum Featured at the Josephine L. Taylor Leadership Institute's (JLTLI) Education Work Group Session

As the leading policy conference in the field of blindness, the JLTLI provided an opportunity for 125 Education Work Group participants to discuss the issue of accessible textbooks and instructional materials and identify the most significant areas needing solutions within the framework of the AFB Solutions Forum's five work group areas: electronic files and research and development; legislative and policy-making; production; training and other needs; and communication and collaboration. A plan of action for the AFB Solutions Forum was identified with significant input by the Association of American Publishers.

April 22, 1999--Dallas, TX--Administrative Structure is Defined for the AFB Solutions Forum

The administrative structure for the AFB Solutions Forum was defined to include five work group facilitators:

Electronic Files--Jim Allan, Texas School for the Blind and Visually Impaired

Legislative and Policy-Making--Mark Richert, AFB Governmental Relations

Production--Phyllis Campana, Braille Authority of North America (BANA)

Training and Other Needs--Frances Mary D'Andrea, AFB

Communication and Collaboration--Marie Amerson, Association for Education and Rehabilitation of the Blind and Visually Impaired (AER)

July 26, 1999--Nationwide--Solutions Targeted

Beginning in May 1999, eighty-five stakeholders provided input into the wording for the five work groups' statements of purpose. Short and long-term solutions to the most critical issues with time lines for implementation were finalized in July 1999. The statements of purpose include:

Electronic Files --The Electronic Files and Research and Development Work Group is primarily concerned with exploring and defining the following critical issues: The creation, production, and distribution of electronic files provided by textbook publishers for the production of textbooks in braille and other special media and identifying new trends, technologies and research that will positively affect production, accessibility, and delivery of textbooks to students with visual impairments.
Legislative and Policy-Making --The Legislative and Policy-Making Work Group is primarily concerned with the analysis and development of public policies impacting the Solutions Forum's goal of ensuring equal access to the printed word, and more specifically, to the full range of educational materials. This work group is the Forum's point of contact for ongoing efforts among representatives of the publishing industry, blindness advocacy organizations and the National Library Service to determine the appropriate electronic file format and markup language to efficiently produce braille, large-print and audio textbooks. Additionally, this work group will serve as a mechanism to package, present and disseminate the Solutions Forum's outcomes for future advocacy efforts.

Production --The focus of the Production Work Group is to identify the processes involved in the production and dissemination of textbooks and instructional materials in specialized media needed by students who are visually impaired. This work group will recommend guidelines and strategies for acceptable quality braille transcriptions; appropriate adaptations of materials for producing textbooks to ensure they are educationally sound for visually impaired students; and eliminating duplication of efforts.

Training and Other Needs --The Training Work Group focuses on the training needs of those who create and use textbooks and instructional materials for students who are blind or visually impaired. The work group will identify the necessary steps required to increase the number of qualified braille transcribers and identify the skill sets needed in training people associated with the creation and use of textbooks and instructional materials for students with visual impairments. The target audiences include among others: braille transcribers, textbook publishers, producers of specialized materials, parents, and educators.

Communication and Collaboration --The Communication and Collaboration Work Group serves as a clearinghouse for sharing information related to the activities of the five Solutions Forum work groups. The primary focus is to inform and educate the field of blindness, publishers, and the general public regarding issues and strategies for ensuring equal access to textbooks and instructional materials in accessible formats.

October 21, 1999--Louisville, KY--AFB Solutions Forum Met and Defined the Essential Questions for Three National Surveys

Work group committees developed questions for three national surveys to reflect the following:

Investigation by the Electronic Files and Research and Development Work Group of how students with visual impairments currently access multimedia information and to identify initiatives that will increase students' access to multimedia presentations;

National review of issues associated with the production and delivery of textbooks by the Production Work Group in order to focus on improving production and acquisition of specialized textbooks and instructional materials in all 50 states;

Identification of up-to-date information regarding the training needs of braille transcribers by the Training and Other Needs Work Group, including data on the
number of braille transcribers from each state, the skill sets needed by transcribers, the training currently available to transcribers, the resources for continued training, and suggestions for recruitment and retention of braille transcribers.

Various organizations and publications were identified for receiving articles and information about the data from the surveys, as well as other AFB Solutions Forum activities.

**November 10, 1999--New York, NY and Austin, TX--AFB Solutions Forum Web Sites Launched**


**November 15, 1999--Nationwide--New Facilitators Took Charge**

Two of the five work groups welcomed new facilitators. The new facilitators are Alicia McAninch (New Mexico) for Production, and Larry Brown (Oregon) for Training and Other Needs. They both represent the Association of Instructional Resource Centers for the Visually Handicapped (AIRC).


A national press release was developed that noted the strategic partners in the AFB Solutions Forum and outlined six major barriers in equal access to textbooks and information. The major barriers identified were:

- Lack of standardization of electronic file formats provided by textbook publishers;
- Inaccessibility of multimedia textbooks, especially those delivered via the Internet and CD-ROM;
- Variation in state textbook regulations regarding accessible instructional materials;
- High expense of producing specialized materials and the lack of fiscal incentives to develop new technologies; and
- Shortage of qualified braille transcribers and production resources; and communication and collaboration barriers, including duplication of efforts.

**March 2, 2000--Dallas TX--AFB Solutions Forum Meets at Josephine L. Taylor Leadership Institute (JLTLI)**

Prior to the annual JLTLI, 45 people representing textbook publishers, producers of specialized media, educators, parents, assistive technology specialists, and consumers met to discuss outstanding issues and work from the July 1999 work plan of the AFB Solutions Forum. In addition, participants reviewed the three surveys in preparation of the pilot study being conducted in March 2000.
April 10, 2000--Nationwide--AFB Solutions Forum Surveys Distributed

Three national surveys were finalized and distributed. Final reports of the surveys will supply general information to encourage states to create policies and procedures for producing textbooks and other instructional materials in accessible media. The final reports will be ready in October 2000.

Multimedia Survey --The multimedia survey was distributed throughout the United States to 2,500 teachers of students with visual impairments. The purpose of this survey is to provide national data on how multimedia textbooks and presentations are used in educational settings. The survey asks for information on teachers' methods of adapting multimedia information and on the training needed for the use of such presentations in classrooms with students who are visually impaired.

Production Survey --The purpose of the third survey is to assist in long-range planning to improve production and acquisition of textbooks and instructional materials for students who are visually impaired. It was sent to one stakeholder in each state who was asked to coordinate answers with all entities within the state.

Training Survey --This survey was sent to a stakeholder responsible for braille transcription in all 50 states. The stakeholder was asked to coordinate answers throughout the state. The purpose of the survey is to provide a national overview of the numbers of trained braille transcribers, skill sets for the job, recruitment and retention issues for braille transcribers, and the tasks they typically perform.

April 18, 2000--Washington, DC--Federal Legislation Emerges

AFB Solutions Forum stakeholders began defining legislative language with the Association of American Publishers (AAP) and the National Federation of the Blind (NFB), among other organizations. The goal was to develop a consensus on federal legislation that would provide students with greater access to textbooks and other instructional materials.

May 5, 2000--Washington, DC--National Legislation Moves Forward

Major steps were taken to develop a consensus among the field of blindness, publisher representatives, and NFB concerning national legislation.

May 10, 2000--Macon, GA, and Dallas, TX--Training Segment Developed for National Project

The AFB Solutions Forum’s Communication and Collaboration Work Group developed a training segment on accessible textbooks for a project coordinated by the Council of Schools for the Blind (COSB) and the National Association of State Directors of Special Education, Inc. (NASDSE). The state training project was developed to provide administrators, parents, and professionals throughout the United States with information about educational guidelines for students who are visually impaired.
May 19, 2000--New York, NY--AFB Solutions Forum Partner, George Kerscher, Selected to Chair Open E-Book Forum

By unanimous vote the prestigious national organization, Open eBook Forum (OeBF), selected George Kerscher, Senior Officer, Accessible Information, Recording For the Blind & Dyslexic (RFB&D) as chairperson. The OeBF is an association of hardware and software companies, publishers and users of electronic books and related organizations whose goals are to establish common specifications for electronic book systems, applications, and products that will benefit creators of content, makers of reading systems, and consumers. Mr. Kerscher, a long-standing member in the AFB Solutions Forum, will chair the OeBF. The OeBF is helping to catalyze the adoption of electronic books, encourage the broad acceptance of specifications on a worldwide basis, and increase awareness and acceptance of the emerging electronic publishing industry. The OeBF develops the specifications for electronic books.

June 10, 2000--Nationwide--Work Groups Develop Fact Sheets and Position Papers

Members of several AFB Solutions Forum Work Groups developed four fact sheets and/or position papers, including:

1. Production of Braille Textbooks;
2. Common Acronyms Used When Speaking About Accessible Textbooks;

Text of these papers is available on both AFB Solutions Forum web sites at www.afb.org/education.asp and www.tsbvi.edu and as part of the Accessible Textbooks Tool Kit.

June 15, 2000--Washington, DC--Meeting Held to Build Collaboration Among Publishing Industry and the Field of Blindness

The Joint Technology Task Force, co-hosted by the Association of American Publishers, the American Foundation for the Blind, and Recording for the Blind and Dyslexic, Inc., met to discuss important news in electronic publishing. The 41 participants, two-thirds of whom represented publishers, discussed new technology and capabilities for electronic file conversion that allows greater accessibility to the visually impaired community. Development of a cross-platform standard for electronic files, dual stream publishing (both print and eBook), synchronized audio and text, and how organizations serving people with disabilities can work together with innovative publishers were among the topics discussed.

June 22, 2000--Washington, DC--Consensus on Federal Legislation Moves Forward

Experts in publishing textbooks, state issues, electronic file format, access technology, production of textbooks in specialized formats, and policy-making met to discuss
potential language for the "Instructional Materials Act of 2000" with discussion about the best policy solutions to achieve the objectives.

**July 5, 2000--Princeton, NJ--Microsoft Announced Support for DAISY Consortium**

The Digital Audio-Based Information System Consortium (DAISY Consortium) announced that software giant, Microsoft Corporation, has pledged financial and technical support for the consortium's ongoing work to establish global accessibility standards for the next generation of digital talking book technology. Several AFB Solutions Forum partners (including AFB, American Printing House for the Blind, National Library Service, and Recording for the Blind and Dyslexic) are members of the DAISY Consortium, a group of nearly 40 nonprofit libraries and organizations worldwide that produce and distribute books, journals and other types of information in accessible formats. Its mission is to identify and create global standards for information technology for people with print disabilities such as blindness.

**July 17, 2000--Denver, CO--Presentations Relevant to AFB Solutions Forum Were Presented at International AER Conference**

Several presentations were made by AFB Solutions Forum partners at the biennial international conference of the Association for Education and Rehabilitation of the Blind and Visually Impaired (AER). A central theme included new technologies being developed that will strengthen accessible textbooks for every child who is blind or visually impaired.

**July 19, 2000--Denver, CO--AER Accepted "The Accessible Textbooks and Instructional Materials Resolution"**

Membership of AER unanimously accepted “The Accessible Textbooks and Instructional Materials Resolution,” a document that expresses the commitment of the members of AER to support cooperative efforts within the field of blindness and visual impairment and within the publishing industry to improve timely provision of braille, large-print and audio textbooks and instructional materials to students who are visually impaired. The resolution notes that literacy is basic to successful education for children, that textbooks and instructional materials provide the foundation for education of all children, and that new technology exists that is designed to hasten the transfer of information into accessible formats. The resolution also concedes that, despite recent technological advances, many students who are visually impaired still do not receive accessible textbooks and learning materials at the same time as their classmates, and this discrepancy needs to be eliminated.

**August 25, 2000--Nationwide--Consensus Building Continues Through the AFB Solutions Forum**

Continuing the discussions on the development of language for federal legislation, a broad-based review was held with stakeholders in the blindness community representing state issues, electronic file format, braille software developers, access technology, production of textbooks in specialized formats, and policy-making.
September 19, 2000--Washington, DC--Joint Technology Task Force Formed

From the compelling demonstrations at the Emerging Technology meeting held on June 15, 2000, AFB, AAP, and RFB&D formed the Joint Technology Task Force (JTTF). The task force was created so that publishers and stakeholders from the AFB Solutions Forum could discuss the testing and use of emerging technologies and the utilization of those files by the visually impaired community for the production of accessible textbooks. The two main goals of the JTTF are:

1. To analyze the National Information Standards Organization (NISO) Extensible Markup Language (XML) file format to determine its suitability for converting textbook content into braille and other accessible formats.
2. To promote and demonstrate to accessible book producers and braille transcribers the efficiency and benefits of using publishers’ files in NISO XML format.

Stakeholders in this effort have expertise in Extensible Markup Language (XML), which is used for all modern IT systems. The Digital Audio-Based Information System (DAISY) Consortium and the National Information Standards Organization (NISO) both use the XML notation. The DAISY/NISO XML 3.0 Document Type Definition (DTD) is used to define markup for textbooks. The structure guidelines of DAISY clarify the usage for braille applications and for Digital Talking Books (DTB). In addition, expertise is from braille software developers; expert users of braille translation software with publishers' electronic files; and publishers of textbooks.

Stakeholders include: American Foundation for the Blind; American Printing House for the Blind; Association of American Publishers (with Harcourt, Houghton Mifflin, McGraw-Hill, Pearson, and Scholastic); Braille Authority of North America; Duxbury, Inc.; Ed-IT PC; National Braille Association; National Library Service; Recording for the Blind and Dyslexic; Texas Education Agency's producers of alternate formats; and educators of children with visual impairments.

September 21, 2000--Flint, MI--Accessible Technology Demonstrated for President Clinton

AFB President, Carl Augusto, was with President Clinton as AFB’s Director of Information Systems and Research and Development, Janina Sajka, demonstrated an innovative electronic book technology. The technology is part of an initiative of Time-Warner Trade Publishing and AFB to release to the general public the first commercial title using the NISO/DAISY publication format. This format will enable readers to see the text of the book displayed on screen or read it in braille, while fully synchronized with the audio of a narrator. President Clinton cited Time-Warner Trade Publishing and AFB for their leadership toward accomplishing a joint partnership to provide equal access to information.
October 11, 2000--Louisville, KY--AFB Solutions Forum Held Third Annual Fall Meeting

The fall meeting of the AFB Solutions Forum was attended by 77 people, including seventeen by phone. The meeting featured the significant findings from the three national surveys conducted during the spring/summer 2000, an update on national legislation concerning the "Equal Access to Instructional Materials Act of 2000" and the goals of the Joint Technology Task Force.

The Production Work Group welcomed a new facilitator, Lorri Quigley, director, Educational Resource Center for the state of Utah.


June 1999--AER Report
September 1999--JVIB, Vol. 93, Number 9
October 1999--JVIB, Vol. 93, Number 10
Fall 1999--NAPVI Awareness
November 1999--JVIB, Vol. 93, Number 11
Spring 2000--NAPVI Awareness
April 2000--AER Report
June 2000--JVIB, Vol. 94, Number 6
August 2000--JVIB, Vol. 94, Number 8
September 2000--AAP newsletter
March 2001--JVIB, Vol 95, Number 3
November 2001--AER Report
April 2002--JVIB, Vol 96, Number 4

March 15, 2001--Washington, D.C.--AFB Solutions Forum National Meeting

Eighty-four participants took part in the spring meeting to build work plans for 2002. Twenty-five goals were identified.

May 2001--San Antonio, Texas--Partnership to Develop a New Career

AFB, Northwest Vista College in San Antonio, Texas, and the Texas Education Agency began a partnership to develop a new profession/career of a braille textbook transcriber through a curriculum and a series of college courses.

June 27, 2001--Nationwide--Instructional Materials Accessibility Act IMAA

Representatives of the American Council of the Blind, American Foundation for the Blind, American Printing House for the Blind, Association of American Publishers, Association for Education and Rehabilitation of the Blind and Visually Impaired, National Federation of the Blind, Recording for the Blind & Dyslexic, Texas Education Agency, and other major stakeholders of the AFB Solutions Forum reached final agreement on both the text of legislation to take to Capitol Hill and to work collaboratively to achieve its enactment. This legislation will dramatically improve access to instructional materials required for classroom use in elementary and secondary schools.
July 2001--Atlanta, GA--Design of the National Training for Braille Transcribers

Twenty-three experts in web-based learning, DAISY/NISO/XML file format, and braille transcription began developing a national training program for braille transcribers to learn how to use electronic files produced by commercial textbook publishers.

August 2001--Texas--Development of Job Skills for the Career of a Braille Textbook Transcriber

Northwest Vista College in San Antonio, Texas, conducted two meetings with eighteen experts with firsthand knowledge of the requirements of a braille textbook transcriber. The goal was to develop an occupational profile of a braille textbook transcriber. The end result was a list of 31 tasks that are critical to the job and the identification of a series of job skills needed to perform the tasks.

October 2001--Louisville, KY--National Meeting

Seventy-five stakeholders met in Louisville to discuss the critical next steps in moving the IMAA forward on Capitol Hill and the upcoming college program of a braille textbook transcriber. Representative from ACB, AAP, AFB, and NFB spoke about the strategies.

January 2002--Nationwide--Development of a National Training Manual on How to Work with Publishers’ Files

Expert braille transcribers assisted in developing a training seminar and manual that offers new skills to current braille transcribers. The contents identify key steps in managing publishers’ electronic files. The manual and seminar will become a web-based, self-paced program on AFB’s web in the spring of 2003.

March 6, 2002--Washington, D.C.--ANSI/NISO Standard for the Digital Talking Book (DTB) was Approved

The DTB is a collection of electronic files arranged to present information in a powerful, flexible reading system. The system easily adapts to different types of documents and different user needs. The American National Standards Institute (ANSI) unanimously adopted a DTB standard that allows for files to be arranged presenting information to the target population via alternative media. These media include: human or synthetic speech, refreshable braille, or visual display (i.e. large print).

March 7, 2002--Washington, D.C.--AFB joins the Get Caught Reading Campaign

Two new celebrities joined the Association of American Publishers’ long list of people who “get caught reading.” Patty Duke and Erik Weihenmayer are part of the public service campaign to show that reading is cool and braille literacy is fundamental.
March 14, 2002--San Diego, CA--National Training for Braille Transcribers

Training was conducted at the California Transcribers and Educators of the Visually Handicapped (CTEVH) Conference for braille transcribers who were knowledgeable about textbook production, but who were not experienced in working with publishers’ files.

April 10, 2002--Alexandria, VA--National Training for Braille Transcribers

Training was conducted at the National Braille Association Conference for braille transcribers who were knowledgeable about textbook production, but who were not experienced in working with publishers’ files.

April 24, 2002--Washington, D.C.--Instructional Materials Accessibility Act (IMAA) Press Conference

National legislation that will dramatically improve access to textbooks for students who are blind or who have other print disabilities in elementary and secondary schools was introduced in both the U.S. House of Representatives and the U.S. Senate. The purpose of this bipartisan legislation is to ensure that instructional materials for blind or other people with print disabilities are received in an accessible medium at the same time as their nondisabled peers. Senators Christopher Dodd (D-CT) and Thad Cochran (R-MS) and Representatives Thomas Petri (R-WI) and George Miller (D-CA) are the lead sponsors of this legislation.

June 5, 2002--Dallas, TX--AFB and Verizon National Campaign for Literacy, Textbooks, Transcribers and Technology

Verizon Communications announced a three-year partnership with AFB to build a public awareness and advocacy program that will promote the new career (braille textbook transcriber) at the federal and state levels, and raise general awareness of the needs of blind and low-vision schoolchildren for timely access to textbooks and learning materials. Erik Weihenmayer, first blind athlete to summit Mount Everest, has agreed to serve as the national spokesperson and Verizon Literacy Champion.

July 1, 2002--Ogden, UT--Accessible Textbooks Tool Kit is now Available

The Communication and Collaboration Work Group spearheaded the development of a resource kit of information about the AFB Solutions Forum, issues, critical resources, and potential solutions for the right books at the right time. Expert assistance from the Utah Schools for the Deaf and the Blind was given through the graphic design and production of the Accessible Textbooks Tool Kit.

Communication and Collaboration Work Group
Marie Amerson, facilitator; Alicia McAninch; and Mary Ann Siller

For more information, contact the American Foundation for the Blind, Mary Ann Siller, siller@afb.net.
October 2002 - Louisville, KY - AFB Solutions Forum Fifth Annual Fall Meeting

AFB Solutions Forum stakeholders met again in Louisville, Kentucky to discuss the current status of issues related to accessible textbooks and instructional materials. The agenda included updates about critical issues and work group breakout sessions. Agenda topics included: The AFB Solutions Forum Tool Kit; AFB Training Series for Braille Transcribers; AFB & Verizon National Campaign for Literacy, Textbooks, Transcribers, and Technology; and the Instructional Materials Accessibility Act (IMAA). The Legislative and Policy-Making, Electronic Files, Training, and Production work groups met in small groups and members of the Communication and Collaboration Work Group had representatives in each group.

January 7, 2003 - Washington, DC - Meeting of National File Format Advisory Committee

The US Department of Education awarded a supplement for an existing grant to the National Center on Accessing the Curriculum, housed at the Center for Applied Special Technology (CAST), to develop a voluntary standard file format. The purpose of the standard file format is to ensure that all students have accessible curriculum materials, with particular emphasis on access to print materials through a single file format for all K-12 students with a disability. To assist in the project, an advisory panel was formed with representatives of publishing, education, software developers, and disability groups. Members have been selected for the National File Format Advisory Committee and are focused on three areas of concern: consumer issues, technical issues, and feasibility components. The January 7 meeting of the advisory committee gathered consumer input about desired features and functions for the core requirements of accessible instructional materials. Additional meetings are scheduled for March and June 2003 to discuss the technology and feasibility issues so that a final report can be given to the U.S. Department of Education in September 2003.

January 29, 2003 - Washington, DC - IMAA Reintroduced in the 108th Congress

The Instructional Materials Accessibility Act (IMAA) was reintroduced to the House by Representative Thomas E. Petri (R-WI) as H.R. 490. The bill to improve access to printed instructional materials used by blind or other persons with print disabilities in elementary and secondary schools was referred to the Committee on Education and the Workforce.

February 10, 2003 - Guilford, Connecticut - Senator Chris Dodd Touts Need for Improved Access to Instructional Materials for the Blind

Senator Chris Dodd (D-CT) visited Guilford High School to announce introduction of legislation to provide better access to textbooks and instructional materials for blind and visually impaired students. Dodd’s bill, the Instructional Materials Accessibility Act (IMAA), calls for the creation of one uniform electronic file format and creation of a national repository for the electronic files. The IMAA would also provide critical funding to assist state and local educational agencies in effectively converting electronic files into braille.
WORK GROUPS’ STATEMENT OF PURPOSE

The following appears on web pages of the AFB Solutions Forum and is used with permission.

The AFB Textbooks and Instructional Materials Solutions Forum, a collaborative national effort on the part of agencies and organizations that produce and distribute textbooks and other instructional materials, works to ensure equal access to instructional materials for students who are blind or visually impaired. AFB Solutions Forum participants include textbook publishers; educators; access technology specialists; producers of braille, large-print and recorded textbooks; parents of children who are blind or visually impaired; and adults who are blind or visually impaired.

Electronic Files and Research and Development:

The Electronic Files and Research and Development Work Group is primarily concerned with exploring and defining the following critical issues: The creation, production, and distribution of electronic files provided by textbook publishers for the production of textbooks in braille and other special media and identifying new trends, technologies and research that will positively affect production, accessibility and delivery of textbooks to students with visual impairments.

Legislative and Policy-Making:

The Legislative and Policy-Making Work Group is primarily concerned with the analysis and development of public policies impacting upon the Solutions Forum’s goal of ensuring equal access to the printed word, and more specifically, to the full range of educational materials. This work group is the Forum’s point of contact for ongoing efforts among representatives of the publishing industry, blindness advocacy organizations and the National Library Service to determine the appropriate electronic file format and markup language to efficiently produce braille, large-print and audio textbooks. Additionally, this work group will serve as a mechanism to package, present and disseminate the Solutions Forum’s outcomes for future advocacy efforts.

Production Process:

The focus of the Production Work Group is to identify the processes involved in the production and dissemination of textbooks and instructional materials in specialized media needed by students who are blind or visually impaired. This work group will recommend guidelines and strategies for acceptable quality braille transcriptions; appropriate adaptations of materials for producing textbooks to ensure they are educationally sound for students with visual impairments; and eliminating duplication of efforts.
Training and Other Needs:

The Training Work Group focuses on the training needs of those who create and use textbooks and instructional materials for students who are blind or visually impaired. The work group will identify the necessary steps required to increase the number of qualified braille transcribers and identify the skill sets needed in training people associated with the creation and use of textbooks and instructional materials for students with visual impairments. The target audiences include, among others: braille transcribers, textbook publishers, producers of specialized materials, parents, and educators.

Communication and Collaboration:

The Communication and Collaboration Work Group serves as a clearinghouse for sharing information related to the activities of the five Solutions Forum work groups. The primary focus is to inform and educate the field of blindness, publishers and the general public regarding issues and strategies for ensuring equal access to textbooks and instructional materials in accessible formats.
ALPHABET SOUP: COMMON ACRONYMS USED WHEN SPEAKING ABOUT ACCESSIBLE TEXTBOOKS

The following appears on web pages of the AFB Solutions Forum and is used with permission. Similar information has also been published by the National Braille Association.

Open Electronic Book Forum (OEBF)

The purpose of the Open eBook Forum (OEBF) is to create and maintain standards and promote the successful adoption of electronic books. The OEBF is an association of hardware and software companies, publishers and users of electronic books and related organizations whose goals are to establish common specifications for electronic book systems, applications and products that will benefit creators of content, makers of reading systems and, most importantly, consumers. The OEBF is helping to catalyze the adoption of electronic books; to encourage the broad acceptance of these specifications on a worldwide basis among members of the Forum, related industries and the public; and to increase awareness and acceptance of the emerging electronic publishing industry. The OEBF is composed of member organizations (each of which may have one or more representatives) and a Board of Directors. The members determine the policies and activities of the organization.

http://www.openebook.org

Digital Audio Based Information System Consortium (DAISY Consortium)

The DAISY Consortium is establishing the International Standard for the production, exchange, and use of the next generation of “Digital Talking Books.” The DAISY Consortium is made up of organizations throughout the world who serve persons who are blind or print disabled. Blindness organizations which are active members in the DAISY Consortium and will begin producing Digital Talking Books in DAISY format include Recording for the Blind and Dyslexic (RFB&D), American Foundation for the Blind (AFB), American Printing House for the Blind (APH), Canadian National Institute for the Blind (CNIB), and the U.K. Royal National Institute for the Blind (RNIB), to name just a few. The object of the DAISY Consortium is to improve the access to all kinds of information for blind and visually impaired people. DAISY Digital Talking Books are expected on the market in 2000.

http://www.daisy.org

Digital Talking Book (DTB)

A Digital Talking Book is envisioned to be, in its fullest implementation, a group of digitally encoded files containing an audio portion recorded in human speech; the full text of the work in electronic form, marked with the tags of a descriptive markup language; and a linking file that synchronizes the text and audio portions. The need to digitize audio collections around the world is clear. Currently, each country has its own system and format for serving its clients. To read talking books on cassettes is similar to
the ancient way of reading scrolls. There is a lot of winding and rewinding. In a digital talking book the reader has random access to the sections via the talking table of contents. The digitization of books intended for persons with disabilities provides opportunities to increase the quality and availability of information to print-disabled persons.

**National Information Standards Organization (NISO)**

A committee of the United States based National Information Standards Organization (NISO), in conjunction with the internationally known DAISY Consortium, is working on a specification for Digital Talking Books. This will serve as the next generation of information technology for persons who are blind and print disabled. At the heart of this specification is an XML DTD that incorporates the elements of structure needed to provide access to information. The specification goes on to define how the textual information can be synchronized with digitally recorded human speech through Synchronized Multimedia Integration Language (SMIL), a recommendation of the W3C. The specification identifies six classes of books that have varying amounts of text mixed with audio. Most significantly, one class of book contains only text with no recorded human speech. Access to the information would be through synthetic speech, refreshable braille or dynamically generated large print.

http://www.niso.org

**Document Type Definition (DTD)**

This is a formal definition of a discrete set of XML tags usually targeted at a particular type of application. For example, the Document Type Definition for the Digital Talking Book would define tags for things one finds in a book, e.g., chapter, paragraph, footnote, jacket, etc.

**World Wide Web Consortium (W3C)**

The W3C is an international industry consortium founded in 1994. Its mission is to promote the evolution and ensure the interoperability of the World Wide Web. Working with the global community, the Consortium produces specifications and reference software for free use around the world. The World Wide Web Consortium established the Web Accessibility Initiative (WAI) in 1997. Changing the web’s underlying protocols, applications and, most importantly, the way content is developed can significantly improve access to the web by people with disabilities. The WAI has working groups developing comprehensive and unified sets of accessibility guidelines for content accessibility, browser accessibility, and authoring tool accessibility.

http://www.w3.org and http://www.w3.org/wai/

**The Extensible Markup Language (XML)**

The XML is the universal format for structured documents and data on the web. It is a set of rules, guidelines, and conventions for designing text formats for data, in a way that produces files that are easy to generate and read (by a computer), that are unambiguous, and that avoid common pitfalls, such as lack of extensibility, lack of support for internationalization/localization, and platform dependency. Like HTML, XML makes use of tags (words bracketed by ‘<’ and ‘>’) and attributes (of the form
name="value"), but while HTML specifies what each tag & attribute means (and often how the text between them will look in a browser), XML uses the tags only to delimit pieces of data, and leaves the interpretation of the data completely to the application that reads it. In other words, if you see “<p>” in an XML file, don’t assume it is a paragraph. Depending on the context, it may be a price, a parameter, or a person.

http://www.w3.org

**Hypertext Markup Language (HTML)**

HTML is the lingua franca for publishing hypertext on the World Wide Web. It is a non-proprietary format based upon SGML; it can be created and processed by a wide range of tools from simple plain text editors. HTML uses tags such as `<h1>` and `</h1>` to structure text into headings, paragraphs, lists, hypertext links, etc.

http://www.w3.org

**SMIL**

The Synchronized Multimedia Integration Language (SMIL) is written as an XML application and is currently a W3C recommendation. Simply put, it enables authors to specify what should be presented; therefore, enabling them to control the precise time that a sentence is spoken and make it coincide with the display of an image appearing on the screen. The SMIL language has been designed for ease of access for authoring simple presentations with a text editor. The key to success for HTML was that attractive hypertext content could be created without requiring a sophisticated authoring tool. The SMIL language achieves the same goal for synchronized hypermedia.

http://www.w3.org/AudioVideo

**Optical Character Reader (OCR):**

A device which can optically analyze a printed text, recognize the letters or other characters, and store this information as a computer text file. OCRs are usually limited to recognizing the styles and sizes of type for which they are programmed.
OFFICIAL RESOLUTION OF THE ASSOCIATION FOR EDUCATION AND REHABILITATION OF THE BLIND AND VISUALLY IMPAIRED

The following information is used by permission of the Association for Education and Rehabilitation of the Blind and Visually Impaired (AER).

Resolution 2000-09

WHEREAS it is recognized as a fundamental truth that literacy is basic to successful education for all children; and

WHEREAS textbooks and instructional materials provide the foundation for education of all children, allowing them access to a world of information; and

WHEREAS technology has made the transfer of information into accessible formats a process that is easier and faster than ever before in history; and

WHEREAS in spite of technological advances, the reality is that many students with visual impairments do not receive accessible textbooks and learning materials at the same time as their classmates; and

WHEREAS instructional materials and textbooks must be available to all students on time and in the appropriate media;

THEREFORE BE IT RESOLVED, this 19th day of July, 2000, in the City of Denver, Colorado, that the Association for Education and Rehabilitation of the Blind and Visually Impaired (AER) supports cooperative efforts within our field and with the publishing industry to improve timely provision of braille, large-print and audio textbooks and instructional materials to students with visual impairments so they can compete on an equal basis with their peers.

Unanimously Approved
DEAR DOT

The following information appeared in the Spring 2001 American Foundation for the Blind’s “DOTS for Braille Literacy” newsletter, Volume 5, Number 2, and is used with permission.

Dear DOT,

I keep hearing people talk about electronic books, but I don’t understand what they are. Can you explain them? What do they have to do with putting a book into braille? How can I use them with my students?

Signed, Victoria

Dear Victoria,

Your letter came at a time when many exciting things are happening in the world of publishing and technology. You are no doubt familiar with creating simple documents on your word processor, turning it into braille with translation software, and then printing it out with an electronic braille embosser. Nowadays, books are produced on the computer, and the publisher creates an electronic file that contains all the information needed to print the textbook (such as page numbers, headings, subheadings, captions, etc.). However, the formats currently used by publishers are not as easy to translate into braille as a simple word-processing document. Streamlining the use of publisher files to produce braille textbooks is an important issue, and is a critical element addressed by the AFB Textbooks and Instructional Materials Solutions Forum.

Have you ever had to wait months to receive a braille textbook for a student? The Solutions Forum is a national collaborative effort initiated in 1998 by AFB to eliminate the barriers faced by students who are blind or visually impaired who do not receive their textbooks at the same time as their peers. Approximately 40 organizations are working together to combat this problem including publishers of educational materials; technology specialists; braille, large-print and audio production specialists; parents, educators, and consumers. Representatives from these organizations make up five working groups: Electronic Files/Research & Development; Legislative and Policy-Making; Production Issues; Training and Other Needs; and Communication and Collaboration. To understand more about how the Solutions Forum and its members are changing how you can get your braille textbooks, we have to go into some background details.

The publishing industry has embraced new technologies such as the Internet, digital talking books (not on tape anymore!), and “electronic book” or “eBook” technology. A number of publishers were creating eBooks in different ways, so the Open E-Book Forum was created in 1999 to streamline and standardize the process. At the same time, an international effort was underway between two other groups--the Digital Audio-Based Information System (DAISY) Consortium and the National Information...
Standards Organization (NISO) — to create a standard “markup” language to create digital talking books, and to facilitate the production of braille from digital talking book files. The hope is that these overlapping efforts and technologies will meet, and that a single format can be created that will allow publishers to create a variety of books— so braille, print, and electronic books can all be created from one file! At present, the file format that has the most promise is called the DAISY/NISO XML format.

Currently, most braille transcribers are creating braille textbooks by scanning the print pages with an optical character recognition (OCR) scanner, or by entering the information in by hand, and by using braille translation software (such as Duxbury or MegaDots) to “translate” computer information into braille. If you have ever done this yourself, you know how much work goes into preparing the file, “cleaning up” the file, and formatting the braille so that the material is error-free when it is embossed. Just think how much easier it would be to receive a computer disk from a publisher that includes all the information in the textbook, completely formatted, and as error-free as possible so that the time involved in producing a braille book will be considerably shortened.

While the “human touch” will always be needed to produce braille textbooks (think of the tactile graphics in so many books!), training transcribers to use the new file format is another important goal of the Solutions Forum. Using the DAISY/NISO XML format as a foundation, national organizations are currently creating and testing the file format to refine and improve it. Results of this work are expected in summer of 2001.

While this is exciting news, much of this lies in the future. What can be done in the meantime to get braille books to your students? An important stakeholder of the AFB Solutions Forum is the American Printing House for the Blind (APH), for many years the primary source of braille textbooks for students. APH recently announced they have reached agreements with all the major textbook publishers to open the APH File Repository to “authorized users” as defined under the 1996 Chafee Amendment to the U.S. Copyright Law. This will open the Repository to any “nonprofit organization or a governmental agency that has a primary mission to provide specialized services related to training, education, or adaptive reading or information access needs of blind or other persons with disabilities.”

Another resource teachers can draw upon is APH’s Louis database, which lists books and materials that are currently available in accessible media. For more information about both of these projects, go to the APH web site, www.aph.org. Many of the AFB Solutions Forum papers, fact sheets, and resources are available online at www.afb.org/education.asp and at www.tsbvi.edu. For more information about eBook issues, visit the following web sites: www.daisy.org and www.openebook.org. If you are interested in becoming actively involved with one of the AFB Solutions Forum work groups, contact Mary Ann Siller, Project Coordinator and AFB National Program Associate in Education at siller@afb.net.

Signed,
DOT
SURPASSING GUTENBERG: A HISTORIC OPPORTUNITY IN ACCESS TO PUBLISHED INFORMATION FOR BLIND READERS

The following information appears on web pages of the AFB Solutions Forum and is used with permission.

By Janina Sajka & George Kerscher

Executive Summary

We examine some surprising reasons to explain why electronic book publishing will become a versatile medium comprising 10% of all consumer book sales in the U.S. by 2005, estimated by Anderson Consulting at $2.3 billion. The Association of American Publishers (AAP) and the Open Electronic Book Forum (OEBF) both pin this expectation on open standards any book, anytime, anywhere, for anyone. Electronic books will succeed, we argue, in part because they provide communicative opportunities not available in traditional, static print media. But, they will also succeed because of developments in technology for blind readers which will benefit all readers regardless of ability or disability. As evidence we offer, among other points, Microsoft Corporation’s licensing of technology developed to benefit blind people for use in Microsoft Reader and mainstream publishing applications. We demonstrate, further, that technology transfer from disability to mainstream use has solid historic precedent.

Copyright 2000 by Janina Sajka, George Kerscher and the American Foundation for the Blind

Access to information is profoundly critical in determining a person’s quality of life. What sort of life is it when a person cannot read? A person simply cannot expect a rich and rewarding life without the ability to read and without access to published materials ranging from menus and signage to correspondence, financial and legal documents as well as to great and small works of literature, science, philosophy, religion, and the arts. So, while a blind individual may be highly educated and lettered, he or she is virtually illiterate if unable to access published information.

It is no surprise, therefore, that agencies for the blind have historically sought better means for providing information for their constituents. Many, if not most historic achievements remembered today as milestones in blind people’s history are, in fact, achievements that significantly enhanced access to information. These include the invention of braille, the standardization of braille symbology, and the talking book, among others.

Today, a monumental change in the lives of blind people is again on the horizon. Though little understood even among blindness professionals as of this writing, the emergence of electronic books (ebooks) is of historic proportion nonetheless. Electronic
books promise to make published material accessible to blind readers at the time of publication to all readers. They will not require a separate editorial and distribution channel, because the same electronic book will be usable by blind and sighted readers alike. The next year will determine whether this opportunity becomes reality now, or whether the realization of this technological opportunity will be deferred to some other decade.

A Historical Perspective

As the 15th century printing press redefined knowledge and revolutionized learning forever, so this opportunity promises to change forever the lives of blind and sighted readers alike in ways we can yet only dimly foresee. Can we conceive of blind people going to Barnes & Noble or B. Dalton to buy their books? Can we imagine that a sighted colleague, friend, or family member would say to the blind reader, “Here, let me give you this book—it’s really wonderful and you should read it!” No one does this today without recourse to a specialty publisher of books in a specially adapted medium. Where all literature was once the province of a privileged social class, the printing press gave us mass learning, mass literacy, mass marketing, and mass communications. Five hundred years later, we stand on the threshold of including blind people at last, in this historic literacy revolution. For blind people, such an achievement would certainly rival braille itself in historic significance.

This monumental opportunity is not the result of the efforts of the blind community alone. Rather, it arises from the confluence of several independent efforts from academia, from computer science, from publishing, as well as from the blind community. Each of these several independent efforts is well on the road toward useful results for its individual constituencies. The electronic book from the blind community, called the “Digital Talking Book,” will profoundly simplify the reader’s ability to navigate through the book’s contents. It will provide full text that can be automatically displayed in braille or in large print fonts. And, it will preserve the feature most blind readers particularly cherish in traditional talking books—audio recordings of superb narrators reading the text aloud. But we who are building the digital talking book are no longer creating our product apart from those who are creating new book technologies for the mass market. We have discovered one another. And, in our growing awareness of the value each of us brings to the table, we have discovered a startling new vision. We have begun to understand that the confluence of our individual efforts can produce a single product in a single electronic book format usable by, and attractive to all readers, whatever their preferred reading medium.

It is not that the traditional book is dying. Far too many readers love printed books too much for the traditional book to disappear from the scene. Rather, it is that electronic media are available to convey information and stimulate the human spirit in ways the static page cannot. Mainstream technologists dream of pages that come to life and transform before the reader’s eyes. Certainly such multimedia illustrations would be helpful in subjects requiring complex illustration, such as the sciences. Technologists reason, “Why be limited to static pictures and charts when we have the technology at hand to introduce multimedia into our illustrations?” Consider further that over 400 pounds and 2,000,000 pages of printed text can be distributed on a one ounce DVD, and you will understand why seven dental schools will require course materials on DVD this coming autumn (“Bookbag of the Future,” 2000).
Blind readers share two needs with all readers which indicate that their needs can and will be met through standardized electronic books: Text will remain a central element in electronic books. Moreover, this text will be stored in the computer with the kinds of codes that can be used for searching and indexing, as opposed to picture images of words; structural elements of a book’s contents will be tagged with codes that faithfully map the book’s actual intellectual structure: chapters, sections, footnotes, and sidebars.

Curiously, the power of structural navigation has yet to persuade many mainstream electronic book technologists perhaps because they’re still focused on the more dazzling display opportunities available in ebook technology. This is perhaps understandable given that ebook technology is still very new, and its commercial viability is yet to be fully demonstrated. An understanding of how content is structured, however, is a key component of effective reading strategies, so we can expect that the electronic book will soon support more than just “next page” and “previous page” navigation. It would be shortsighted indeed to expect the electronic book to be constrained by the inherent limitations of traditional books, where indexes and tables of contents only presaged hyperlinks, for example.

**Better Information Access for Everyone**

It is accurate to say that we have some good news for blind readers and some even better news. The good news is the NISO/DAISY digital talking book. It will revolutionize the experience of reading for the blind user, and will especially revolutionize the experience of study. The digital talking book is itself the result of a convergence of the efforts of two separate teams known now as the NISO team and the DAISY team. Both teams have taken great care to ensure that the specifications they produce which define the digital talking book are fully viable independent of any particular medium. NISO/DAISY encoded content can, therefore, be delivered on CD-ROM for reading in specially designed players; over the Internet for reading in specially designed browsers or with popular browsers such as Netscape, Internet Explorer, and Lynx; or even over a Touch Tone telephone. Moreover, NISO/DAISY encoded content can be read and navigated structurally. This means that a reader can skim through text by advancing and retreating by chapter, section, and/or subsection. Readers of this document are strongly encouraged to experience for themselves the ease of navigation and the joy of reading a DAISY book on a DAISY player. The significance of structural navigation is far easier to understand through experience than through abstract description. Therefore, suffice it to say that it provides blind persons with the ability to read very much as sighted persons read.

Good as this news is for blind readers, it pales when we consider that the NISO/DAISY protocol may be incorporated into the Open Electronic Book Forum (OEBF) protocol. Spearheaded barely one year ago by a host of companies interested in electronic publishing and the National Institute of Standards and Technology (NIST), OEBF is the electronic publishing industry’s effort to define a cross platform standard for electronic files. OEBF is a membership organization incorporated in the U.S. as a 501(c)6 nonprofit. Member organizations include traditional media publishers, electronic publishers, hardware manufacturers that produce devices for reading electronic books, software developers, and various other organizations and individuals including disability organizations and access technology providers. The OEBF’s purpose is to create and establish standards for, and to promote, electronic book technology. OEBF
books produced by any publisher will be readable on any manufacturer’s OEBF compliant device. Such cross platform compatibility is correctly understood to be critical to the industry’s success. As with the voice telephone industry in the early 1900s, it is untenable to require a different proprietary device in order to read each individual publisher’s content. Incorporating NISO/DAISY within the next iteration of OEBF standards would simply mean that any and all books published to OEBF specifications would be accessible to blind people whether or not the publisher actually considered accessibility during the production process. Recognizing a serious and damaging potential for conflict in standards on the one hand, and a historic opportunity to serve blind people’s access needs through the general marketplace rather than through specialty publishing on the other, NISO and DAISY group members continue to participate in OEBF. There is a very strong probability of success because of this participation as evidenced by the willingness of OEBF members to incorporate the needs of blind readers into OEBF specifications.

Digital Rights Management (DRM) technology is an important copyright enforcement issue. Still, various indications suggest that electronic books can now succeed in the general marketplace, and especially in the educational marketplace. At the library of the University of Texas at Austin, their more than 6,000 electronic texts are checked out 30 times more frequently than newly acquired books in traditional hardbound or softbound media (“Racing to Convert Books to Bytes”, 1999). Various U.S. states’ education departments, such as Maryland’s, are looking to electronic books to reduce costs and to facilitate enhanced learning opportunities. Much is to be gained by including blind people’s requirements in OEBF standards. The benefits will accrue to blind and sighted readers alike: blind people gain by having access to countless more texts than would ever be produced by specialty publishers, and titles are available at the same time as sighted readers gain access, while sighted readers gain from the blind community’s understanding of the importance of structural access an understanding just now dawning within OEBF.

**Aren’t Braille and Traditional Talking Books Enough?**

People with print disabilities have historically been disenfranchised from the mainstream of learning and employment because of a lack of access to published information. While braille and Talking Books are being created, producers battle constantly to keep up with the growing number of print books published each year. Only approximately 10% of texts published today are ever made available in braille or as Talking Books and they’re only available months after the book is first published for the sighted reader. Furthermore, braille on paper and Talking Books on audio cassettes cannot be used as flexibly as print books. Now, with the emergence of electronic books for the general population, we have a tremendous opportunity to automatically give blind readers access to the new age of electronic books with a level of usability never before experienced by blind readers.

**A Legal Mandate for Access**

From the publishing perspective the blind and print-disabled market is too small to receive much attention on its own. Yet, an increasing body of law and regulation in the U.S. (and abroad) is requiring publishers to produce accessible materials. These include laws in Texas and California, among other states, requiring all textbooks and curricular
materials to be accessible. Provisions in the regulations promulgated by the Federal Communications Commission (FCC) implementing Sec. 255 of the Telecommunications Act of 1996 and in those from the Access Board implementing Sec. 508 of the amended Rehabilitation Act of 1973 will require accessible publications for the federal and telecommunications markets in the U.S.

It is preferable, in fact, that blind individuals remain a small segment of the market for electronic books. If electronic books are properly designed, all readers will benefit, but blind readers will benefit especially because many more titles will be available far sooner than ever before because they will be produced for a larger market than blind people could ever constitute on their own.

As we have frequently pointed out in our various advocacy efforts, the product that is universally designed meets the needs of the mainstream population better. The general population benefits, in other words, when the needs of blind readers are incorporated into publishing standards. For example, people driving to work could choose to listen to an electronic book presented through spoken word audio during their commute. They could switch to a visual presentation at other times. It may prove that more and more people will choose electronic books that are versatile and allow alternative access methods. In short, it is in the best interest of publishing to embrace universal design in the industry. And, with blind people’s needs incorporated into the standard, it is in blind people’s best interest as well.

**Work on Digital Talking Books**

A committee of the United States based National Information Standards Organization (NISO), in conjunction with the internationally known DAISY Consortium, is working on a specification for Digital Talking Books. This will serve as the next generation of information technology for persons who are blind and print disabled. This specification is written in XML and supports capture of the elements of structure in a book to facilitate navigation. The specification goes on to define how the textual information can be synchronized with digitally recorded human speech through Synchronized Multimedia Integration Language (SMIL), a recommendation of the World Wide Web Consortium (W3C). The specification identifies six classes of books that have varying amounts of text mixed with audio. Most significantly, one class of book contains only text, with no recorded human speech. Access to the information in this kind of digital talking book would be through synthetic speech, refreshable braille, or dynamically generated large print.

The Digital Audio based Information System Consortium, The DAISY Consortium, is an international effort to define specifications for, and begin the production of, digital talking books. Older than the U.S. Library of Congress’ National Library Service for the Blind and Physically Handicapped (NLS/BPH) spearheaded NISO committee, DAISY’s specifications and the NISO specifications are now virtually identical despite the fact that they were produced by different groups, and will be precisely identical by year’s end because the NISO and DAISY teams appreciate the value of having a single, universal standard. Blindness agencies which are active members of the DAISY Consortium will begin producing digital talking books in DAISY format include Recording for the Blind and Dyslexic (RFB&D), American Foundation for the Blind (AFB), American Printing House for the Blind (APH), Canadian National Institute for the Blind (CNIB), and the
U.K. Royal National Institute for the Blind (RNIB), to name just a few. DAISY digital talking books are expected on the market during this calendar year.

**Open Electronic Book Forum**

On September 21, 1999, the Open Electronic Book Forum (OEBF) announced its 1.0 specification as a formal recommendation (standard) for electronic books. There was outstanding cooperation with the disabled community in the OEBF specification process, and this XML implementation is a great first step toward a truly universally designed specification. There is already a 60% correspondence between the OEBF 1.0 specification and the specifications defined in the NISO/DAISY process, despite the fact that no formal effort has yet been undertaken to synchronize these specifications.

**A Test of Viability**

In a project facilitated by the Association of American Publishers (AAP), the National Library Service for the Blind and Physically Handicapped (NLS/BPH) is currently concluding a pilot project to test the viability of converting OEBF 1.0 texts into NISO/DAISY format. NLS/BPH is performing these conversions by hand since, understandably, no computer-based tools for such conversions yet exist. Of course, should the NISO/DAISY specification be folded into a new OEBF standard that is being called OEBF 2.0 no such conversion would be necessary. Interestingly, NLS/BPH reports that the conversion process is no more difficult than expected. While the converted text NLS/BPH contain complicated structural elements such as tables and charts, NLS/BPH would, in retrospect, have preferred to test with even more complex texts.

The AAP has teamed with Anderson Consulting to evaluate the market for ebooks and to define the basis of its publisher members entry into ebook publishing. In a glowing study entitled “Reading in the New Millennium, A Bright Future for ebook Publishing” Anderson Consulting projects the ebook market at $2.3 billion by 2005 10% of the estimated $21.9 billion total consumer book market in 2005. This study also highlights the importance of open standards to the success of electronic publishing because “it’s easy for consumers: any book, any source, any device.”

Following in a tradition at least as old as the typewriter (which was invented to enable a blind countess to write legibly), Microsoft Corporation has licensed technology that will add support for the NISO/DAISY protocols to Microsoft Reader, its electronic book viewing software. Microsoft’s press release which announced this acquisition, *Microsoft Licenses Technology to Enable Synchronized Audio For e-books on Microsoft Reader*, also supports the benefits of convergence in ebook technologies and commits financial support to the DAISY Consortium: “The enhanced capabilities of Microsoft Reader will open the door to a wide range of advantages for book lovers, including greater flexibility to enjoy books and more value in learning from books by hearing words as well as seeing them on screen. ‘Sometimes, the only thing better than reading a good book is to have someone read it to you out loud,’ said Dick Brass, vice president of technology development at Microsoft. ‘With this innovative technology, Microsoft Reader will offer the book lover yet another way to enjoy a great title, with lots of flexibility and control. For the vision and print impaired, it can also open up whole worlds of reading that were not readily available before.’”
In licensing NISO/DAISY technology developed by Labyrinten Data of Falköping, Sweden, and isSound of Ewing, N.J., Microsoft was careful to ensure that publisher tools would also be available: “As part of the licensing agreement, isSound and Labyrinten will also create enhanced versions of their LpStudio/PLUS tool kit to support production of mixed media materials for Microsoft Reader.”

“In support of efforts to establish an international standard for the production, exchange and use of the next generation of audio books, Microsoft, through its relationship with isSound and Labyrinten, will donate a portion of revenues generated through this licensing deal to The DAISY Consortium…”

**ebook Japan Initiative**

A Japanese electronic publishing group consisting of publishers, printing industry representatives, and bookstores launched a pilot project of multimedia electronic books supported by the Ministries of Trade and Industry of Japan. The pilot project aims to establish standards for electronic book publishing that will accommodate versatile scripts of Japanese and other languages. The pilot will be finished this year. The Japanese ebook specification is also based on XML and is being developed to meet the requirements of various user groups including people with disabilities. The pilot project will produce 5,000 titles available at participating bookstores. Dedicated handheld viewers, which do not have sound output at the moment, are being distributed among participating consumers.

**Converging Standards at OEBF**

The OEBF has talked about the next specification that will be produced. There is general recognition within OEBF that the current 1.0 specification is actually adequate only for conversion of legacy documents (such as PDF files). As publishers begin to author their data with both electronic books and print books in mind, their markup requirements will need to be met by a more sophisticated markup scheme. The OEBF 2.0 specification, ebook Japan, the specifications from AAP, and the NISO/DAISY specifications can and should meld into a single universal design specification for electronic books.

**Action Recommendations**

Given the historic opportunity now before us, all stakeholders should:
1) adopt no less a goal than the complete redefinition of the thing we know as a “book” on behalf of readers everywhere (including blind readers) through a convergence of NISO/DAISY, AAP, and OEBF standards;
2) consciously disabuse ourselves of the historic notion that regards a printed publication as the true source document and all other media as variants. In truth, the true source already is and must remain an electronic file. Our task is to understand that it must be an accessible electronic file, and that all media representations of this file whether hardbound standard print books, large print, braille, recorded audio, or synthesized audio are all alternative media to a single electronic source; actively work for a strong convergence of OEBF, AAP, and NISO/DAISY standards;
3) relinquish immediately any plans of producing any new titles in ASCII.
Conclusion

The best news before us is simple. Our goal is achievable. We are in a position to influence the outcome. We must recognize that there is not now, and never will be, any inevitable development of technology. Rather, tomorrow's technology will always reflect the dreams and the aspirations of those who build it.

The advocacy position of organizations serving blind persons regarding technology has always stressed the importance of incorporating access considerations in the design of technology early and throughout the development cycle. We have the opportunity before us to shape tomorrow's book technologies to incorporate the needs of all readers including blind readers. If we choose to ignore this opportunity, we will have no standing to complain about it should it prove insufficient for our constituency when it is built by others.

An exciting future beckons on the horizon. Blind consumers are eager to begin using digital talking books now. Certainly, all blindness organizations and professionals should promote NISO/DAISY by word and deed, and work actively in word and deed for a convergence with OEBF and AAP. The real potential for a compelling and transformational change in blind people's access to published information for generations to come is sufficient reason. In the end analysis, we need no other reason. But open standards convergence is in everyone's interest, so all stakeholders should work actively in word and deed for a convergence in electronic book technologies from which all will benefit for generations to come.

References

1) Developed at the American Foundation for the Blind in the late 1920s, the talking book is better known in publishing today as an “audio book.”


4) Two telephone companies split the market in Kansas City in the first decade of the 1900s. Yet, a customer of either of these companies could not telephone a customer of the other company because the technologies were incompatible. Such a circumstance where, for example, a customer of AT&T could not call a customer of MCI is unimaginable today. Yet, it is part of the history of telephony. In email communications this same phenomenon was common as recently as the early 1990’s when a subscriber of Compuserve could not send email to a subscriber of America On Line (AOL), for example.

6) The first typewriter known to actually work was built by Pellegrino Turri for his blind friend Countess Carolina Fantoni da Fivizzono. Turri wanted to help her write legibly.

7) The fact that the word processors favored by authors and the printing software utilized in the press room may not now easily share files with the customer’s electronic book viewing device means only that the technology industry has not been told to resolve these discrepancies. The point of fact is that electronic files are widely and heavily utilized by almost everyone throughout the publishing process from concept (often in email) through final product (inventoried and shipped with the assistance of tracking software). In other words, the blue pencil and the glue jar may soon sit in the museum alongside implements from the scriptorium.

Please direct all comments regarding this AFB White Paper to the authors: Janina Sajka & George Kerscher. Janina Sajka is the director of Information Systems Research and Development at the American Foundation for the Blind. George Kerscher is a research fellow at Recording For the Blind & Dyslexic (RFB&D); project manager to the DAISY Consortium; and chairperson of the Open Electronic Book Forum Board of Directors (OEBF).
WEB SITE RESOURCES FOR EDUCATION

June 2002

The following is a sample list of web resources compiled for the AFB Solutions Forum. Some web addresses may change after publication of this tool kit.

**American Foundation for the Blind (AFB) [wwwafb.org]**

The mission of the American Foundation for the Blind (AFB) — the organization to which Helen Keller devoted her life — is to eliminate the inequities faced by the ten million Americans who are blind or visually impaired. AFB fulfills this mission by addressing the most critical issues facing this growing population: literacy, employment, access to technology, and independent living (aging).

Headquartered in New York City, AFB maintains offices in Chicago and Dallas, a National Literacy Center in Atlanta, a National Employment Center in San Francisco, a governmental relations office in Washington, DC, and a Technology and Employment Center in Huntington, WV.

AFB’s web site includes:

- a one-of-a-kind collection of articles, fact sheets, resource lists, and statistics on blindness and low vision, now more conveniently organized and searchable by keyword or phrase
- a searchable, updated AFB Directory of Services with links to agency web sites from 30 service categories ... identifies agencies by state or province
- a Community Center, where you can get information on events, conferences, announcements, and jobs available, or post questions or discussion topics on fully accessible message boards
- the AFB Press publications catalog — order your next AFB Press title online
- an online Helen Keller Archives — browse through hundreds of photographs, letters, and other memorabilia items

**American Council of the Blind (ACB) [www.acb.org]**

Provides consultation/technical assistance and materials regarding employment of blind & visually impaired individuals, information and referral on all aspects of blindness and maintains a job bank for current job postings.

**American Printing House for the Blind (APH) [www.aph.org]**

Provides media, tools and materials needed for education and independence for blind and visually impaired persons. Services include: consultation/technical assistance, literacy programs, education materials, media production, professional training and products for sale.
**Association for Education and Rehabilitation of the Blind and Visually Impaired (AER) [www.aerbvi.org](http://www.aerbvi.org)**
Promotes professional excellence through support of those who provide services to people with visual impairments. Services include: Continuing education opportunities for professionals, monthly publication of jobs, keeping membership informed about news in the field of education and rehabilitation.

**Association of American Publishers (AAP) [www.publishers.org](http://www.publishers.org)**
AAP members publish hardcover and paperback books in every field - fiction, general nonfiction, poetry, children’s literature, textbooks, reference works, Bibles and other religious books, and scientific, medical, technical, professional and scholarly books and journals. They also publish audio and video tapes, computer software, loose-leaf services, electronic products and services including online databases, CD-ROM and a range of educational materials including classroom periodicals, maps, globes, filmstrips, and testing materials.

**Association of Instructional Resource Centers for the Visually Handicapped (AIRCVH) [www.tsbvi.edu/textbooks/afb/airc.htm](http://www.tsbvi.edu/textbooks/afb/airc.htm)** for information about the materials center within a particular state. Has statewide responsibility for the delivery of large print, braille and/or taped textbooks to school-aged students with visual impairments.

**Blind Children’s Center [www.blindcntr.org](http://www.blindcntr.org)**
A family centered agency which serves children with visual impairments from birth to school age.

**The Blind Babies Foundation [www.blindbabies.org](http://www.blindbabies.org)**
Provides services and programs for families, professionals, and the community to meet the needs of infant and preschool children who are blind or visually impaired.

**Braille Authority of North America (BANA) [www.brailleauthority.org](http://www.brailleauthority.org)**
Works to make braille simpler and more universal, promotes and facilitates the use, teaching, and production of braille, and provides information and referral to resources involving braille standards.

**California Department of Education, Clearinghouse for Specialized Media and Technology [www.cde.ca.gov/csmt/](http://www.cde.ca.gov/csmt/)**
Provides special media and technical assistance to educators, transcribers, and administrators who serve students with disabilities in California public schools.

**Center for Applied Special Technology, Inc. (CAST) [www.cast.org](http://www.cast.org)**
Assists teachers and parents in finding accessible electronic learning materials for students with disabilities. Expands educational opportunities through the development and use of computer technology.

**Council for Exceptional Children, Division on Visual Impairments (CEC-DVI) [www.cec.sped.org](http://www.cec.sped.org)**
Provides information on instructional strategies for students with disabilities.
Council of Schools for the Blind (COSB) [www.cosb1.org](http://www.cosb1.org)
Serves as an information clearinghouse and advocate for areas of interest relating to residential schools for blind and visually impaired persons.

Digital Audio-Based Information System Consortium (DAISY) [www.daisy.org](http://www.daisy.org)
The DAISY Consortium works to improve access to information for blind and visually impaired people establishing international standards for the next generation of “Digital Talking Books.”

Discovery School.Com [www.school.discovery.com](http://www.school.discovery.com)
Provides innovative materials for students, teachers, and parents.

Duxbury Systems, Inc. [www.duxburysystems.com](http://www.duxburysystems.com)
Manufactures and distributes software for translating print to braille in over 30 languages.

Education Service Center (ESC), Region 20, Braille Department [www.Braille.edu](http://www.Braille.edu)
The Braille Department transcribes textbooks and other materials using literary, Nemeth, music, and foreign language braille codes. The Braille Department uses seven braille embossers and has a reproduction capacity of 4,200 pages/hour, 15 hours a day.

Hadley School for the Blind (HSB) [www.hadley-school.org](http://www.hadley-school.org)
Provides academic, personal enrichment, and compensatory/rehabilitation education through free home study courses, including braille reading and writing.

Homeschooling Special Needs Children [www.homeschooling.about.com](http://www.homeschooling.about.com)
Provides information on homeschooling special needs children.

The Internet Public Library [www.ipl.org](http://www.ipl.org)
A public service organization providing library service to Internet users.

The Institute for Families of Blind Children [www.instituteforfamilies.org](http://www.instituteforfamilies.org)
Nonprofit organization offers counseling and support to families of blind children.

Library of Congress National Library Service for the Blind and Physically Handicapped (NLS) [www.loc.gov/nls](http://www.loc.gov/nls)
Provides a free library program of braille and recorded materials.

Low Vision Gateway [www.lowvision.org](http://www.lowvision.org)
A starting point to access information on the World Wide Web related to the fields of low vision and blindness.

The National Association for Parents of Children with Visual Impairments, Inc. (NAPVI) [www.napvi@perkins.pvt.k12.ma.us - www.spedex.com/napvi](http://www.napvi@perkins.pvt.k12.ma.us - www.spedex.com/napvi)
Assists parents of visually impaired children through information and resources, providing support and training, networking, outreach programs and advocating for educational needs.
National Braille Association (NBA) [www.members.aol.com/nbaoffice/index.htm](http://www.members.aol.com/nbaoffice/index.htm)
Provides continuing education to those who prepare braille, and to provide braille materials to persons who are visually impaired.

National Braille Press (NBP) [www.nationalbraille.org](http://www.nationalbraille.org)
Provides information about literature in alternate formats. Produces materials in braille, cassette tape and large print. Offers braille services to other organizations.

National Center for Accessible Media (NCAM) at WGBH [www.wgbh.org](http://www.wgbh.org)
Research and development facility dedicated to the issues of media information technology for people with disabilities.

National Federation of the Blind [www.nfb.org](http://www.nfb.org)
A national organization providing public education about blindness, information and referral services, scholarships, publications, adaptive equipment for the blind, advocacy and support services, development and evaluation of technology, and information about employment.

National Information Center for Children & Youth with Disabilities [www.NICHY.org](http://www.NICHY.org)
Provides information on disability related issues. The special focus is on children and youths, birth to 22.

National Parent to Parent Support and Information Systems [www.NPPSIS.org](http://www.NPPSIS.org)
Provides parents and professionals with healthcare information, resources and referrals.

New York Institute for Special Education [www.nyise.org/whatsnew.htm](http://www.nyise.org/whatsnew.htm)
Educational facility that provides education programs to support the education of children who are blind or visually impaired and emotionally and learning disabled. The web site provides resources to support educational programming.

Northwest Vista College (San Antonio, Texas) [www.accd.edu](http://www.accd.edu)
A community college who, in partnership with the American Foundation for the Blind and the Texas Education Agency, is developing a new career (Braille Textbook Transcriber) through a series of college courses.

PBS [www.pbs.org](http://www.pbs.org)
A private nonprofit media enterprise committed to lifelong learning, through web sites providing extensive resources for education services. Look for TeacherSource.

Recording for the Blind and Dyslexic (RFB&D) [www.rfbd.org](http://www.rfbd.org)
Provides and promotes the effective use of accessible educational materials so that all people will have equal access to the printed word.
Region IV, Education Service Center (ESC) www.esc4.net/braille
Braille Services at Region IV ESC, Houston, Texas, has 26 years of experience in providing high quality text and graphics in braille textbooks and tests for braille readers throughout the country.

The Special Education Exchange www.spedex.com
Provides information to educators, professionals, parents, consumers, and students in the field of special education.

TechAdapt, Inc. svonsee@techadapt.com
Produces materials in alternate formats (braille). Types of content: Textbooks, commercial materials, menus, etc.

Texas Education Agency (TEA) www.tea.state.tx.us
Monitors & provides funding and technical assistance to Texas Regional Service Centers serving blind/visually impaired students. Provides instructional materials for these students.

Texas School for the Blind and Visually Impaired (TSBVI) www.tsbvi.edu
Offers elementary through secondary education for children with visual impairments, summer school programs, short-term placement, vocational evaluation for public school students, an early childhood outreach program statewide, and publishes education-related curricula specific to students with visual impairments.

Resources and information for parenting and teaching a child with visual impairments.

WGBH - Descriptive Video Service http://access.wgbh.org
Video description provides descriptive narration of key visual elements - making television programs, feature films, home videos and other visual media accessible to people who are blind or visually impaired. Key visual elements are those which viewers with visual impairments would ordinarily miss, such as actions, costumes, gestures, facial expressions, scene changes and on-screen text. Inserted within the natural pauses in dialogue, audio descriptions of important visual details help to engage viewers who are visually impaired with the story.
ORGANIZATIONAL CONTACT LIST

June 2003

Mr. David Sweeney
Adaptive Technology Services
Texas A&M University
Department of Student Life
1257 TAMU
College Station, TX 77843-1257
Phone: 979-847-9596
Fax: 979-458-1214
E-mail: david@studentlife.tamu.edu

Ms. Dee Konczal
Project Manager
Alternate Textbook Production Center of the California Community Colleges
Ventura Community College
71 - A Day Road
Ventura, CA 93003
Phone: 805-654-6396
1-800-858-9984
Fax: 805-648-8944
E-mail: Dkonczal@vcccd.net

Ms. Melanie Brunson
American Council of the Blind
1155 15th St., N.W.
Washington, D.C. 20005
Phone: 202-467-5081
Fax: 202-467-5085
E-mail: mbrunson@acb.org

Ms. Mary Ann Siller
Director, National Education Program
American Foundation for the Blind
260 Treadway Plaza
Dallas, TX 75235
Phone: 214-352-7222, ext. 15
Fax: 214-352-3214
E-mail: siller@afb.net
Mr. Bob Brasher  
Vice President of Products and Services  
American Printing House for the Blind  
1839 Frankfort Ave.  
P.O. Box 6085  
Louisville, KY 40206-0085  
Phone: 502-899-2369  
Fax: 502-899-2363  
E-mail: bbrasher@aph.org

Mr. Mark Richert  
Executive Director  
Association for Education and Rehabilitation of the Blind and Visually Impaired  
4600 Duke Street  
Alexandria, VA 22304  
Phone: 703-823-9690  
Fax: 703-823-9695  
E-mail: markr@aerbvi.org

Mr. Steve Driesler  
Executive Director, School Division  
Association of American Publishers  
50 F Street NW  
Washington, D.C. 20001  
Phone: 202-220-4549  
Fax: 202-347-3690  
E-mail: sdriesler@publishers.org

Mr. Larry Brown  
Representing the Association of Instructional Resource Centers for the Visually Handicapped (AIRC VH)  
Oregon Textbook and Media Center  
Kuenzi Hall, Room B6  
999 Locust St. N.E.  
Salem, OR 97303  
Phone: 503-763-2413  
Fax: 503-763-2971  
E-mail: larry.brown@wesd.org

Ms. Marty Murrell  
Representing the Association of State Education Consultants for the Visually Impaired  
Texas Education Agency  
1701 N. Congress  
Austin, TX 78701  
Phone: 512-463-9362  
Fax: 512-463-9560  
E-mail: Mmurrell@tea.state.tx.us
Ms. Eileen Curran  
Representing the Braille Authority of North America (BANA)  
National Braille Press  
88 Stephen Street  
Boston, MA 02115  
Phone: 617-266-6160 ext 17  
Fax: 617-437-0456  
E-mail: ecurran@nbp.org

Ms. Nancy Niebrugge  
Director of Braille Publishing  
Braille Institute of America, Inc.  
741 N. Vermont Ave.  
Los Angeles, CA 90029  
Phone: 323-663-1111, ext. 3165  
Fax: 213-663-0867  
E-mail: NNNiebrugge@brailleinstitute.org

Mr. Rod Brawley  
Clearinghouse for Specialized Media and Technology  
California Department of Education  
560 J Street, Suite 390  
Sacramento, CA 95814  
Phone: 916-445-5103  
Fax: 916-323-9732  
E-mail: rbrawley@cde.ca.gov

Ms. Sue Reilly  
Representing the California Transcribers and Educators of the Visually Handicapped (CTEVH)  
San Diego City Schools  
Center for Student Support and Special Education Services  
4350 Mount Everest Blvd., Room B2  
San Diego, CA 92117  
Phone: 619-725-7697  
Fax: 619-725-5689  
E-mail: sreilly@mail.sandi.net

Mr. Skip Stahl  
Co-Director, Universal Learning Center  
Center for Applied Special Technology, Inc. (CAST)  
40 Harvard Mills Square, Suite 3  
Wakefield, MA 01880  
Phone: 781-245-2212  
Fax: 781-245-5212  
E-mail: sstahl@cast.org
Mr. Robert Stepp  
Computer Application Specialities Company  
5446 S. 32\textsuperscript{nd} Street  
Lincoln, NE 68516  
Phone: 402-423-4782  
Fax: 402-423-5154  
E-mail: rstepp@c-a-s.com

Dr. Ellyn Ross  
Representing Council for Exceptional Children  
Division on Visual Impairments (DVI)  
Pennsylvania Training & Technical Assistance Network  
6340 Flank Drive, Suite 600  
Harrisburg, PA 17112-2793  
Phone: 717-541-4960 ext. 3002  
Fax: 717-541-4968  
E-mail: eross@pattan.k12.pa.us

Dr. Phil Hatlen  
Representing Council of Schools for the Blind  
Texas School for the Blind and Visually Impaired  
1100 West 45th Street  
Austin, TX 78756  
Phone: 512-454-8631  
Fax: 512-206-9453  
E-mail: hatlen_p@tsbl.tsbvi.edu

Mr. William Jolley  
Secretary General  
DAISY Consortium  
20 Wadham Parade  
Mount Waverly Vic 3149  
Australia  
Phone: 613-9807-5137  
Fax: 613-9807-5137  
E-mail: wjolley@bigpond.com

Mr. Joe Sullivan  
President  
Duxbury Systems, Inc.  
270 Littleton Rd. Unit 6  
Westford, MA 01886  
Phone: 978-692-3000 ext. 308  
Fax: 978-692-7912  
E-mail: joe@duxsys.com
Mr. Alex Mlawsky
Glencoe/McGraw-Hill
8787 Orion Place
Columbus, OH 43240-4027
Phone: 614-430-4383
Fax: 614-430-4400
E-mail: alex_mlawsky@mcgraw-hill.com

Ms. Dawn Turco
Senior Vice President
Educational Operations
Hadley School for the Blind
700 Elm St.
Winnetka, IL 60093
Phone: 847-446-8111
Fax: 847-446-0855
E-mail: turco@hadley-school.org

Ms. Carole Uettwiller
Vice President
Director of Design Production
Harcourt Brace and Company
6277 Sea Harbor Drive
Orlando, FL 32887
Phone: 407-345-3510
Fax: 407-345-4030
E-mail: cuettwiller@harcourtbrace.com

Ms. Karen Barrett
Director, Braille Library
Helen Keller Services for the Blind
One Helen Keller Way
Hempstead, NY 11550
Phone: 516-485-1234 ext. 246
Fax: 516-538-6785
E-mail: Hksblibrary@aol.com

Mr. Pearce McNulty
Houghton Mifflin Company
222 Berkeley Street
Boston, MA 02116
Phone: 617-351-5504
Fax: 617-351-1128
E-mail: pearce_mcnulty@hmco.com
Mr. Michael Moodie  
Research and Development Officer  
National Library Service for the Blind and Physically Handicapped  
Library of Congress  
1291 Taylor Street, NW  
Washington, D.C. 20542  
Phone: 202-707-5108  
Fax: 202-707-1690  
E-mail: mmoo@loc.gov

Mr. Warren Figueiredo  
Louisiana School for the Visually Impaired  
1120 Government Street  
Baton Rouge, LA 70802  
Phone: 225-219-1686  
Fax: 225-219-1684  
E-mail: warrendfig@aol.com

Mr. David Rosenthal  
Macmillan/McGraw-Hill  
2 Penn Plaza 23rd Floor  
New York, NY 10121-2298  
Phone: 212-904-3373  
Fax: 212-904-3222  
E-mail: david_rosenthal@mcgraw-hill.com

Ms. Susan Shorey  
Vice President  
McDougal Littell  
1500 Sherman Avenue  
Evanston, IL 60201  
Phone: 847-424-3161  
Fax: 847-869-2598  
E-mail: susan_shorey@hmco.com

Ms. Mary Zabelski  
Representing the National Association for Parents of Children with Visual Impairments, Inc. (NAPVI)  
Chicago Lighthouse for People who are Blind or Visually Impaired  
1850 West Roosevelt Rd.  
Chicago, IL 60608  
Phone: 312-997-3675  
Fax: 312-243-8539  
E-mail: maryz@chicagolighthouse.org
Ms. Betsy Burnham  
ATIC Manager and Trainer  
American Printing House for the Blind  
Representing National Braille Association  
9531 Hickory Falls Way  
Baltimore, MD 21236  
Phone: 502-895-2405 ext. 378 (w)  
410-256-8842 (h)  
Fax: 410-256-7789  
E-mail: bburnham@aph.org (w)  
betsyburnham@juno.com (h)

Ms. Eileen Curran  
Director of Operations  
National Braille Press  
88 Stephen Street  
Boston, MA 02115  
Phone: 617-266-6160 ext. 17  
Fax: 617-437-0456  
E-mail: ecurran@nbp.org

Ms. Madeleine Rothberg  
Project Director  
National Center for Accessible Media  
WGBH  
125 Western Avenue  
Boston, Massachusetts 02134  
Phone: 617-300-2492 (direct voice)  
617-300-3400 (main NCAM)  
Fax: 617-300-1035  
Email: madeleine_rothberg@wgbh.org

Mr. Chris Weaver  
New Mexico State University  
Mathematics Accessible to VI Students  
Department of Mathematical Sciences  
MSC 3MB  
P.O. Box 30001  
Las Cruces, NM 88003  
Phone: 505-646-2664  
Fax: 505-646-1064  
E-mail: chrweave@nmsu.edu

Dr. Jo-Carol Fabianke  
Vice President  
Northwest Vista College  
3535 North Ellison Drive  
San Antonio, TX 78251-4217  
Phone: 210-348-2006  
Fax: 210-348-2064  
E-mail: jfabiank@accd.edu
Mr. McKinley Williams
Pearson Education
299 Jefferson Rd.
Parsippany, NJ 07054
Phone: 973-739-8278
Fax: 973-739-8057
E-mail: mckinley_williams@prenhall.com

Ms. Irene Belinsky
Pearson Learning
299 Jefferson Rd.
Parsippany, NJ 07054
Phone: 917-739-8298
E-mail: irene.belinsky@pearsonlearning.com

Mr. George Kerscher
Senior Officer
Accessible Information
Recording for the Blind and Dyslexic
1203 Pineview Drive
Missoula, Montana 59802
Phone: 406-549-4687
Fax: 406-549-6723
E-mail: kerscher@montana.com

Mr. Larry Koons
Scholastic, Inc.
524 Broadway, 11th Floor
New York, NY 10012
Phone: 212-965-7215
Fax: 212-965-7270
E-mail: lkoons2@scholastic.com

Ms. Mary Lou Beals
Scott Foresman
1900 East Lake Avenue
Glenview, IL 60025
Phone: 847-486-2221
Fax: 847-486-3911
E-mail: MaryLou.Beals@scottforesman.com

Ms. Sharon von See
TechAdapt, Inc.
1017 Fairhaven Drive
Garland, TX 75040
Phone: 214-264-8895 (w)
972-414-2651 (h)
E-mail: svonsee@techadapt.com
Mr. Chuck Mayo  
Program Administrator  
Textbook Administration Division  
Texas Education Agency  
1701 North Congress Avenue  
Austin, TX 78701-1494  
Phone: 512-463-9601  
Fax: 512-475-3612  
E-mail: Cmayo@tea.state.tx.us

Dr. Jim Allan  
Statewide Technology Specialist and Webmaster  
Texas School for the Blind and Visually Impaired  
1100 West 45th Street  
Austin, TX 78756  
Phone: 512-206-9315  
Fax: 512-206-9264  
E-mail: jimallan@tsbvi.edu

Mr. Steve Kohn  
Verizon Communications  
Strategic Alliances; Education and Disabilities Initiatives  
23 Norman Lane  
Darien, CT 06820  
Phone: 212-395-2255  
E-mail: stephinkohn@verizon.com

Ms. Debbie Davis  
Executive Director  
Visual Aid Volunteers  
617 State St.  
Garland, TX 75040  
Phone: 972-272-1615  
Fax: 972-276-2839  
E-mail: tx.braille@verizon.net
 STATES WITH TEXTBOOK ADOPTION PROCESS

Listed states adopt K-12 unless otherwise noted:

Alabama
Arkansas
California - adopts only K-8
Florida
Georgia
Idaho
Indiana - adopts only 1-12
Kentucky
Louisiana
Mississippi
Nevada
New Mexico
North Carolina
Oklahoma
Oregon
South Carolina
Tennessee
Texas
Virginia
West Virginia

Adoption periods and subject schedules vary by state.
### School Division State Braille Laws Summary (K-12)

<table>
<thead>
<tr>
<th>STATE/CONTACT</th>
<th>LAW/RULE</th>
<th>REQUIRED MATERIALS</th>
<th>FORMAT/SPECIAL INSTRUCTIONS</th>
<th>SECTION 508/DAISY</th>
<th>SUBMISSION DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALABAMA</td>
<td>Admin. Rules Sec 290-080-61-62(25)</td>
<td>All adopted textbooks and supplementary materials, literary and nonliterary.</td>
<td>ASCII or other electronic format compatible with Braille conversion</td>
<td>Not specified</td>
<td></td>
</tr>
<tr>
<td>ARKANSAS Sue McKenzie Textbook Administrator 501/682-4593</td>
<td>Statute Sec. 6-41-405/Contract</td>
<td>Literary subjects in all adopted texts; nontextual portions of textbooks when technology is available.</td>
<td>Per state contract, ASCII, ICADD-22, SGML, or improved format</td>
<td>Per contract, 90 days after request</td>
<td></td>
</tr>
<tr>
<td>ARIZONA Hugh Pace Exceptional Student Svcs. 520/628-6616</td>
<td>Statute Sec. 15-214</td>
<td>Literary subjects; nonliterary when technology is available.</td>
<td>Standard format approved by Dept of Ed compatible with Braille conversion</td>
<td>Not specified</td>
<td></td>
</tr>
<tr>
<td>CALIFORNIA</td>
<td>Education Code 60061</td>
<td>All print material offered to any other state. Recommended subjects: Eng/Lang Arts, Visual/Perf Arts, Hist, Soc Sci, For Lang, Math, Sci, Health.</td>
<td>Not specified in Code. Recommended: Braille compatible format, such as ICADD or SGML</td>
<td>Within one month of adoption</td>
<td></td>
</tr>
<tr>
<td>CONNECTICUT NEW - 2003</td>
<td>Statute Sec 10-295</td>
<td>Establishes fund to provide specialized instructional materials, including Braille and large print</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DELAWARE</td>
<td>Statute Sec 206-14</td>
<td>Print copy of all materials; electronic file on request</td>
<td>ASCII</td>
<td>Upon request</td>
<td></td>
</tr>
<tr>
<td>FLORIDA Elizabeth Carrouth Program Director, IM 850/487-8798</td>
<td>Statute Sec 233.0561(5)</td>
<td>Adopted student textbooks for literary subjects; nonliterary when technology is available. Include corrections/changes; if this cannot be accomplished, provide marked tear sheets</td>
<td>Per instructions: ICADD 22 or SGML for DOS; 3.5 double-sided/high density diskette; Labeling: Seq #, ISBN, bk title, file name, pub, typing co/contract, format option/version, copyright date; Contents: Title page, consultants/reviewers, table of contents, all chptrs, all appendices, all glossaries, indices. Include special items w/in text file.</td>
<td>Upon request</td>
<td></td>
</tr>
<tr>
<td>GEORGIA Kim Hartwell Dept. of Special Ed. 404/362-2024</td>
<td>House Bill 228 Signed by Governor — Act 321 Textbook Adoption agreement</td>
<td>All recommended textbooks must be provided in electronic format.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAWAII — NEW - 2002</td>
<td>Statute Sec 302A-442.5</td>
<td>All literary textbooks or other instructional materials sold to the state or any local education agency. Non literary when software is available.</td>
<td>ASCII for literary and for nonliterary (natural sciences, computer science, math, and music) when software is available. Does not apply to materials written in the Hawaiian language.</td>
<td>Not specified</td>
<td></td>
</tr>
<tr>
<td>STATE/CONTACT</td>
<td>LAW/RULE</td>
<td>REQUIRED MATERIALS</td>
<td>FORMAT/SPECIAL INSTRUCTIONS</td>
<td>SECTION 508/DAISY</td>
<td>SUBMISSION DATE</td>
</tr>
<tr>
<td>---------------</td>
<td>----------</td>
<td>--------------------</td>
<td>----------------------------</td>
<td>------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>IDAHO</td>
<td>Statute Sec 33-118</td>
<td>All approved materials for literary subjects; nonliterary when technology is available. (However contract will continue to specify nonliterary.)</td>
<td>Per contract, Word or ASCII</td>
<td></td>
<td>Upon request</td>
</tr>
<tr>
<td>ILLINOIS</td>
<td>Act 87-1071 Sec 28-21</td>
<td>Literary subjects; nonliterary when technology is available.</td>
<td>ASCII file and print copy of textbook</td>
<td></td>
<td>Within 15 days of request for print copy; 90 days for e-file</td>
</tr>
<tr>
<td>INDIANA</td>
<td>Statute Sec 20-10.1-0-15</td>
<td>Literary subjects; nonliterary when technology is available.</td>
<td>ASCII or other format determined by board.</td>
<td></td>
<td>Within 60 days of request</td>
</tr>
<tr>
<td>IOWA</td>
<td>Statute Sec 301.10</td>
<td>All textbooks requested by department</td>
<td>Best format for electronic Braille translation.</td>
<td></td>
<td>Not specified</td>
</tr>
<tr>
<td>KENTUCKY</td>
<td>Statute Sec 156.476 SB 243 enacted 4/9/02</td>
<td>All adopted textbooks. Beginning with 2004 adoption, a preference given to publishers who provide materials in alternative formats</td>
<td>If publisher submits electronic file in another state that is of a higher level of accessibility than basic ASCII, KY wants equal access to that same file version that same material is sold in KY. ASCII or any format readily translated into Braille. Provide files to American Printing House for the Blind. Beginning with 2004 adoption: formats comparable to the printed version that are compatible with commonly used Braille translation and speech synthesis software and include corrections and revisions as may be necessary to assure clarity in presentation and use. Navigation within and between files should be reasonably efficient so that the disabled learner is able to fully utilize the material in a manner that yields the same result as the print version affords a nondisabled learner. File format shall be limited to those formats that allow for a comparable version that is readable with text and screen readers such as HTML, XML, or other formats that meet the criteria. For extreme cases where ALT tags are not feasible, a tag may read, This item is too complicated to render with current technology. Legacy materials shall be exempt from the criteria for this preference. (legacy means images and graphics requiring release and permission from another source other than the publisher.)</td>
<td></td>
<td>Beginning 2004, files to be provided at the same time as the print book.</td>
</tr>
</tbody>
</table>

Revised May, 2003
<table>
<thead>
<tr>
<th>STATE/CONTACT</th>
<th>LAW/RULE</th>
<th>REQUIRED MATERIALS</th>
<th>FORMAT/SPECIAL INSTRUCTIONS</th>
<th>SECTION 508/DAISY</th>
<th>SUBMISSION DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOUISIANA Micky Pounders 504-342-6200</td>
<td>Revised Statutes 17:1985</td>
<td>Literary subjects; nonliterary subjects when technology is available</td>
<td>Standard format approved by Board of Ed from which Braille versions can be produced. Per contract, provide files to American Printing House for the Blind</td>
<td>Within 90 days of adoption</td>
<td></td>
</tr>
<tr>
<td>MARYLAND Robb Farrell MD School for the Blind 410/319-5715</td>
<td>Statute Sec 8-408(d) COMAR 13A 05 02 13H</td>
<td>Pupil edition textbooks for literary subjects; nonliterary when technology is available</td>
<td>A format suitable for conversion into Braille or synthesized speech.</td>
<td>Technology-based instructional products should be 508 compliant unless doing so would (a) fundamentally alter the nature of the instructional activity; (b) result in undue financial and administrative burdens on the agency or (c) not meet all other specs.</td>
<td>Upon request</td>
</tr>
<tr>
<td>MICHIGAN</td>
<td>MCL 380.1704</td>
<td>Literary subjects, nonliterary if the technology is available to convert directly to a Braille compatible format</td>
<td>A publisher shall not charge a price for the electronic version that exceeds the price it charges for the print or electronic media version</td>
<td>Upon request</td>
<td></td>
</tr>
<tr>
<td>MISSISSIPIMissouri Judy McLaugherty Textbook Div. 601/354-7543</td>
<td>Statute Sec 37-23-199</td>
<td>Literary subjects; nonliterary subjects when technology is available</td>
<td>ASCII: para. Notations, full text, include. All text-related graphics, glossaries, indices and front matter, well organized, logically dev. files, accurately labeled disks to id the title and chap. or other grouping structures, sequentially numbered disks, if applicable.</td>
<td>Within 10 working days of request</td>
<td></td>
</tr>
<tr>
<td>MISSOURI</td>
<td>Statute Sec 170.132</td>
<td>All public elementary, secondary, and post-secondary schools shall preferentially procure IM from vendors who provide electronic files</td>
<td>ASCII: para. Notations, full text, include. All text-related graphics, glossaries, indices and front matter, well organized, logically dev. files, accurately labeled disks to id the title and chap. or other grouping structures, sequentially numbered disks, if applicable.</td>
<td>Not specified</td>
<td></td>
</tr>
</tbody>
</table>

Revised May, 2003
<table>
<thead>
<tr>
<th>STATE</th>
<th>CONTACT</th>
<th>LAW/RULE</th>
<th>REQUIRED MATERIALS</th>
<th>FORMATT/SPECIAL INSTRUCTIONS</th>
<th>SECTION 508/DAISY</th>
<th>SUBMISSION DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEW MEXICO</td>
<td>David Bowman</td>
<td>SB 301</td>
<td>New law adds workbooks, teacher manuals or editions, blackline masters, transparencies, test packets, software, CD-ROMs, videotapes and cassette tapes. Defines textbook to include a system of instructional materials or a combination of a book and supplementary instructional materials that conveys information to the student or otherwise contribute in addition to textbooks including electronic textbooks.</td>
<td>Mutually agreed-upon electronic format (such as Word, ASCII or LaTeX) Includes private right of action language. Adds publishers to groups the department should consult with before adopting guidelines for implementation and administration of new Braille Access Act.</td>
<td>If adopted, a national file format such as DAISY/NISO XML</td>
<td>Upon request</td>
</tr>
<tr>
<td>NEW YORK</td>
<td>Laurie Munro</td>
<td></td>
<td>All IM. A preference will be given to vendors who agree to provide materials in alternate formats, except where the IM needed for a course cannot be obtained from any vendor in all alternative formats.</td>
<td>Alternative format defined as any medium or format for the presentation of IM . . . Including Braille, large print, open and closed captioned, audio, or an electronic file in an approved format as defined in the regulations of the commissioner.</td>
<td>Not specified</td>
<td>Not specified</td>
</tr>
<tr>
<td>NORTH CAROLINA</td>
<td>Wandra Polk</td>
<td>Statute Sec 115C-90</td>
<td>No requirements for publishers.</td>
<td>Contracts allow State Board of Ed to produce Braille, large print, and audio cassette copies for use in state public schools</td>
<td>Within 60 days written notice.</td>
<td>Within 60 days written notice.</td>
</tr>
<tr>
<td>OHIO</td>
<td>Paul Mauro ORCLISH 800-672-5474</td>
<td>Statute Sec 3329.01 Rules 3301-51-21</td>
<td>Newly adopted materials for which technology exists for translation into Braille</td>
<td>Per Instructions: Windows or MS-DOS; 3.5 ddhd diskette. ASCII, WP or Word; Labeling: Seq #, bk title, file name, pub, typ ting co; Contents: Title page, consultants/reviewers, table of contents, chapters (in indiv. File), appendices, glossaries, indices; Include special items w/in text file. Include file with description of all codes.</td>
<td>Format from which Braille version can be produced.</td>
<td>Upon request from district</td>
</tr>
<tr>
<td>OKLAHOMA</td>
<td>Mary Boren</td>
<td>Statute Sec 70-16-106-D</td>
<td>Literary materials; nonliterary when translation software is available.</td>
<td>ASCII</td>
<td>Upon request</td>
<td>Upon request</td>
</tr>
<tr>
<td>OREGON</td>
<td>Rex Cruse 503-378-8004, ext. 261</td>
<td>Statute Sec 343.595</td>
<td>Literary subjects; nonliterary when translation software is available.</td>
<td>Format from which Braille version can be produced.</td>
<td>Upon request from district</td>
<td>Upon request</td>
</tr>
<tr>
<td>SOUTH CAROLINA</td>
<td>Jim White</td>
<td>Contract</td>
<td>Newly submitted literary programs; non-literary when technology available.</td>
<td>Electronic formats suitable for transcription into Braille.</td>
<td>Upon written request</td>
<td>Upon written request</td>
</tr>
</tbody>
</table>

Revised May, 2003

June 2003
## School Division State Braille Laws Summary (K-12)

<table>
<thead>
<tr>
<th>STATE/CONTACT</th>
<th>LAW/RULE</th>
<th>REQUIRED MATERIALS</th>
<th>FORMAT/SPECIAL INSTRUCTIONS</th>
<th>SECTION 508/DAISY</th>
<th>SUBMISSION DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TENNESSEE</td>
<td>Rule 0520-1-2.15</td>
<td>All adopted materials</td>
<td>Electronic files that can be translated to Braille. Provide files to state DE, APH or a national repository.</td>
<td>60 days from request</td>
<td></td>
</tr>
<tr>
<td>TEXAS</td>
<td>Statute Sec 31.028</td>
<td>Literary materials in English and Spanish language versions requested by State Board of Ed; nonliterary when technology is available.</td>
<td>Per instructions: ASCII, ICADD 22 or SGML for Windows or DOS, or agreed format. 3.5 DDHD diskette, 5.25 Syquest, or other agreed on media. Labeling: Seq #, bk title, file name, pub, typing co. Contents: Title page, consultants/reviewers, table of contents, chptrs, appendices, glossaries, indices. Include special items w/in text files</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UTAH</td>
<td>Statute Sec 53A-26-111</td>
<td>Literary materials; nonliterary when technology is available</td>
<td>ASCII</td>
<td>On request</td>
<td></td>
</tr>
<tr>
<td>VIRGINIA</td>
<td>Code Sec. 22.1-241</td>
<td>State reviewed and contracted basal pupil edition textbooks for literary subjects.</td>
<td>ASCII or other mutually agreed subject.</td>
<td>90 days from written request</td>
<td></td>
</tr>
<tr>
<td>WEST VIRGINIA</td>
<td>Statute Sec 8-101-5</td>
<td>Literary materials; nonliterary when technology is available</td>
<td>ASCII</td>
<td>Not specified</td>
<td></td>
</tr>
</tbody>
</table>

Revised May, 2003
TEXTBOOK CREATION: FROM ELECTRONIC FILE TO PRINT PUPIL EDITION

The following information appears on web pages of the AFB Solutions Forum and is used with permission.

- Market Research
- Writing Out-of-House Authors
- Editing/Revising
- Editorial/Design Collaboration
  (This involves selection/creation color palette choice, photo research, obtaining the rights of third party, materials)
- Page Composition/1st pass
- Includes Photo Shoots, Scanning of Images
- Editorial/Design Revision
- Page Composition - 2nd pass
- Ship to Film Supplier
- Film/Proofs Generated
- Proofs Checked and Revised, Files Revised at Outside Supplier
- Final Film/Plates Generated
- Printing-Additional Changes May Be Made on Press and Not Reflected in Final Electronic File
- Files Shipped Back to Publisher, On-Press Changes Incorporated
- Final Product - 1st Printing Pupil Edition (used for submission purposes)
- State Submission
- State Requests Changes and Publisher Submits a List of Changes
- Changes Incorporated into Electronic Files
- Shipped to Film Supplier
- Final Film/Plates Generated
- Printing- Additional Changes May Be Made on Press and Not Reflected in Final Electronic File
- Files Shipped Back to Publisher. On-Press Changes Incorporated
- Final Product for Classroom Use

PRODUCTION OF BRAILLE TEXTBOOKS FACT SHEET

The following was created June 15, 2000 by the AFB Textbooks and Instructional Materials Solutions Forum Electronic Files Work Group. Special thanks to Sharon von See (TechAdapt, Inc.) and Diane Spence (Region IV Education Service Center, Houston, Texas).

There are 20 state adoption states and 30 open territory adoption states. The acquisition of textbooks varies throughout the United States, but bids are usually sent to the publishers through local district boards or state boards of education.

Braille Transcription with Publishers’ Electronic Files


2. The National Library Service for the Blind and Physically Handicapped, Library of Congress, offers the certification course for braille transcribing. It is considered the required standard for braille transcribers in the U.S. There are several levels of certification. The first level of certification is for learning the standard code. This takes approximately one year to complete. After that a transcriber works for a minimum of six months on simple projects such as novels and pleasure reading. The transcriber then takes on simple textbooks, with assistance from experienced transcribers. The transcriber can then continue on to the next levels of certification, either math and science or music. These certifications usually take a minimum of a year to achieve.

With producing textbooks, the braille transcriber usually receives the print copy that is in need of corrections. The braille transcription is begun and sometimes finished before the printing that the reader will receive is actually complete.

3. Braille producers review publishers’ disks for usability. If there are problems with the disks, they would contact the publisher and/or the state entity managing textbooks.

4. The transcribing agency works with the graphics companies that have been contracted by the publishers to get the best type of files possible. The graphic company then sends sample files to the transcribing agency for evaluation. The state entity sends “file specification checklists” to the publishers, but it is often the case that these are not passed to the graphic companies. Often, the transcribing agencies receive files with words misspelled or missing from the file completely. Each heading, caption, word and punctuation mark that is in print needs to be included in the file sent to the transcriber. In the case of a foreign language textbook, the accented letters shown need to be in the files.
5. Braille producers work with the publishers and/or the state agency until usable/good copies of electronic files are received. Sometimes this is a multi-step process involving education of publishers and negotiation with publishers.

6. Braille production staff (formatting specialists) review textbooks and make formatting decisions about how the books are structured. The print textbooks are highly visual. The more colors, boxes, maps and artwork in the print— the longer it takes to format a book for the braille user.

7. Textbooks are assigned to transcribers for brailling and graphics are given to tactile graphics specialists. In some cases, the transcriber and graphics specialist are one and the same person.

8. Transcriber/graphics specialists prepare the braille versions of textbooks by using the publishers’ disks.

   - The electronic file is imported into the braille translation software a chapter at a time. The translation software will not easily import unusually large files. These have to be broken into smaller, more manageable files.

   - A title page, author’s page, transcriber’s note page, special symbols page, and other preliminary pages are prepared as needed.

   - The transcriber inserts formatting commands line by line, to set up the file according to various braille codes (Nemeth/math & science, chemistry, music, textbook, and computer).

   - Picture descriptions are written and included as needed. This involves the transcriber having to determine exactly what the reader needs to know so the correct wording of a transcriber’s note is used. **Tactile graphics are preferred above raised line drawings and computer generated graphics.**

   - Each volume is reviewed and prepared for the first proofreading.

9. The first proofread version of the file is printed on a braille embosser and graphics are reproduced on a Thermoform machine and/or braille graphics embosser. The graphics are inserted in the appropriate position within the braille volume. The draft copy of the volume is ready for the first proofreading.

10. Proofreader and copyholder read each volume of the textbook. A “page and line” report is completed listing the errors in each volume. The report is returned with the volume to the transcriber/graphics specialist for corrections.

11. Transcriber/graphics specialists correct errors and return the braille volumes to the proofreader for a second review. This process continues between the transcriber and proofreader until the volume is finalized.
12. Proofreader reviews the volume for a final time and informs transcriber that the textbook is ready for production. The transcriber sends the finished file and graphics to the reproduction facility.

**Copying, Binding and Shipment of Braille Textbooks**

13. A braille technician retrieves the electronic files for the braille volumes, braille labels, print title pages, print transcriber note pages and spine labels. They are then brailled.

- After a quality control check for correctness and completeness, a braille technician electronically queues the book to be embossed on one of several braille embossers. The braille labels are brailled. The print title page and transcriber note pages are printed on a specially designed printer.

- The embossed volumes are removed from the braille output bin and checked for production inequities such as fading dots, extra dots, proper alignment and correct page count per volume.

- Braille specialists “burst” the book, cutting the braille paper into 11x11 inch sheets. They add the property page and check for continuity and completeness of each volume.

- A production worksheet is checked for graphics requirements. If the book contains graphics, a braille specialist retrieves the appropriate graphic master from the graphics library. He/she thermoforms the necessary graphics and returns the masters to the graphics library.

- A braille specialist collates the embossed book, thermoform graphics pages, print title pages, print transcriber note pages, and book covers. The book is then bound on a spiral binding machine. A clear braille label is then affixed to the cover of the book.

- A second braille specialist inspects each volume and packs the textbooks for shipment.

14. The textbooks are then sent to requesting school districts and the state agency/state contact is notified that the volumes have been sent.
FLOWCHART FOR WORKING WITH PUBLISHERS’ FILES

The following chart was developed by Betsy Burnham (APH) and is reprinted from the AFB Training Manual for Braille Transcribers.
WHY DOES IT TAKE SO LONG?

The following article is reprinted from the NBA Bulletin, Winter 1996/97 and is used with permission.

The National Braille Association, Inc. is a nonprofit organization which provides continuing education to those who prepare braille, and provides braille materials to persons who are visually impaired.

By Betsy Burnham, Chairman
NBA Transcriber and Educator Services Committee

In September of this year I was talking with Gloria Buntrock, a past president of NBA, regarding her group’s proofreading policy. I do not remember the exact conversation or what precipitated Gloria saying, and I paraphrase, “When you are transcribing a book you should think of yourself as a publisher.” Those words hit home and triggered many other thoughts for days to come.

Two or three days after this conversation, I was feeling particularly overwhelmed and frustrated over an accounting book our group had received two weeks before. The school was calling wondering where the book was. The student needed the book. I began to think, what are we doing wrong? Are we really taking too much time to braille this book? We have a scanner and translation software after all! (I say that facetiously.) Then Gloria’s words, as I recalled them, came back to me. “You are a publisher.”

I wondered how long it took the publishers of this accounting book to have it ready for print distribution. As the print publisher designs the book, decisions must be made as to how this information will be visually displayed not only to get the information to the student but to enhance the student’s learning of that information. Graphic artists, education specialists, typesetters and many other specialists are involved in these decisions which result in bold, colored and italicized print, graphics, size of font and placement of pictures and, oh yes, those wonderful marginal notes. It is indeed a very long tedious process for print publishers and this long process is accepted and expected by the consumer. For this article I phoned the publishing company of the particular accounting book I was working on and asked the approximate time the publication of an accounting book takes. The person with whom I spoke said that from receipt of a manuscript to the final proof they plan on an absolute minimum of two years prior to sending the book for printing.

The decision as to which textbook school systems choose for their students is based not only on the information contained in a book, but also if the information is presented in a manner that will ensure and enhance the learning of the subject.

I realized that as a transcriber I indeed am a publisher and the way I format or display the print copy in braille must also “enhance the learning” of that material for the braille reader. There is clearly a difference between what will enhance learning for a print
reader and what will enhance learning for the braille reader. I must be very concerned about how and where I place this material on the braille page. Where do I put those marginal notes so they don’t interrupt the flow of the text? Which diagrams should be put into tactile diagrams, which should be described, which should be omitted? Will it be necessary for me to distinguish between bold and italicized print? How will the table or chart be used? Will it be read across or up and down? My decisions can and do make the material either clear and understandable or more confusing than ever.

Luckily I have *Braille Formats: Principles of Print to Braille Transcription, 1997*, my handouts from NBA workshops, and fellow transcribers to assist me in making those decisions. But it does and should take time.

I want the books I transcribe to “enhance learning” not just give the information or worse yet make learning that text more difficult because I didn’t format the text correctly or think about the student I was transcribing the book for. Therefore, I will continue to read what I am transcribing, think about how that information will be used, and format it properly.

The next time someone asks me why does it take so long, I will take a deep breath, count to three, and ask myself how long do I think it took to produce the print version; then say very nicely, “I am doing the best that I can. And oh, by the way, I have a copy of an article from the NBA *Bulletin* I’d like you to read.”

Hopefully when those requesting the books stop to think about how long it took to publish the print text they will begin to understand the function and job of a transcriber and grant them the same understanding and courtesy that they give the print publisher.
OWNING THE PROBLEM

The following appears on web pages of the AFB Solutions Forum and is used with permission.

By Phil Hatlen, Superintendent, Texas School for the Blind and Visually Impaired.

In the early days of “Integration” of blind students into regular classrooms, it was recognized immediately that the child having the right braille book at the same time as her sighted classmates was crucial to successful participation in the general education classroom. In California, there were not state adopted textbooks, leaving each school district the option of choosing which textbooks they would use. APH may have had as many as three reading series at that time thus, it was unlikely that braille textbooks would be readily available for blind children in California, and perhaps for many other parts of the country.

Teachers of blind children were few and far between, and it quickly fell to them to develop a process that assured the timely production of braille books for students in regular classrooms. Individual braille transcribers and transcribing groups multiplied rapidly wherever there was a concentration of blind students in regular classrooms. Groups generally formed in the communities where there was a local educational program for braille reading students.

Therefore, those teachers who served the students blinded by retrolental fibroplasia in the 1950s and 1960s were privileged to be a part of an amazing movement, combining teachers and transcribers in the heroic task of providing “the right book at the right time.” Leading this movement were the National Braille Association and the California Transcribers and Educators of the Visually Handicapped.

The early success of mainstreaming required total commitment by everyone in school administration, including the school principal, the superintendent, and the School Board. Because enrollment of blind students in general education classrooms was an exciting, innovative concept, these programs became the pride of the community. Principals and superintendents became the spokespersons for these programs. Parents, teachers, and educators alike considered it a privilege and honor to have a resource program for blind pupils in their neighborhood school.

The message of shared pride and shared responsibility is a critical part of this story. The success of delivering the right book at the right time in the right medium was built on the foundation of mutual pride and responsibility. Everyone involved wanted the program to work, and it could not work if the braille reader did not have her textbooks on time.
With regard to textbooks, two factors made these early programs work:

1. The quick, but thorough development of a network of transcribers, completely devoted to providing the right book at the right time.

2. Classroom teachers who believed they shared the responsibility to make mainstreaming work. They demonstrated this in a number of ways. They made themselves available to teachers of the visually impaired (TVIs) both before and after school. They adjusted their teaching style so that, if at all possible, materials could be transcribed in braille before they were used in class.

Most importantly to the success of mainstreaming is that classroom teachers were required to select textbooks for the coming school year by January or February of the preceding year. This means that in January of 1959, a classroom teacher was expected to select all textbooks she/he would be using during the 1959-1960 school year. Because these teachers were proud to be a part of an effort to equalize educational opportunities for blind students, they eagerly and willingly made this textbook commitment. The author knows of no teacher who ever refused this request, or who changed textbooks later. They were so proud to be a part of this program to ensure the success of blind students, that they would do anything within reason to make it work for students. The teachers knew that no sighted student would suffer in the process of ensuring the success of mainstreaming, so everyone won!

Between February and August of that spring and summer, transcribing groups went to work preparing textbooks in braille. On the first day of school, students had the same books in their desks as their sighted classmates, and it wasn’t all that hard to do.

Can this system work today? There is no reason why not. Successful mainstreaming takes work and cooperation, and it may take some adjusting on the part of educators. Local school districts that are committed to mainstreaming or inclusion must accept their responsibility in the timely delivery of instructional materials. If this means more preplanning, then they must decide how committed they truly are to the success of blind students in the general education program. Teachers of the visually impaired, orientation and mobility specialists, related special education services, and parents all work together to make mainstreaming a success for the blind student. Classroom teachers, principals, and general administrators must be a part of this team, and ensure that commitment for success guarantees “the right book at the right time in the right medium.”
TEXTBOOKS ON TIME: WILL IT EVER HAPPEN FOR THE BLIND?

The following is from the Fall 2000 issue of Future Reflections, Volume 19, Number 4; copyright National Federation of the Blind and is used with permission.

By Kristin Cox

Editor’s Note: Kristin Cox is the Assistant Director of Governmental Affairs of the National Federation of the Blind. She is also a dynamic young woman who knows from her own experience growing up as a blind child the importance of a good education. Inherent in our society’s definition of a good education is the assumption that children will have the materials - textbooks, workbooks, etc. - they need so that they may learn. Parents know that when the first day of school rolls around children will be coming home with backpacks stuffed with books handed out to them by their new teachers. We expect this. But what happens if a child doesn’t get his/her textbooks on the first day? Or the second day? Or even a month later? Such a scenario is almost unthinkable to the average parent. Yet, this very thing happens to hundreds of children around the country year after year. Here is what Kristin Cox has to say about the timely provision of textbooks to blind children:

Johnny is an active, enthusiastic and curious sixth grader. Along with many of his friends, Johnny had mixed emotions about going back to school this year. “I like school, and I like being with my friends, but I am a little nervous and hope I will do well,” he said. Some of the challenges Johnny faces this year are unique and not typically experienced by other sixth graders. Johnny is blind.

For Johnny, obtaining accessible versions of instructional materials and texts is critical if he is to succeed in school. Over one month into the school year Johnny still does not have the braille copy of his history book and only segments of his math book have arrived. Already he feels behind and struggles to keep up with his classmates in his history and math classes.

Unfortunately Johnny’s story is far too common among blind students. This is true even though parents of blind students, schools, teachers, publishers, and others are usually well-intended and work hard to provide blind students prompt access to instructional materials. So, why then all of the problems?
In this article, we will discuss both the answers to this question as well as possible solutions. But first, we must begin with a description of how accessible formats are acquired.

**Acquiring Accessible Format of Instructional Materials**

Any meaningful discussion about braille in the classroom must include the role of the Individualized Education Program (IEP). The IEP is the blueprint from which a student’s successful education is built. It should reflect the IEP team’s fundamental belief that the blind student should have access to the same instructional materials at the same time that their sighted peers do.

Parents, along with the other members of the IEP team, must carefully craft clear and strong language that ensures that all instructional materials are available in accessible formats, such as braille. Sometimes the IEP may stipulate that textbooks should be converted into braille, but may leave out workbooks, supplemental, and testing materials. The IEP team should think through all of the possible instances during the child’s classroom education in which print materials would need to be converted into accessible formats.

However, avoid the temptation to create exhaustive lists which are finite. Fixed lists cannot account for the unpredicted needs which inevitably pop up throughout the child’s education. Instead, incorporate language that is inclusive and comprehensive.

**The Selection of Instructional Materials for Classroom Use**

The process of selecting and approving the use of instructional materials for classroom use differs depending on the state. Some states, known as adoption states, approve the use of textbooks on a statewide basis. For example, Florida, an adoption state, employs a group of individuals to decide which math, reading, science, and other texts will be used for all grade levels in all schools throughout the state. This standardized approach to textbook adoption tends to be predictable. Very often adoption states determine which books will be used at least six months before the school year in question begins.

In other states, known as open territories, the teacher, school, or school district can determine which instructional materials will be used. The inherent flexibility in open territory states can result in the selection of instructional materials closer to the beginning of the school year. For example, a teacher could decide to use a particular science book just weeks before school begins.

How schools and states go about selecting instructional materials for classroom use has a significant impact on the problem at hand. Converting instructional materials into accessible formats is labor intensive. Without adequate time, the best braille transcriber in the world cannot produce high quality braille in a timely fashion. If schools determine which texts will be used early on, accessible format producers will have a better chance of converting the text and delivering it to the student on time. In contrast, the late adoption of instructional materials inevitably leads to the late delivery of accessible formats to blind students.
How and Where to Locate Accessible Instructional Materials

With the text selection process completed, the compilation of a specific list of texts and other materials the blind student will need for the upcoming school year can begin. This process should begin as early as possible. Typically the responsibility for doing this lies with the Teacher of the Visually Impaired (TVI). Once this information is collected, the TVI or other designated individual must locate, purchase, or produce the accessible versions of the materials. For braille and electronic texts, there are three primary resources available to accomplish this.

First, each fiscal year the American Printing House for the Blind (APH) receives an appropriation from the federal government for the production and distribution of accessible instructional materials and supplies for legally blind students. APH is then charged with crediting “designated ex officio trustees” with funds to purchase accessible instructional materials and supplies based on the number of blind students served by that particular agency. Ex officio trustees are simply agencies designated by state departments of education. Such agencies may be statewide instructional resource centers, schools for the blind, etc. In essence, the designated agency has a prepaid credit line with APH from which accessible instructional materials and supplies can be purchased. Requests from individual school districts for accessible materials available through this program must flow through their state’s designated ex officio agency.

Second, states may contribute their own resources for the production and purchase of accessible instructional materials. Some states allocate these funds to an already established instructional resource center. Other states distribute the funds to media centers, school districts, and like entities throughout the state. Texas, for example is well known for its vast and comprehensive collection of internally produced accessible formats. In fact, Texas often produces accessible formats for other state and local education agencies.

The production of accessible formats by different instructional resource centers, schools, and other agencies could result in duplication of effort. To avoid this, APH houses the Louis Database of Accessible Formats for people who are blind or visually impaired. This third resource acts as a centralized clearinghouse of over 145,000 titles in accessible formats produced by over 200 agencies. Educators, administrators, and parents can locate valuable information about the existence and location of textbooks and other educational materials in accessible formats as well as other relevant data. The sharing of accessible formats helps minimize the costs and substantial efforts associated with the conversion process.

The Mechanics of Converting Instructional Materials into Accessible Formats

Converting instructional materials into accessible formats is easier said than done. Typically, it involves a labor-intensive process of either scanning or manually inputting original information into an electronic format. This electronic version is used to produce nonvisual formats, such as braille, or synthetic speech. The conversion of a single textbook can take at least six months to complete. The cost, time, and labor needed to convert materials into accessible formats vary depending on the complexity of the
information being converted. For example, math and science books are typically more
difficult to convert into alternative formats such as braille.

In order to streamline the conversion process, fifteen states require publishers to
provide an electronic version of any textbook that a state or local educational agency
purchases. The electronic version can then be quickly converted to a nonvisual format.
However, electronic formatting standards vary from state to state. These incongruities
naturally lead to inefficient duplication for publishers. Even more important, the
standards are imprecise and often result in file formats that cannot be easily used for the
purpose intended.

Even with an electronic version of the text, high quality braille still depends on the
competency of braille transcribers and proofreaders. Certification helps in determining
the baseline competence of these individuals. The National Library Service for the Blind
and Physically Handicapped (NLS) offers a variety of courses which lead to the
certification of braille transcribers and proofreaders. Certification does not guarantee
high quality and standardized braille production, but it does help.

Unfortunately, not all states use certified transcribers. This may be due to either the lack
of commitment to high quality braille on the part of the state, or the lack of competent
braille transcribers in the area. Some states rely on volunteer transcribers, but this
group is rapidly decreasing in number.

How to Streamline the Conversion Process: The National Federation of the
Blind’s Proposal

Although some states have made modest progress toward giving blind students
nonvisual access to relevant educational information, their solutions are, at best, partial
and unable to address the systemic issues involved. The National Federation of the
Blind is committed to ensuring that all blind children have equal access to instruction
materials. To this end, the National Federation of the Blind supports streamlining the
process of converting instructional materials into accessible formats. We recognize that
no one single solution will speak to all of the varying components of the process.
However, there is one approach we are working on that, if implemented, would
significantly further the progress of the prompt and accurate conversion of information
into accessible formats.

During the annual NFB Washington Seminar in 2000 the National Federation of the
Blind introduced a legislative proposal entitled, “The Accessible Instructional Materials
Act of 2000.” If enacted, the proposal would implement four primary objectives:

- Publishers should provide electronic versions of instructional materials purchased
  by state and local education agencies
- Electronic files submitted by publishers should be compatible with braille
  transcription software
- A national repository should be established to house and distribute the electronic
  files
- Congress should appropriate funds for the training and development of individuals
  responsible for producing alternative formats, such as braille
Through this approach, the provision of electronic files (now limited to a handful of states) will benefit all schools and state agencies across the country. More importantly, the proposal will create a uniform electronic file-formatting standard that promotes the efficient, accurate, and prompt conversion of materials into accessible formats. This standardized approach will also serve publishers by eliminating individual and inconsistent state requirements. Furthermore, the appropriation of funds for training and development will support ongoing efforts to ensure the competence of alternative format producers.

Soon after our Washington Seminar, we entered into negotiations with the Association of American Publishers and other stakeholders to build consensus and support for the proposal. There have been some modifications to the proposal as a result of these ongoing negotiations.

However, the objectives outlined above have been and will continue to be the cornerstones to our legislative effort.

Members of Congress generally support our approach. However, the possibility of enacting this legislation will not occur until the convening of the new Congress in 2001.

**How You Can Make A Difference**

Parents, in particular, can play an important role in the acquisition of accessible instructional materials. Here are some ways parents can make a difference:

1. If possible, bring a credible and knowledgeable advocate to your IEP meetings. Advocates offer a wealth of experience, knowledge, and the support parents often need while developing and implementing the IEP.

2. Encourage your states, school districts, and schools to adopt policies which provide adequate time between the point of approving texts for classroom use and the beginning of the school year. This will ensure that there is sufficient time to convert the instructional materials into accessible formats.

3. Work closely with the teacher of the visually impaired, classroom teachers, and school administrators to ensure that requests for accessible formats are made as soon as is practicably possible.

4. Follow up with the teacher of the visually impaired to confirm the arrival of each accessible textbook and other materials before the school year begins. It is not uncommon for a parent to learn that only part of a text was converted into braille, or, that a workbook did not arrive at all. Make a list of everything your child will need for the upcoming school year and check it off as it arrives. Too often parents will not realize, until a month or two into the school year, that an important text has not arrived.

5. Become active in the National Federation of the Blind. The Federation offers resources, invaluable information, and the opportunity to network with other parents of blind children. Equally important, the Federation acts as a collective voice for the blind. Through our collective efforts, laws, and policies societal opinions can be shaped and changed for the better.

6. Provide your child with positive blind role models. Blind adults who are successful act not just as positive role models, but can suggest alternative
techniques for adapting to the classroom environment. The impact a role model can have on a blind child is immeasurable.

7. Contact members of Congress. Let your Representatives and Senators (both on the state and federal levels) know of the challenges blind students face in the classroom. Promote the idea that publishers should provide electronic versions of their texts to schools.

Conclusion

Almost everyone agrees that providing our blind children with a high quality, challenging education is an imperative. A good education prepares an individual to face competently the challenges of adulthood. This is even more relevant in an economy and society that places increasing value upon information.

It naturally follows, then, that when blind children cannot fully access their educational environment, the implications stretch far beyond the classroom. This is why the National Federation of the Blind has insisted, and will continue to insist, that blind children have equal access to all instructional materials used in the classroom.

Copyright 2000 by National Federation of the Blind
Used by Permission
The following information appeared in the Washington Post.

By Andrew Mollison

Washington Bureau

Thursday, February 7, 2002

WASHINGTON — Blind students from across the country lobbied members of Congress this week to support a new plan to give the next generation of blind students faster access to usable versions of textbooks.

“I use braille and recorded books and readers,” said Angela Wolf, a senior at the University of Texas, who is president of the National Association of Blind Students.

But she recalled having to wait two to four weeks for taped or digitally recorded versions and months for braille versions of textbooks that sighted students could use in print versions on the first day of school.

“And sometimes there simply isn’t an accessible version,” Wolf said. “It’s not always easy to find and schedule time with people to be readers (of the print version). That can be a real pain.”

The students were seeking a federal law that would require all publishers of new K-12 textbooks to send an electronic file of each textbook in a uniform national format to a newly created nonprofit center. The center would assist state and local educators in helping students and their parents obtain those files, which can be used instantly for large-print, audible or braille-machine versions. The usual six-month delay in obtaining regular braille versions of textbooks could be cut in half.

The plan would cost the federal government $6 million a year. It was crafted during two years of negotiations by about 20 groups, including the schools division of the American Association of Publishers, state education and rehabilitation departments, the American Foundation for the Blind and the National Federation of the Blind.

“It would be more cost-efficient for the publishers, students would have more access, schools would have fewer headaches finding accessible material and society would have more educated workers,” Wolf said.
The proposal would apply only to elementary and secondary textbooks, because only those publishers agreed to the plan.

But its advocates anticipate that if the system is created and works smoothly, it would attract support from all other U.S. publishers, including those who supply college textbooks. Federal laws already require colleges and schools to supply students with accessible textbooks and other instructional materials. And just over half the states require publishers to provide electronic copies of print editions of K-12 textbooks.

“However, there is no consistent file format used among the states, and creating one to meet each state’s standards takes time and can cost a publisher thousands of dollars,” said Marc Maurer, president of the National Federation of the Blind. “The delay and uncertainty can be totally frustrating for the student.”

At the publishers’ association, Steve Driesler, executive director of the schools division, said, “The financial advantage for our publishers would come from dealing with one standard, as opposed to dealing with 26 state formatting rules, and from the nonprofit center’s use of the files in a way that would protect our intellectual property rights.”
LACK OF BRAILLED TEXTBOOKS LEAVES BLIND STUDENTS IN A BIND

By Sandy Coleman, Globe Staff, 5/13/2002

The following information appeared in the Boston Globe and is used with permission.

Close your eyes and envision a complex math problem. Now, solve it, imagining the formulas and graphs - without a book.

That’s what Newton North High student Tasha Chemel, who is blind, had to do for three months in her junior math class because the braille version of her textbook didn’t arrive until after the school year began. The 16-year-old, who has been blind since birth, has to have all her textbooks converted to braille. Most years, she doesn’t get them on time.

“One year, someone forgot to order the ones I needed... Last year, my history book took forever to come. In the interim I had to listen to it on tape, which doesn’t work very well,” said Chemel. “It’s been a pain.”

Advocates for the blind say such delays deny blind or visually impaired students equal access to education. They are pushing for legislation recently introduced in Congress that would require states to make sure that such students get their books on time. Publishers would have to produce electronic copies of textbooks and furnish them to a national access center for distribution to schools nationwide.

Eileen Curran, director of educational services for the National Braille Press in Boston, compares the measure to laws that require schools to build handicapped ramps. “The only thing preventing a child in a wheelchair from getting a full education is being able to enter a school. The only piece that is lacking in visually impaired students’ education is the access to their materials.”

Converting printed textbooks into braille is so elaborate that it takes about three months. It means textbooks have to be ordered far in advance of the school year, but officials often have to wait until budgets are approved in the summer to order books. And sometimes teachers haven’t made their selections or change their minds at the last minute.

In Massachusetts, regular textbooks are converted at the National Braille Press. A transcriber must first turn the printed material into an electronic format, usually by scanning the pages. However, “scanners often make errors,” said Curran.

Advocates and publishers estimate that there are 90,000 blind or visually impaired students in the country. In Massachusetts, there are about 2,000, 200 of whom are braille readers.

“The numbers may be small, but the problem is not,” said Peter Leofanti, assistant
principal and Chemel’s math teacher at Newton North. “The big deal is the state tells us that blind and visually impaired students have to be educated in a mainstream situation,” he said. “I agree with that. But they require a lot of support, and anything that makes this easier and facilitates it should be considered.”

Sometimes, when brailled books don’t arrive on time, teachers such as Anne Spitz do the braille themselves on home machines. That’s what she did last year when parts of a reading series didn’t arrive in time for her third-grade students.

“Parents of sighted children would be appalled if their children were sitting in class without materials,” said Spitz, who teaches visually impaired students at Bridgewater Elementary School. “At a time when high standards and literacy are being pushed, no student can afford to fall behind,” she said.

Currently, only 26 states require publishers to provide electronic copies of textbooks for visually impaired and blind students. Massachusetts is not one of them. “The big problem for publishers has been that electronic file format requirements vary from state to state, making it time-consuming to produce books in the appropriate format,” said Stephen Driesler, executive director of the school division of the American Association of Publishers.

“The system has not worked well for the blind kids. It takes sometimes six months or longer into the school year to get their books,” he said. “The new legislation would require publishers to create only one type of file, saving time and money,” he added.

The Instructional Materials Accessibility Act is currently awaiting committee hearings in Congress. It was introduced last month by the National Federation of the Blind, along with Senator Christopher Dodd, Democrat of Connecticut, and Representative Thomas Petri, a Wisconsin Republican. The American Association of Publishers worked two years with advocacy groups and educators to draft legislation that all sides could support.

However, it will take up to three years to set up an electronic access center and cost $1 million to run annually. Another $5 million will be needed initially to train staff and provide technical assistance to schools. Moreover, only books published after the legislation is enacted would be available electronically.

Still, advocates hope the legislation will provide some relief.

At one point this year, when Chemel’s book hadn’t arrived, Leofanti improvised, squeezing goo out of a tube to create graphs that Chemel could feel and study. “We had to do a lot of things orally, and I had to repeat and repeat,” he said. “She’s been a very resilient and resourceful kid. She took it philosophically.” She said, “We’ll do the best we can with what we have.”

But Chemel is angry, particularly as she heads toward college where the workload will be increased and she may be facing similar book problems.

“I should have books as accessible as anyone else,” she said. “I shouldn’t have to waste my time chasing down materials. I want to focus on academics.”
ACCESSIBILITY BENEFITS ALL STUDENTS: ELECTRONIC TEXTBOOKS POISED TO PROVIDE UNIVERSAL ACCESS

The following comes from the January 2000 newsletter “F.Y.I.” of the Publishers Resource Group, Inc. and is used with permission.

By Jim Allan, Ph.D., Texas School for the Blind and Visually Impaired

Accessibility of products and information has become a worldwide issue. The good news is that there is no shortage of information, tools, techniques, or professionals with the expertise to develop electronic textbooks in an accessible format. Ensuring that the electronic textbooks likely to be adopted are designed to be accessible to all students in the most logical and cost-effective manner requires collaboration among textbook publishers, media accessibility developers, software and hardware developers, teachers of students with disabilities, consumer advocates, Internet and online service providers, and state government.

Many states, such as California and Texas, are working on the development of accessible textbooks individually. Nationally, efforts include those of the American Foundation for the Blind’s Textbooks and Instructional Materials Solutions Forum (www.afb.org), WGBH’s National Center on Accessible Media (www.wgbh.org), the World Wide Web Consortium’s Web Content Accessibility Initiative Guidelines (www.w3.org), and the Center for Applied Special Technology’s Universal Design for Learning Initiative (www.cast.org).

The Texas Education Code defines an electronic textbook as “computer software, interactive videodisc, magnetic media, CD-ROM, computer courseware, online services, an electronic medium, or other means of conveying information to the student or otherwise contributing to the learning process through electronic means” [Sec. 31.002 (1)]. This defines only the physical delivery media (e.g., computer software, CD-ROM, and online services). However, the delivery medium itself is not inherently inaccessible to students with disabilities. The critical features of electronic textbooks are their content and method of presentation.

The method of presentation of multimedia instructional materials determines if (1) the information is accessible, (2) all students can learn from the content, and (3) materials are usable by all students. Although information on the Internet can be made accessible, the accessibility of many current materials delivered through this medium is questionable. In addition, Texas has not yet adopted an electronic textbook that is fully accessible.

An accessible electronic textbook is one that allows students who have disabilities to use the same textbook and to achieve the same intended benefits as students who do not have disabilities. Moreover, they would be able to achieve the same benefit with approximately the same amount of effort. Accessibility features should be essential design criteria for the development of any multimedia project.
Building an accessible multimedia textbook requires planning first and foremost to reduce costs and streamline the development process. For example, it is simple enough to include a keyboard interface at the design stage, during development and coding of the project. Attempts to add the keyboard interface later typically entail costly and time-consuming reprogramming.

In addition, providing accessible electronic textbooks benefits all students, not just students with disabilities. For example, spoken on-screen information helps not only visually impaired, reading disabled, or dyslexic students but also students who are bilingual, who have limited English proficiency, or who learn better by receiving multimodal (auditory and visual) input. In Texas alone, students for whom English is a second language constitute approximately 30 percent of the student population. Moreover, research indicates that multimodal (auditory, kinesthetic, and visual) access enhances comprehension, retention, and learning, possibly boosting student achievement.

No one can argue that all students have different functional abilities and learning styles. Not all students can read printed material; not all students can hear audio information; and not all students can comprehend complex diagrams. Each student requires a variety of learning experiences to maximize learning. Providing all students with instructional materials that present information in an enriched multimedia environment allows each student to interact with the materials in a manner that best fits his or her learning mode. For example, information in print can be provided in audio; audio information can be captioned and displayed in print; and complex information can be displayed as a simplified series of diagrams building to create a complex diagram. Such a multimedia instructional environment would allow students to choose the presentation mode that works best for them and would provide truly universal access to all students.

Electronic textbooks should be designed to improve and expand the user interface and navigation procedures to meet the needs of all students. Keyboard control and navigation, in addition to mouse control and navigation of instructional materials, helps students who cannot use a mouse because of a visual disability, motor disability, poor eye-hand coordination, or temporary injury. Video materials that are closed-captioned or that have descriptive audio tracks also provide multisensory input, which could enhance comprehension. When accessibility is designed into the textbook itself, learning activities can be customized, not only just for the students with disabilities but for all students. Thus, the learning benefits accrue not only for those who most urgently need these accommodations but also for mainstream learners.
The following information was prepared by the AFB Solutions Forum’s Communication and Collaboration Work Group. It appears on the AFB Solutions Forum web pages and is used with permission.

NASDSE and COSB collaborated on statewide training to address the publication called *Blind and Visually Impaired Students: Educational Service Guidelines*. This component focused on textbooks and instructional materials which are in the appropriate media and delivered on time.

I. Introduction:

Access to information is profoundly critical in determining the quality of one’s life. Textbooks and related instructional materials are essential tools in all educational settings. Indeed, it is difficult to imagine a public school classroom in which students would be expected to achieve academically without the benefit of textbooks directly related to the subjects being studied. However, for students who are blind or have low vision, that often is not the case. Despite everyone’s best efforts and advancements in access technology, many visually impaired students do not receive textbooks in braille, large print, audio or other needed special media at the same time as their sighted classmates.

The authors of the *National Agenda for the Education of Children and Youths with Visual Impairments, Including those with Multiple Disabilities* identified the importance of timely provision of instructional materials in appropriate media as one of the eight most critical national issues affecting the education of students with visual impairments. Based upon input received via a national survey of teachers, administrators and others, the *National Agenda: Report to the Nation*, recently published by AFB Press, includes the following observation:

“The Goal 7 survey revealed very few surprises to individuals currently providing specialized materials to students with visual impairments. It is apparent that instructional materials can (be) and are offered to our students in specialized formats, but these instructional materials certainly are not provided at the same time as those for their sighted peers.”
II. Background of the Issues:

The challenge confronting students who are blind or visually impaired is one of keeping up with their sighted peers, but without the benefit of equal and timely access to textbooks or instructional materials. The barriers and potential solutions to having the right book in the right medium at the right time center around five key areas: electronic files/research and development, legislative/policy-making, production, training, and communication and collaboration.

Electronic Files:
Relates to the creation, production, and distribution of electronic files provided by textbook publishers for the production of textbooks in braille and other special media.

Legislative/Policy-Making:
Focuses on the analysis and development of public policies impacting equal access to the printed word, and more specifically, to the full range of educational materials.

Production:
Relates to identifying the processes involved in the production and dissemination of textbooks and instructional materials in specialized media needed by students who are blind or visually impaired.

Training:
Relates to the needs of those who create textbooks and instructional materials for students who are blind or visually impaired. It also relates to individuals responsible for ensuring that these students have access to learning materials and the skills to use them efficiently and effectively.

Communication and Collaboration:
Relates to the need to educate those in the field of blindness, publishers and the general public regarding issues and strategies for ensuring equal access to textbooks and instructional materials in accessible formats.

III. Critical Expectations and Realities Concerning Access to Textbooks:

Listed below are five critical issues that a school administrator needs to be familiar with concerning the requirements of IDEA and access to the general curriculum for children with visual impairments.

1. Providing the Appropriate Textbooks in the Classroom on the First Day of School

Expectation:
In all schools around the country, when children enter the classroom on the first day of school, their textbooks are waiting for them. For the sighted child, there is no sharing or waiting for textbooks; therefore, learning can begin immediately. For the child who is
blind or has low vision, all of the needed books are identified prior to the end of the previous school year and ordered in a timely manner. The complete texts are available in braille, large print or audio text on the first day of school. The child who is blind is given the same access to education as his/her sighted classmates.

**Reality:**

Children with print disabilities have historically been disenfranchised from the mainstream of learning and future employment because of a lack of access to published information. Approximately 29 states are considered open territory states for adoption of school textbooks. Because they do not go through a state adoption process, individual school districts may select different textbooks. Typically when states (or local school districts) do not have a system in place for choosing books sufficiently early or a system for producing textbooks, a scenario such as the following is all too common. A student’s IEP has identified algebra for next year, but all of the algebra teachers in this school are allowed to use different textbooks than their colleagues, even within the same school. The teacher of students with visual impairments must determine who will teach Jody algebra and which textbook should be ordered. However two weeks before the end of school, Ms. Turner finds that the proposed class schedule won’t work for Jody, so a different algebra teacher and textbook must be identified. The school system is adopting a new series of English textbooks, and the school will not decide until May 15 which books they will be ordering for the next school year. The English department encourages teachers to use the same textbook, but to supplement the lessons with literature from the library. The science teacher is being progressive and has decided to use multimedia presentations of materials. This year a new social studies series replaced the old series that had been around for quite a while and included lots of maps showing countries that no longer exist.

Textbooks for mathematics, algebra, science and social studies often contain many graphics which require careful consideration when adapting them to braille or auditory format. Special braille codes which are a component of this type of text require specialized transcriber skills. In addition, producing large print copies is not a simple, straightforward process. Many textbooks depend on color to make the lessons effective, and most enlarged copies do not include color. Print size and font are also important features that must be considered when producing large print textbooks.

One might think an older version of the text in braille would be adequate. However, the information might be outdated (as in the social studies text), which would hinder educational advancement for the child with visual impairments.

In the long run, if it is a heavy year for complicated texts in science and math or if classroom teacher assignments are delayed, visually impaired children will receive their books late, only in chapters, or not at all. When the textbooks and instructional materials arrive late, the student is not fully engaged in the general education curriculum and learning is delayed.

**Expectation:**

Although the production of braille textbooks is complicated, technology has improved the process. People assume that if states have a braille law or merely ask for electronic files from the publishers, any file can be used by braille producers in preparing the translation into braille.

**Reality:**

Technology has helped improve the process, but the production of braille textbooks is highly technical and requires a well-designed system. In the not too distant past, braille textbooks were transcribed by retyping books from the beginning. Scanning a book for brailling was the next step. Now with various braille laws, more and more states are asking publishers to supply the adopted textbooks in an electronic file format. However, most people do not realize that all electronic files from publishers are not equal.

The structural elements of an electronic file of a book’s contents are tagged with codes that map the book’s actual intellectual structure, e.g. chapters, sections, footnotes, sidebars, etc. These tag sets help to streamline the process for producing a braille book. Without a structure, the process used by braille producers to translate electronic files into braille becomes more cumbersome and labor intensive to retype or scan information. The end results are delayed production and delivery of textbooks to children.

At this time, many publishers are asked to deliver electronic files in ASCII, which will never provide the coding available in HTML and especially XML (the language of the web) that is needed for easy conversion into braille. ASCII cannot provide proportional font or characters for foreign languages, nor can it indicate bold and italic text or provide codes that indicate the structure of the document such as chapter and section headings. All this information must be added into an ASCII file by hand in order to produce good braille books.

ASCII files are also comparatively difficult to read with speech synthesis. On the other hand, the new Digital Talking Book, which is debuting this year, supports all that ASCII provides, plus all structural and character markings. It also supports multimedia presentations, including moving picture videos, and facilitates synchronizing a refreshable braille display with an audio recording of the text. This is an exciting standard with a future.

What is needed is a single file format. An electronic file format that is well-organized and structured.
3. States/Local School Districts Choosing Books in a Timely Manner

**Expectation:**

Long-range planning for textbook purchases is not a necessity, because publishers will identify a delivery schedule that ensures all the textbooks will be available on the first day of school.

**Reality:**

In the United States, textbooks are either state adopted or locally adopted (the latter called open territory adoption). As of now there are 20 state adoption states (see www.afb.org/solutionsforum/adoption.html and attached resource page). These states present an opportunity to develop a better system for ordering and delivering textbooks. Publishers must work within the constraints of the state and/or local adoption cycle as well as with their production processes to provide the regular print version of a textbook. More time is needed by both the publisher and the agency to create a specially formatted text and ensure that the student who is visually impaired has the textbook on the first day of school along with his/her peers.

4. Multimedia Presentations:

**Expectation:**

Most children are in classrooms that offer exciting, multimedia opportunities for learning. Children who are blind or with low vision have equal access to this exciting trend.

**Reality:**

Imagine the following scenarios and consider how a blind child would access the information:

- A teacher using CD-ROM to teach a lesson on frog dissection in biology class. Students use a “virtual frog” on a screen and use their mouse to manipulate a scalpel.

- A student is required to access a CD-ROM or web-based encyclopedia to answer questions about the architecture of Shakespeare’s Globe Theater.

- An elementary school student with low vision is required to use the Internet to correspond with her pen pal in a buddy school in France.

More and more states are adding multimedia textbook requirements to their adoption list. Often these highly visual technological improvements for the sighted child do not provide equal access for the child who is blind. There are no audio descriptions for videos on CD-ROM or on the web. Without new technology adapted for multimedia presentations, the child with visual impairments cannot access the curricula.

WGBH National Center for Accessible Media (NCAM), an AFB Solutions Forum partner, is a research and development facility that endeavors to make media accessible
to people with sensory disabilities. Their research on the accessibility of CD-ROMs, the web, digital television, and other new technologies is critical for accessible textbooks. They focus on the accessibility of multimedia in all of these efforts.

The Synchronized Multimedia Integration Language (SMIL) standard, from the industry standard-making group of the World Wide Web Consortium, is defining how textual information can be synchronized with digitally recorded human speech through SMIL. Since SMIL is an important part of the National Information Standards Organization (NISO), the DAISY/NISO standards work on electronic books; this technology can be directly integrated into multimedia textbooks using those standards.

By creating educational software, including multimedia textbooks, that can be used by blind students alongside their sighted peers, we can reduce the need for creating separate braille editions of textbooks and eliminate the duplication of effort when schools and districts must create their own accessible materials. The end goal, set forth in the AFB Textbooks and Instructional Materials Solutions Forum and in NCAM’s research, is to ensure that all students get their educational materials at the same time and in a format appropriate for them.

IV. Conclusion:

In response to the issues raised above, in October 1998, the American Foundation for the Blind (AFB) initiated a national campaign called the AFB Textbooks and Instructional Materials Solutions Forum. The Forum is a collaborative national effort of agencies and organizations that produce and distribute textbooks and other instructional materials to ensure equal access for students who are blind or visually impaired. The AFB Solutions Forum participants include textbook publishers, educators, access technology specialists, producers of braille, large print and recorded textbooks, parents of children who are blind or visually impaired, and adults who are blind or visually impaired.

“The AFB Solutions Forum is a critical step toward the elimination of the inequities faced by people who are blind or visually impaired,” said AFB president Carl R. Augusto. “In making school materials accessible, it will help level the playing field for blind and visually impaired students so that they have the same opportunities to learn and succeed as their sighted classmates.”

V. What National Resources are Available to Educators?

Consider the following:

a. The American Foundation for the Blind (AFB) has initiated a national campaign to identify solutions to alleviate the challenges facing children with visual impairments in receiving textbooks on time and in the appropriate media/medium. The AFB Textbooks and Instructional Materials Solutions Forum has two web pages http://www.afb.org/education.asp and http://www.tsbvi.edu/textbooks/afb/index.htm.
b. **The Association of American Publishers (AAP)** is a critical partner in achieving the goal of access to textbooks and instructional materials. AAP is active in collaborating with this national issue. Its web site is www.publishers.org.

c. **WGBH/National Center for Accessible Media (NCAM)** is a research and development facility that works to make media accessible to people with sensory disabilities. Currently, it is doing research on the accessibility of CD-ROMs, the web, digital television, and other new technologies. All of these efforts focus on the accessibility of multimedia. Its web site is http://www.wgbh.org/ncam.

d. **American Printing House for the Blind, Inc. (APH)** —— Two critical projects associated with these national issues are APH’s Accessible Textbook Initiative and Collaboration Project (ATIC) and the Repository Project. The ATIC is a strategic project to revamp APH’s existing structures and create new systems to provide accessible textbooks in an expanded variety of media and to do so in a customer-responsive manner. In addition to traditional hard copy textbooks, this commitment will provide textbooks through on-demand transcription or enlargement as well as electronic media. The strategic vision for the ATIC Project is to respond effectively to the textbook needs of blind and visually impaired students by delivering custom-produced accessible textbooks in a variety of media and in a timely manner. In addition, the Repository Project is involved in collecting braille textbook files and publishers’ textbook files that can be downloaded directly from APH’s web site. This includes braille files from APH (in Duxbury format) as well as braille files in various formats from volunteer, nonprofit, and government agencies. Its web site is http://www.aph.org.

e. **Recording for the Blind and Dyslexic (RFB&D)** is involved with research that will revolutionize the experience of reading for the blind user. It is part of an international study to define specifications of digital talking book which will improve structural navigation of files. Its web site is www.rfbd.org.

VI. **Resources:**


Relevant sections from this document include:

a. **Foundations for Educating Students Who Are Blind or Visually Impaired, Including Those with Multiple Disabilities**

   Issue IV (page 25)
   “Educators must know that students who are blind or visually impaired have the right to participate in all areas of general school curriculum and activities.”
Issue IX (page 32)
“Educators should be knowledgeable about various types of instructional technologies and their impact on the educational opportunities for students who are blind or visually impaired, including those with multiple disabilities.”

b. Supportive Structure and Administration

Issue VI (page 46)
“State and Local Education Agencies should ensure that visually impaired and blind students receive adequate resources and appropriate reading media on a timely basis, on schedule with their sighted peers.”

c. Program Requirements and Placement Options

Issue IX (page 73)
“Educators must provide equal access to materials and resources to ensure equal educational opportunities for students with visual impairment.”

To purchase this book, contact Perkins School for the Blind at (617) 924-3434.

2. AAP list of states with a state adoption process http://www.afb.org/education.asp.

3. AAP chart of braille laws (see http://www.afb.org/education.asp.


To purchase AFB Press Books, contact AFB at 800-232-3044 or www.afb.org.
WHAT IS ASCII: AN OUTDATED COMPUTER FILE SYSTEM, AN OUTMODED COMMUNICATIONS MEDIUM, AN OUTGOING ACCESSIBILITY TOOL

The following appears on web pages of the AFB Solutions Forum and is used with permission.

Author - Electronic Files and Research and Development Work Group: Janina Sajka and Jim Allan

American Standard Code for Information Interchange (ASCII) is the basis of character sets used in almost all present day computers. The roots of ASCII reach back to the typewriter, and particularly to the teletypewriter. Today’s computers offer characters from most foreign languages—and offer them in sizes and font faces never available in the typewriter age. Also, the ASCII character set never provided information that could help a user navigate information. Strategies such as bold and italics were never available in the typewriter age—to say nothing of the kind of navigation riches that web technologies provide.

Still, ever since computers became affordable, a plain ASCII text file has provided print-disabled readers access to published information. Getting a book or a document as a plain ASCII text file has become almost synonymous with getting an accessible copy. This is because ASCII files have provided information (content) that could be used with any computer. However, an ASCII textfile only provides the text or content of the document (though primarily in English), all spaces, most of the punctuation, and all the line breaks in the document. All positional formatting (paragraph indents, centering, headings, etc.) is accomplished by inserting blank spaces and carriage returns—just as it would be on a typewriter. With ASCII, the structure and details of the page are not embedded in the coded text. Because ASCII provides only content and no information about document structure or presentation, it is no longer a good choice for mass production of accessible textbooks and curricular materials. The time has come to transition from ASCII text files toward new electronic file formats.

Newly available electronic file formats can provide everything an ASCII text file ever provided the print-disabled reader—and far more. For example, file formats that facilitate producing properly formatted braille on a variety of paper sizes or devices, also provide the needed information for the construction of books with synchronized audio and electronic text.

ASCII: A Cherished Legacy of Our Past

The plain truth is that ASCII is very old. It may surprise you to learn that ASCII has been in use long before computers. In fact its roots go back to the 19th Century. Just as automobiles replaced the horse and buggy and computers replaced typewriters, new
technologies are at hand to provide a superior level of access that is international in scope.

**ASCII: We Won’t Miss You**

A plain ASCII textfile has no markup commands or codes that indicate formatting (structure or presentation) information (headings and fonts). It cannot indicate bold and italic text. It cannot provide codes that indicate the structure of the document such as chapter and section headings. ASCII cannot provide proportional fonts, or characters for foreign languages. All this information (markup) must be added into a plain ASCII text file by hand in order to produce good braille books. It will never provide the markup coding available in Hypertext Markup Language (HTML) and especially Extensible Markup Language (XML), which are the languages of the web.

In addition, the “structure” that plain-ASCII leaves out (or handles inadequately) is not only important to document structure but also to the very meaning of mathematical expressions involving powers, fractions, radicals, etc. With the right coding, these can be quickly and accurately put into braille (as well as in print and speech). Therefore, a typical plain-ASCII presentation of math is almost useless for automated transcription purposes.

ASCII files are also comparatively difficult to read using speech synthesis. We must look forward to new tools such as the Digital Talking Book (DTB), debuting in 2000. The DTB supports all structural and character markup available from HTML/XML. As we transition to these new formats, existing files of classic literature, archived documents, and other ASCII files created with older computer tools must remain accessible to individuals with disabilities and those using older software and hardware. But this does not mean that we cannot make progress and the DTB is a major improvement on ASCII, particularly because it facilitates navigation through a book so well.

**Conclusion**

We should not start any new programs based on ASCII. ASCII will continue to be appropriate for simple email messages—and “quick and dirty” text access, and archived literature and documents, but it is no longer a responsible choice for today’s educator. It has too many limitations for timely and accurate braille production. A base requirement for files used in the production of braille textbooks should be a file that is based on a recognized markup with full capabilities for character and structural formatting. Files created using a markup language can be easily reformatted for different paper sizes or for presentation on a refreshable braille display. An already marked up file can be made into a braille book in a more timely fashion because all structure and formatting for braille production does not need to be added into the file. A fully-structured and marked-up electronic file will assist in a smooth transition from the publishers’ electronic files to the production of textbooks in braille.
USE OF MULTIMEDIA PRESENTATION AND TECHNOLOGY

The following information was prepared for the AFB Solutions Forum.

**Fact Sheet**

From the Results of the National Survey Conducted by the American Foundation for the Blind Textbooks and Instructional Materials Solutions Forum’s Electronic Files and Research and Development Work Group.

Dr. Robert Wall, Vanderbilt University, and Mary Ann Siller, AFB

January 2002

More and more schools are adopting textbooks that include multimedia presentations. However, these textbooks are not accessible to students who are blind or visually impaired. To determine the current use of technology in accessing multimedia formats, in the spring of 2000 the AFB Textbooks and Instructional Materials Solutions Forum conducted a national survey of teachers who instruct students with visual impairments. We were interested in determining the access challenges these teachers face and solutions they are using in the classroom.

The AFB Solutions Forum is a collaborative national effort on the part of textbook publishers; access technology specialists; producers of braille, large print, and audio; parents; educators; and consumers. The AFB Solutions Forum is a project of AFB’s National Education Programs.

A wide array of technology currently is used in America’s public schools. For students with a perceptual impairment, the range of technology is often increased by the need for alternate information media and the ability to present and access these alternate media. For students with visual impairments, the provision and access of information through braille, large print, and speech can involve many different pieces of technology.

A total of 410 teachers from 44 states and four provinces responded to the survey, which produced the following significant findings.

Demographic features of respondents:

- 93.1% were teachers of students with visual impairments (TVIs)
- 57.2% were AER members
- 79.7% were itinerant teachers
- 15.1% worked in Local Education Authorities (LEAs)
- 4.9% worked in special schools for the blind
- 30% of TVIs were the only TVI in their LEA
Most of the teachers surveyed felt more comfortable using general technology than technology designed specifically for students with visual impairments. From 70 to 90 percent of the respondents felt they had a working knowledge of word processors, closed circuit television, e-mail, and the Internet. Only 50 to 60 percent felt they had a working knowledge of optical devices, braille transcription software, braille note takers, or screen readers.

This response raises questions concerning how much expertise can be expected of a teacher with a given piece of assistive technology and where training in its use is available. More training in general and specialized technology use is needed for both teachers and students.

Patterns of general technology use for blind and low-vision students are similar, but low-vision students seem to be more facile with a wider range of technologies. More than 80 percent of both groups use some form of word processing and a PC platform on a daily basis. Over 50 percent of both groups access the Internet regularly. About 25 percent of each group uses e-mail regularly. Low-vision students use the PC platform as often as blind students, but are more likely to also use the Mac platform. Only 27 percent of blind students use a Mac platform regularly, compared with 48 percent of low-vision students. Slightly more low-vision students use CD-ROMs regularly (51% compared to 39% for blind students).

Blind and low-vision students have very different patterns in the use of access technology. Blind students are more likely to use braille-based systems (over 60 percent use a portable braille note taker, screen reader, or speech synthesizer), while low-vision students are more likely to use optical devices or a system that enhances the visual presentation of material (over 60 percent use optical devices, closed circuit television, or screen magnification software). However, a moderate percentage of each group (up to 16 percent for blind students and 11 percent for low-vision students) uses technology primarily aimed at the other group. This might reflect students with low vision who read in both print and braille and are classified as being “blind” or “low vision” based on their level of acuity.

General technologies are being used similarly by blind and low-vision students whether they are in public schools, in special schools for the blind, or under supervision of itinerant teachers. However, PC computers are used more often in special schools. While teachers in special schools might use PC computers with both groups of students, they tend to use them to access a wider variety of informational venues for blind students than for low-vision students.

Blind students are more likely to use braille output devices for computers if they are in a special school. However, low-vision students use several pieces of access technology less in all situations than would be expected. This is understandable for braille-based technologies but surprising for screen readers and speech synthesizers, which low-vision students would be expected to use. A low-vision student is least likely to be using these particular access technologies in the public school classroom.

While a wide range of technologies is used by blind and low-vision students to access multimedia presentations, blind students also use verbal description as often as any specific piece of technology. Low-vision students are slightly less likely to rely on verbal
The pattern of technology use by blind and low-vision students is similar for various school districts, regardless of whether or not they have adopted texts with multimedia formats. However, the use of most technologies is higher in those districts that have adopted at least one text with a multimedia format. This might reflect school divisions with a more aggressive technology development policy, teachers who use technology more with their students, or states with more funds allocated for technology dissemination and training.

Of the teachers surveyed, 67 percent consider their own lack of knowledge and training one of the greatest obstacles to effective student use of technology. Other obstacles cited include inaccessible content (40 percent) and insufficient time with students (40 percent). Solutions proposed by teachers include more technical training for teachers (39 percent), more funding for software, equipment, and upgrades (37 percent), and reducing the numbers of students in a teacher’s caseload (12 percent). To get students in regular education classes more involved, teachers of students with visual impairments suggested more one-on-one instruction, making applicable software such as Zoomtext and JAWS readily available, preteaching required computer skills, and engaging the cooperation and enthusiasm of the regular education teacher.

Many ideas were expressed on how to involve students more and increase their effective use of technology. An appropriate starting point would be to determine the specific technological needs and abilities of each student. The total group of teachers surveyed noted that slightly less than one-third of their students to date have received an assistive technology assessment. For 28 percent of the respondents, none of their students had ever had an assistive technology assessment.

The teachers were presented with scenarios that might require the use of multimedia in regular education classes and asked to indicate what modifications would be needed. They tended to rely on one of two technologies, enlarging software (e.g., Zoomtext) or speech software (e.g., JAWS). When faced with a scenario that did not have an obvious access solution, a majority of teachers relied on verbal description. Most suggestions to increase the effective use of technology by students with visual impairments involved increased training for teachers and/or students.

Percentages of teachers making various recommendations:

- 23.8% local and state in-service or summer training for staff and students
- 12.9% hands-on computer training for TVIs
- 8.8% training targeted to professionals with statewide responsibilities for VI students
- 6.7% more time allocated for training
- 2.9% certification standards for TVIs in technology
- 13.3% more technology specialists
- 12.1% increased funding for computers and equipment
- 8.4% increased accessibility of software and websites
- 7.1% increase in places to access tech support, e.g., 800 numbers
- 6.7% increased number of tech labs
- 6.7% curriculum for teaching technology skills
While the availability of training in existing and emerging technologies is paramount at the state and local levels, making informational venues more accessible for students with visual impairments is also important. WGBH’s National Center for Accessible Media (NCAM) is one such program that is developing guidelines for making software and multimedia presentations more accessible. However, even with these guidelines, funding sources must be created to channel technology to students so they can readily access the information.

**Selected Readings**


Available online at http://www.wgbh.org/ncam/cdrom.

**Selected Resources**

American Foundation for the Blind
National Education Program
260 Treadway Plaza
Dallas, Texas 75235
214-352-7222
FAX-214-352-3214

AFB Textbooks and Instructional Materials Solutions Forum
Electronic Files and Research and Development Work Group

Complete Analysis of the AFB Solutions Forum Survey of Multimedia Presentations for Students with Visual Impairments

American Foundation for the Blind
National Literacy Center
100 Peachtree Street, Suite 620
Atlanta, Georgia 30303
404-525-2303
FAX: 404-659-6957

The technology component of the AFB National Literacy Center seeks to encourage the use of technology to develop, enhance and maintain literacy skills for individuals who are blind or visually impaired www.afb.org/literacy.asp.
PRODUCTION AND DELIVERY OF SPECIALIZED MATERIALS

The following information was prepared for the AFB Solutions Forum.

Fact Sheet

From the Results of the National Survey Conducted by the American Foundation for the Blind Textbooks and Instructional Materials Solutions Forum’s Production Work Group.

Dr. Robert Wall, Vanderbilt University and Mary Ann Siller, AFB
February 2002

The importance of literacy instruction in braille for visually impaired students was formally recognized in the 1997 regulations for IDEA. However, the regulations do not guarantee that students who use braille will receive the quantity and quality of braille materials needed to access their general education curricula. As IDEA requires a free and appropriate public education, the provision of braille materials becomes a critical issue. Access to textbooks and materials related to information discussed in class is essential to the education of all students, including those who require materials in formats other than regular print. While state agencies, volunteer groups, and a variety of for-profit companies produce alternate media textbooks and instructional materials, the actual systems used and their advantages and disadvantages are not generally known.

The AFB Textbooks and Instructional Materials Solutions Forum’s Production Work Group conducted a national survey to determine the state of special material production and delivery across the country. Of 42 states responding, 21 were represented by the director of the state’s Instructional Media Center or Instructional Resource Center (often a central point for the production and distribution of braille and large print materials).

Six systems of handling special materials in a state were identified:

1. **Acquisition/Delivery**: A central purchasing agency acquires materials and sends them directly to LEAs and special schools.
2. **Clearinghouse**: Materials are borrowed or purchased from other sources. There is no production or repository of previously acquired materials.
3. **Depository**: Materials are borrowed or purchased from other sources. A portion of the materials is retained for future use.
4. **Depository/Producer**: Materials are borrowed, purchased, and/or produced. A portion of the materials is retained for future use.
5. **Clearinghouse/Producer**: Materials are borrowed, purchased and/or produced.
6. **Varied**: Materials are distributed without provision for a depository. Individual LEAs determine their own systems.
The majority of states indicated they are operating under a depository (n=12) or depository/producer (n=22) model. Regardless of the model used, there was a common preference for having a centralized system with the capacity to store materials for reuse. Commonly cited problems were a lack of funding and staff and political infighting that hampered the system’s operation.

The preference for a central storehouse for materials is demonstrated by the fact that, across the states, 23 percent of braille materials and 30 percent of large-print materials came from such facilities. The survey showed that 56 percent of braille materials and 45 percent of large-print materials used in the states are purchased from state agencies, vendors, contracted producers, or APH. Employees or volunteers produce 16 percent of the braille materials and 15 percent of the large-print materials. Only audiotapes have a primary source, with 73 percent of all audio materials coming from RFB&D.

For those states with the capacity to produce materials, braille and large-print materials are approximately evenly divided between internal production, in-state contracts, and out-of-state contracts. Braille is produced from paper copies 90 percent of the time and from electronic files only 7 percent of the time. Large print is produced from paper copies 100 percent of the time. In addition, 96 percent of all braille and 100 percent of all large-print materials are produced in paper copies for distribution. This indicates that states generally are not availing themselves of current technology and publishers’ electronic files for the production and distribution of materials. Also, 69 percent of the respondents indicated their states did not currently receive publishers’ files. Only 29 percent indicated they had the expertise to use electronic files in production.

While several respondents decried delays in special materials production caused by late requests for texts, few repercussions were reported from requests made after established deadlines. Consequences generally cited for late submissions were that the texts would be late reaching the students. Of all materials (produced and otherwise acquired), 79 percent of braille materials and 88 percent of large-print materials arrived on time. However, this means that approximately one in five braille books and one in 10 large-print books arrived after the start of the school year or after a student needs the text in class.

Professionals in many states noted major systemic problems in the production and delivery of special materials. The most commonly cited solutions for these problems are the increased use of technology and recognition of braille transcribing as a viable career option. Increasing the number of transcribers and the ease with which they can produce texts would help to eliminate delays and shortages in material production.

Issues yet to be fully addressed include the high expense of producing specialized materials, the shortage of qualified braille transcribers, and the lack of a centralized agency to coordinate efforts among states. The passage of the Instructional Materials Accessibility Act (H.R. 4582 and S. 2246) should provide the impetus needed to examine major issues and determine viable solutions.

The Act will improve access to printed instructional materials used by elementary and secondary school students who are blind, as well as other students who have print disabilities. This will be achieved through the creation of a system for acquiring and distributing publishers' electronic files of textbooks and other instructional materials, so
that these materials can be made available in braille, synthesized speech, digital text, digital audio, or large print.

**Selected Readings**


**Selected Resources**

American Foundation for the Blind
National Education Program
260 Treadway Plaza
Dallas, Texas 75235
214-352-7222
Fax: 214-352-3214


**American Foundation for the Blind**
**National Literacy Center**
100 Peachtree Street, Suite 620
Atlanta, Georgia 30303
404-525-2303
Fax: 404-659-6957

- AFB Textbooks and Instructional Materials Solutions Forum
- American Council of the Blind: http://www.acb.org
- American Printing House: http://www.aph.org
- Braille Authority of North America: http://www.brailleauthority.org
- Daisy Consortium: http://www.daisy.org
- International Braille Research Center: http://www.braille.org
- Computer Application Specialties: http://www.c-a-s.com/brl2000/
- Duxbury Systems, Inc.: http://www.duxburysystems.com

**For more information, or to order an AFB Press Publication, visit the AFB Bookstore or call: 1-800-232-3044 or Fax: 412-741-0609.**

In keeping with AFB’s mission to achieve equality of access to information for people who are blind or visually impaired, this document is available, upon request, in one or more of the following formats: electronic file, braille, large print, and audio recording.
TRAINING AND AVAILABILITY OF BRAILLE TRANSCRIBERS

The following information was prepared for the AFB Solutions Forum.

Fact Sheet

From the Results of the National Survey Conducted by the American Foundation for the Blind Textbooks and Instructional Materials Solutions Forum’s Training and Other Needs Work Group.

Dr. Robert Wall, Vanderbilt University and Mary Ann Siller, AFB
February 2002

The provision of braille materials for blind students has traditionally depended on the services of braillists who prepare the materials manually. The traditional braillist is a volunteer who types braille material on a manual braillewriter. This tradition grew out of centuries of charitable service to people who are blind and led to the acceptance of volunteerism as the principal means of providing services to blind people.

The AFB Textbooks and Instructional Materials Solutions Forum’s Training and Other Needs Work Group conducted a national survey to determine the current state of braille transcriber availability and training across the country. Of 40 states responding, 40 percent were represented by the director of the state’s Instructional Media Center or Instructional Resource Center (which often houses many of the transcribers in a state).

Three factors define braillists: whether they are paid or volunteer, whether they are certified or not, and whether they are full-time, part-time, or working under contract.

Across all of the responding states, the most common categories were:

- certified, contracted volunteer - 8.8/state
- certified, full-time volunteer - 8.4/state
- non-certified, full-time employee - 8.1/state
- certified, part-time volunteer - 7.5/state
- certified, full-time employee - 5.9/state
- certified, contracted employee - 5.6/state
- non-certified, full-time volunteer - 5.2/state

Looking at the responses another way:

- 42% of the full-time employed transcribers are certified
- 62% of the full-time volunteer transcribers are certified
- 52% of all full-time transcribers are certified
- 58% of all full-time transcribers are volunteers
Long-standing reliance on volunteer braillists, whether through volunteer organizations or prison programs, has hampered overall braille production by not promoting the position of braillist as a viable career. A desire for more volunteer braillists, expressed by 40 percent of the states, indicates a reluctance to move beyond the traditional service delivery models.

While using volunteers for braille production may hamper the development of braillist as a career, a more serious limiting factor is the low standard of certification for braille transcribers. Of full-time transcribers, both employed and volunteer, only 51.8 percent are certified by the National Library Service. This is largely a consequence of the serious shortage of braille transcribers. To illustrate, 77 percent of the respondents reported insufficient numbers of braille transcribers to meet their need for production of special materials. Based on current demands, 380 full-time transcribers are needed in the United States. Based on the states’ projected needs, within five years the nation will need 735 transcribers, and within ten years 1,020 additional transcribers will be needed. Presently only 20 funded positions are recruiting for transcribers.

Areas of certification in which states identified the greatest need are Nemeth (6.5 needed per state), Tactile Diagrams (4.8 needed per state), Transcription Software (4.0 needed per state), Literary Code (3.6 needed per state), Scientific Notation (3.6 needed per state), and Proofreaders (3.2 needed per state). Unfortunately, the certification process is not well understood, even by those who monitor the certification of braillists. The NLS standards are being used to rate the performance and ability of braillists in areas in which the NLS does not offer training or certification (e.g., tactile diagrams and foreign languages). The NLS certification covers only literary and mathematics transcription, proofreading, and braille transcription of music.

In recruiting experienced transcribers, states access the prison programs (20 percent), canvas aides in local schools (13 percent), or use word of mouth (13 percent). In recruiting potential transcribers, states often look to aides or teachers (40 percent), use word of mouth (31 percent), use newspaper ads (20 percent), access prison programs (11 percent), or work through other braille transcribers (9 percent). However, 70 percent of respondents indicated their recruitment efforts were ineffective.

When new recruits are obtained, 79 percent of the time they are provided training through the NLS course. However, only 30.7 percent of those beginning the NLS course actually complete it. Other avenues for training include matching a recruit with a local braillist (23.7 percent), providing training through a local transcribing group (15.8 percent), utilizing courses in a local college or teacher training program (7.9 percent), or training through the state IRC (7.9 percent). Despite the range of options available, 48.3 percent of respondents found no advantages in them for recruitment, training and continuing education of transcribers. Rather than having an array of options, 44.8 percent of the respondents would prefer a mandatory certification process administered in conjunction with a recognized college course.

A revolutionary project to define a new career/occupation is being developed at Northwest Vista College in San Antonio, Texas. The textbook transcribing training program is a collaboration among AFB, Northwest Vista College in San Antonio, Texas, and the Texas Education Agency. The program is intended to increase the success rate in training and certifying braillists and to create a cadre of professionals with the skills
needed to merit professional wages. The new career is aimed at creating a career-based curriculum that can be replicated at other community colleges across the United States. It is hoped that, with the creation of such training programs and the skilled personnel they produce, more funding will be attracted to pay for high quality braille transcribing services throughout the country.

To ensure optimal use of new transcribers’ time, however, training and incentives must be provided for working with electronic files. To this end, electronic files must be created under a standardized rubric or “markup language.” This need is currently being addressed through the Joint Technology Task Force.

**Selected Resources**

**American Foundation for the Blind**  
**National Education Program**  
260 Treadway Plaza  
Dallas, Texas 75235  
214-352-7222  
Fax: 214-352-3214  

Complete Analysis of the AFB Solutions Forum Survey of Training and Availability of Braille Transcribers  

**American Foundation for the Blind**  
**National Literacy Center**  
100 Peachtree Street, Suite 620  
Atlanta, Georgia 30303  
404-525-2303  
Fax: 404-659-6957  

- AFB Textbooks and Instructional Materials Solutions Forum Training and Other Needs Work Group: http://www.afb.org/education.asp  
- The Texas School for the Blind and Visually Impaired: http://www.tsbvi.edu/textbooks/afb/index.htm  
- American Council of the Blind: http://www.acb.org  
- Braille Authority of North America (BANA): http://www.brailleauthority.org  
- International Braille Research Center: http://www.braille.org  
- National Braille Association (NBA): http://www.nationalbraille.org/  
- The Shodor Education Foundation, Inc.: http://www.brl.org  
- The Special Education Exchange: http://www.spedex.com/directories/braille.htm
For more information, or to order an AFB Press Publication, visit the AFB Bookstore or call: 1-800-232-3044 or fax: 412-741-0609.

In keeping with AFB’s mission to achieve equality of access to information for people who are blind or visually impaired, this document is available, upon request, in one or more of the following formats: electronic file, braille, large print, and audio recording.
INFORMATION FROM THE AMERICAN PRINTING HOUSE FOR THE BLIND

The following information was submitted by the American Printing House for the Blind (APH) and is used with permission.

American Printing House for the Blind
1839 Frankfort Avenue
P.O. Box 6085
Louisville KY 40206

Phone: 800-223-1839 or 502-895-2405
Fax: 502-899-2274
E-mail: info@aph.org
http://www.aph.org

Background

The American Printing House for the Blind is the world’s largest company devoted solely to producing products for people who are blind or visually impaired. Founded in 1858, it is the oldest institution of its kind in the United States. Under the 1879 federal Act to Promote the Education of the Blind, APH is the official supplier of educational materials for visually impaired students of less than college level in the U.S.

APH manufactures books and magazines in braille, large type, and recorded form. We also manufacture a wide range of educational and daily living aids, such as braille paper and styluses, talking book equipment, and talking educational software and hardware.

APH primarily serves people who are visually impaired, although many of our products have application with learning disabled people and those who are multi-handicapped. Many of our products can be used by impaired and non-impaired students alike, making them useful for students who are in a mainstream classroom.

Technological Services

The APH Educational and Technical Research department develops products most needed to facilitate the education and rehabilitation of the population served by the American Printing House for the Blind. It does so through cooperative efforts and partnerships between all the departments at APH as well as with individuals, agencies and businesses outside of APH. By developing high quality materials that are needed and affordable, APH can make a difference in the education and lives of blind and visually impaired students and clients, and their families.
Some of the many products that have been developed as a result of these efforts are:

- **Math Flash**: An early math tutorial software.
- **Talking Typer**: A software program for teaching typing skills.
- **Learn Keys**: A PC keyboard exploration and announcement program.
- **PC Typer**: A DOS-based typing tutor.
- **APHont**: A font designed especially for people with low vision.
- **APH Light Box**: A unique device that helps students to utilize their residual vision.
- **Tactile Graphics Kit**: Provides teachers with the means of creating raised line drawings.

**APH Web Site:** [www.aph.org](http://www.aph.org)

On average, more than 20,000 visitors explore the APH web site at www.aph.org each month. They come to the APH web site to purchase products, to explore new acquisitions in the APH Callahan Museum, to view original art by children and adults who are blind or visually impaired, to purchase APH products, and to locate sources of educational materials needed in classrooms across the country and around the world. They can also download working demos of APH software products.

**LOUIS: [www.aph.org/louis.htm](http://www.aph.org/louis.htm)**

The Louis Database of Accessible Materials currently contains information on more than 150,000 books, audio, computer and braille titles, APH products and other materials from more than 200 contributing agencies. At Louis, users can search for specific titles, gather contact information for obtaining these materials from non-APH sources, and order APH products and materials directly online.

**FRED’S HEAD: [www.aph.org/fh/index.html](http://www.aph.org/fh/index.html)**

The Fred’s Head database is an e-resource of tips and techniques for people who are blind or visually impaired. Fred contains records on such diverse topics as: how to become a braille transcriber, sources for assistive devices, techniques for organizing and labeling clothes, tips for the visually impaired traveler, where to find a dog guide, and what do blind people “see” when they dream. Visitors to Fred’s Head can submit their own ideas for records or ask questions that the Fred’s Head staff will answer.

**APH File Repository: [www.aph.org/louis.htm](http://www.aph.org/louis.htm)**

The APH File Repository contains the files that may be downloaded from the APH web site by registered users. The type of files in the Repository are: braille textbook files ready for embossing, publisher textbook files ready for editing and translation, and APH software.

**Accessible Media Producers Database: [www.aph.org/ampdb.htm](http://www.aph.org/ampdb.htm)**

The AMP database contains the names, locations and qualification of producers of accessible materials for the visually impaired.
The following information was submitted by the American Printing House for the Blind and is used with permission.

The APH ACCESSIBLE TEXTBOOK INITIATIVE AND COLLABORATION PROJECT (ATIC) is the embodiment of the American Printing House’s (APH) commitment to provide accessible textbooks to students who are blind or visually impaired. As designed by its original mission, APH is responsible for providing accessible materials that allow visually impaired students to fully participate in their education.

Until recently, the practice has been for APH to produce a range of specific textbook titles selected by the Ex Officio Trustee Publications Committee. These titles have been produced, cataloged, and made available for educators to purchase for their blind and visually impaired students. The complexity of this task lay largely in garnering the resources to produce the needed textbooks.

In recent years, however, this task has been drastically complicated by changes in how textbooks are designed, selected, and used in general education. New requirements have been created by extensive changes in educational service delivery models and the widespread use of whole language instruction, as well as societal factors such as education reform and site based management. Now, instead of predetermining the titles it will produce and offer, APH is faced with the task of providing accessible versions of the books that are used by each blind student’s sighted classmates. This requires the adaptation of a vast number of different textbooks and with very little lead time to produce them. Obviously, the traditional methods for selecting and producing accessible books no longer meet student needs and the requirements of their educational programs.

To effectively address this dilemma, we have renewed our commitment by establishing the ATIC Project. Through it, we will revamp our existing structures and create new systems to provide accessible textbooks in an expanded variety of media and to do so in a customer-responsive manner. In addition to traditional “hard copy” textbooks, this commitment will provide textbooks through on-demand transcription or enlargement as well as in electronic media that can be downloaded from a file repository on our web site. ATIC is a critical undertaking that involves major systems change, not only within APH, but also within the entire field of education of blind and visually impaired students!

**The strategic vision of the ATIC Project is:**

A Textbook Division of APH will effectively respond to the textbook needs of blind and visually impaired students by delivering custom-produced accessible textbooks in a variety of media in a timely manner.
Textbooks will be produced in:

- Braille
  - Hardcopy
  - Electronic files for embossing
  - Downloadable files from our web site
- Large type books in standard textbook size and in color
  - Hardcopy
  - Electronic files for customizing of point size and font
  - Downloadable files from our web site
- Audio
  - Synthetic speech
  - Digital files of human voice
  - Linear braille and additional media as technology develops

In order to accomplish this mission and the specific goals of this multi-phase project, APH made a substantial commitment of resources — financial, human, and intellectual. While this effort began as an initiative to address the need for braille textbooks delivered in a timely manner, it has wisely been expanded to address the need for accessible textbooks in a variety of media. We anticipate that research and development will lead to the implementation of a universal format that will assist project staff in more readily achieving the goals of the project.

APH has hired a director for the project and has established an electronic file repository of electronic textbook files on the APH web site. ATIC has established parallel tracks of focus on which we are working concurrently. Each track is designed to accomplish specific goals of the project and to interface with other tracks as appropriate. Each track plays an integral part in the success of the project and will be woven into the comprehensive effort at appropriate intersections. This approach provides a scaffold to support the staff in the early stages of their work, yet it remains plastic enough to be shaped by their research and decisions.

APH is convinced that this effort is not only essential if we are to meet the needs of visually impaired students, but that it is within the role and responsibility of our mission.

For more information please contact Jane E. Thompson, director, at jthompson@aph.org or visit our web site at www.aph.org.
MORE ACCESSIBILITY FOR MATH STUDENTS: AFB SOLUTIONS FORUM STAKEHOLDERS AND THEIR PURSUIT OF BRAILLE CONVERSION SOFTWARE

The following information appeared in the March 2001 Journal of Visual Impairment and Blindness, Volume 95, Number 3 and is used with permission. Copyright 2001, American Foundation for the Blind.

By Susan Osterhaus, Chris Weaver, and Marie Amerson with Mary Ann Siller, project coordinator

Since 1998, the AFB (American Foundation for the Blind) Textbooks and Instructional Materials Solutions Forum has sought to identify ways to ensure that students with visual impairments receive learning materials in accessible formats at the same time their peers receive the materials in print. Various AFB Solutions Forum stakeholders have been active in projects that help provide accessible textbooks for children with visual impairments and make life easier for their teachers. One important development to achieve this goal is the creation of braille conversion software that is designed to work with files from a print math editing program.

The graphical nature of mathematical and scientific notation, along with special braille codes such as Nemeth Code, the braille code for mathematics needed to represent complicated formulas, have presented unique problems in the delivery of accessible textbooks for mathematics and science instruction. Existing software that converts print mathematics into Nemeth Code requires mathematics to be written in a computer language that is unambiguous in its presentation of mathematical structures in order to correctly generate Nemeth Code. However, many computer languages that are used to represent mathematics provide only a recipe to draw the mathematics and do not provide explicit information on mathematical structure, which is vital information for the production of accurate Nemeth Code.

Scientific Notebook (SN) is a print math editing program that scripts mathematics in a clear, unambiguous way that is ideal for transcription into Nemeth Code. SN has a number of automatic formatting controls for text elements, such as headers, displayed equations, and bulleted or numbered lists. Although these features make mathematics look pretty on print paper, the ability to detect and eliminate these additional structures is crucial to getting correctly formatted braille out of a Nemeth Code converter. In addition, SN includes a built-in scientific graphing calculator, which has a view screen that can be enlarged to 400%, used with a computer program that enlarges text, or used independently by a student with low vision to complete homework assignments.

Because adaptations to SN would make it possible for students with visual impairments to have large print and braille access to mathematics, a project to adapt SN with braille conversion (SN/conversion) software was started by volunteer Jack Medd with guidance from an AFB Solutions Forum stakeholder, the Mathematics Accessible to Visually...
Impaired Students (MAVIS) program at New Mexico State University. Chris Weaver, MAVIS program coordinator, continued the braille conversion software project after Medd’s departure. In the earliest stages of the project, Susan Osterhaus, secondary mathematics teacher and teacher of the visually impaired at the Texas School for the Blind and Visually Impaired and AFB Solutions Forum member, participated in a beta test of the SN/conversion software. Later, the software was tested by other teachers of visually impaired students and Nemeth Code transcribers. The test used the software to prepare, from one print mathematics document, multiple copies in regular print, large print, and braille. Feedback from the beta test indicated that the SN/conversion software was user-friendly and accurate and that it easily and quickly prepared the multiple copies in much less time than traditional methods.

The collaboration between MAVIS and the creators of SN has resulted in a converter that understands the source mathematics and produces excellent Nemeth Code by computer generator standards. Any program is susceptible to bugs, and decisions regarding natural language cannot be made by a computer program. Proofreading the output with a screen reader would help catch most conversion mistakes.

At about the same time Susan Osterhaus began testing the SN/converter, math professor Henry Gray from Metroplex Voice Computing approached her regarding the efficacy of applying the basic product to blind users’ needs. Osterhaus and Gray are currently beta testing a speech recognition package for the SN/converter called Math Talk for the Visually Impaired. The combined Math Talk/SN/converter would feature a read-back feature that would allow blind students to independently use many of the SN features, including printing documents converted into large print and braille.

Neal Kuniansky from Duxbury, Inc. is collaborating with MAVIS. The stakeholders of the AFB Solutions Forum are beta testing a DBT WIN 10.3 version, which uses the MAVIS converter and allows a file to be prepared in SN and imports it directly into DBT for a final proofreading before embossing. In addition, Chris Weaver is working on a Nemeth Code back translator, which will convert Nemeth Code into print and display the converted document in SN.

Weaver and Osterhaus report that the December 2000 issue of the Mathematics Teacher contains a review of SN, which should spread the news about SN to regular math teachers. The AFB Solutions Forum advocates math teachers’ use of SN for their math materials, since SN provides teachers with an inexpensive, user-friendly way to furnish all of their students with high-quality, accessible documents.

This project related to SN and collaborative efforts to address accessibility of math materials is one example of the types of solutions endorsed by the AFB Textbooks and Instructional Materials Solutions Forum various stakeholders coming together to solve problems so that students with visual impairments will have the right learning materials at the right time.

For more information, contact: Susan Osterhaus, secondary mathematics teacher, Texas School for the Blind and Visually Impaired; e-mail: osterhaus@tsbvi.edu or Chris Weaver, program director, Mathematics Accessible to Visually Impaired Students (MAVIS), New Mexico State University; e-mail: chrweave@nmsu.edu.
VERIZON PARTNERS WITH AFB FOR THREE-YEAR NATIONAL CAMPAIGN

The following information was prepared for (summer 2002) *AFB News* and is used with permission.

Verizon Corporation, one of the world’s leading providers of communications services, is partnering with AFB for a three-year national campaign to promote a new college-based career (braille textbook transcriber) and improve literacy for America’s blind and low-vision schoolchildren.

The National Campaign for Literacy, Textbooks, Transcribers and Technology is a broad-based public awareness and advocacy program that will promote the new career at the federal and state levels, and raise general awareness of the needs of blind and low-vision schoolchildren for timely access to textbooks and learning materials. Erik Weihenmayer, who has captured the nation’s heart as the first blind mountain climber to summit Mount Everest, has agreed to serve as the national spokesperson for the campaign. The kick-off for the National Campaign will be held in Washington D.C. on October 3.

“Erik had a goal but required the right tools to reach the summit,” said Andrew Brown, executive director of public affairs programs for Verizon Communications. “Millions of Americans today do not have the required tools to reach their goals; they can’t read. Verizon’s commitment to literacy is about ensuring that everyone, sighted or not, has the tools to reach the top and attain their goals.”

According to Mary Ann Siller, national program associate in education for AFB and the coordinator of the National Campaign, “Through Verizon’s generous philanthropic support and active partnership in this program, we will make a profound difference in children’s lives as this career becomes a reality across the country.”

The AFB Textbooks and Instructional Materials Solutions Forum, in conjunction with AFB’s National Education Programs and National Literacy Center, has taken a leadership role in attacking the critical shortage of braille transcribers and offering new skills to current braille transcribers. In May 2001, the AFB Solutions Forum began an important and revolutionary project to define a new occupation as a braille textbook transcriber. AFB, Northwest Vista College in San Antonio, Texas, and the Texas Education Agency have built a partnership to develop a new profession through a curriculum and a series of college courses. The curriculum will be piloted this summer at Northwest Vista College in San Antonio, Texas, and will be introduced in community colleges across the country over the next three years.
The National Campaign focuses on transcribers, textbooks, literacy and technology. A trained and credentialed braille textbook transcriber will practice his or her career via technology – receiving electronic publishers’ files to the desktop, transcribing those files electronically, and returning the transcribed materials to the state authorized entity for textbook distribution. The career can be practiced anywhere the telecommunications infrastructure is accessible.
Verizon Reads is the umbrella organization for Verizon’s support of improving literacy in America. Established in 1999, Verizon Reads is headquartered in Irving, Texas, and is dedicated to establishing meaningful programs that create awareness, raise funds, support a wide diversity of literacy programs, and encourage collaboration among literacy organizations nationwide.

The AFB and Verizon Reads National Campaign will:

- Raise broad-based awareness across America of the needs of blind and low-vision schoolchildren for access to textbooks and instructional materials,
- Achieve acceptance at the policy level for the new college-based career—braille textbook transcriber and advocate the employment of trained and credentialed transcribers to federal and state decision-makers,
- Deliver broad access to the career course work through community college programs, and
- Promote the new college-based career and access to the training to potential recruits across America.

The Campaign Components

Verizon Reads Literacy Champion – Erik Weihenmayer

Erik Weihenmayer will serve as the Verizon Reads Literacy Champion and spokesperson for the Literacy, Textbooks, Transcribers and Technology National Campaign. Mr. Weihenmayer will be featured at the National Introduction Event on October 3, 2002, and at two on-campus events each year in 2003 and 2004. He will be pictured on the poster and recruiting materials, and appear in public service announcements and the videos for advocacy and recruiting. He will also be available to media for interviews relating to the AFB and Verizon Reads National Campaign.

National Awareness Program

Beginning in 2002 and consistently through 2004, AFB and its communications partner, Dawson|Duncan, will launch and maintain a broad-based media relations and publicity program to achieve maximum national awareness. Media targets will include key consumer media, from Oprah to People Magazine, as well as media segments in public policy, education, careers and training.

A reception, featuring a keynote address by Verizon Reads’ Literacy Champion Erik Weihenmayer and remarks by AFB and Verizon leadership, will be held for key national leaders, policy and decision-makers, parents of children with visual impairments, and corporate partners.

On-Campus Events

On-campus events will be held in four key markets in Texas, California, New York and Florida. Each event will feature the Verizon Reads Literacy Champion, Verizon and AFB representatives.

The on-campus events entail a visit to a local public school by Verizon Reads Literacy Champion Erik Weihenmayer, who will speak to an assembly of the general public, college students, and students who are blind or have low vision. Mr. Weihenmayer will speak about the events and challenges described in his book, *Touch the Top*, and relate these to the National Campaign for Literacy, Textbooks, Transcribers, and Technology. Each student attending will be given a paperback copy of the book.

Events are tentatively scheduled as follows:

- Texas – September 2003
- California – October 2003
- New York – May 2004
- Florida – October 2004

For more information contact, Mary Ann Siller, AFB, 214-352-7222, ext 15 or at siller@afb.net.
THE NATIONAL CAMPAIGN FOR LITERACY, TEXTBOOKS, TRANSCIBERS AND TECHNOLOGY

A Call to Action

There is a critical shortage of braille transcribers throughout the United States. As a result of this shortage, blind and visually impaired schoolchildren do not always receive their textbooks on time and sometimes, not at all, denying them the same opportunities for quality education as those enjoyed by sighted children.

For decades, America’s blind and low-vision schoolchildren have depended on a dedicated group of mostly volunteer braille transcribers. As the numbers of these children have grown over time, this pool of transcribers cannot meet the ever-expanding demand for braille textbooks and learning materials. These volunteers are not always paid for their invaluable work, and the U.S. Department of Labor does not recognize their job as a formal profession. Unless this changes, the children will continue to suffer.

The American Foundation for the Blind (AFB) and Verizon are working with key stakeholders throughout the United States to make this change. In October 2002, they launched the National Campaign for Literacy, Textbooks, Transcribers and Technology. Serving pro-bono as campaign spokesperson is the legendary Erik Weihenmayer, the only blind athlete to conquer the seven summits, the highest peaks on each of the world’s continents.

The National Campaign is a public awareness and advocacy program that promotes the new career of Braille Textbook Transcriber at the federal and state levels, and raises general awareness for the needs of blind and visually impaired schoolchildren for timely access to textbooks. A trained and credentialed braille textbook transcriber will practice his or her career via technology-receiving electronic publishers’ files to the desktop, transcribing those files electronically and returning the transcribed materials to the state-authorized entity for textbook distribution. The career can be practiced anywhere a computer and Internet access are available. A new, community college-level program has been developed to train transcribers to produce textbooks and instructional materials in braille.

Through the National Campaign, AFB and Verizon are advocating for:

• Federal recognition of the profession of a braille textbook transcriber. Ask Congress to support the profession of a braille textbook transcriber and to co-sponsor and support the Instructional Materials Accessibility Act (IMAA). The IMAA has been introduced in the 108th Congress. For more information on the IMAA, go to wwwafborg/textbooks.asp.

• Adoption of this profession and career by regional and state workforce development commissions.

• Adoption of the braille textbook transcriber curriculum throughout the country’s community college systems. Northwest Vista College is the first higher-education institution to offer a curriculum and series of courses. For more information, go to wwwaccedu/nvcareas/braille.
People to consider becoming a braille textbook transcriber. To learn more about this growing and rewarding career, contact Northwest Vista College in San Antonio, Texas, at http://www.accd.edu/nvc/areas/braille/ or visit www.afb.org/education.asp.

Increased public awareness. Most people don’t know that blind and visually impaired schoolchildren go months without the same textbooks as their sighted peers. Spread the word. For print-ready copies of the Call to Action Packet, which explains how you can make a difference, go to www.afb.org/verizon.asp. For a copy of the advocacy video, contact Mary Ann Siller, Director of AFB’s National Education Program and the National Campaign, at siller@afb.net.

Financial support of the National Campaign. To make a donation, go to www.afb.org/credit_card.asp.

Please help ensure that blind and visually impaired schoolchildren receive the education that they deserve.

For more information, contact:

Mary Ann Siller  Frances Mary D’Andrea
Director, National Education Program  Director, National Literacy Center
AFB and Verizon National Campaign Project Director  American Foundation For The Blind
American Foundation For The Blind  (404) 525-2303
(214) 352-7222 x 15  literacy@afb.net
siller@afb.net
NEW COLLEGE-BASED CAREER — BRAILLE TEXTBOOK TRANSCRIPTOR

The following information appears on the AFB web pages and is used with permission.

American Foundation for the Blind, Northwest Vista College (San Antonio, Texas) and the Texas Education Agency

The AFB Textbooks and Instructional Materials Solutions Forum, in conjunction with AFB’s National Education Program and National Literacy Center, has taken a leadership role in attacking the critical shortage of braille transcribers and offering new skills to current braille transcribers. The national need for more qualified textbook transcribers became widely known through the results of two of the three national surveys conducted in the spring of 2000 by the AFB Solutions Forum. These surveys addressed training and recruitment of braille transcribers and the production and delivery of textbooks. For the complete review of the results of the surveys, please go to www.afb.org/education.asp or www.tsbvi.edu/textbooks.afb.

In May 2001, the AFB Solutions Forum began an important and revolutionary project to define a new occupation as a braille textbook transcriber. A partnership with AFB, Northwest Vista College in San Antonio, Texas, and the Texas Education Agency was established to develop a curriculum and a series of college courses for a new profession. Because AFB’s National Literacy Center received federal appropriations funds through the Rehabilitation Services Administration, it was possible to begin the curriculum development process in 2001.

Prior to that time, in January 2000, the Division of Special Education at the Texas Education Agency held a meeting with braille production specialists from across the United States. This was an important meeting to build the case for developing a community college-based program to train new, certified, braille textbook transcribers.

The series of courses will be developed in the spring of 2002 and the initial course will begin in the fall of 2002. The new program is aimed at creating a career-based curriculum that can be replicated at other community colleges throughout the United States, therefore increasing the number of employed braille transcribers available to meet the critical need in this area.

To begin the process, Northwest Vista College used a three-stage employability skills assessment process called Work Keys (TM) to define the tasks and workplace skills necessary for the profession. Two ACT Work Keys (TM) Occupational Profiling meetings were conducted by Northwest Vista College on August 17 & 18 and August 24 & 25, 2001. A final report was developed by Northwest Vista College for AFB. In October 2001, experts in braille textbook transcribing organized the list of 31 job tasks (from the August 24/25 meeting) that were similar and complemented the other associated tasks. Four distinct subject areas with individual job tasks supporting these subject areas were defined.
The numbers shown below reflect the ranking of tasks as to the importance of each task to performing the job as a braille textbook transcriber. The list of 31 tasks shown below is from the final Work Keys Occupational Profiling meeting held on August 24/25, 2001.

**THIRTY-ONE CRITICAL JOB TASKS NECESSARY FOR A BRAILLE TEXTBOOK TRANSCRIBER**

October 17, 2001

**BRAILLE**

Ability to read and write braille.

1. Demonstrate proficiency in transcribing, in proofreading, and in correcting braille errors
6. Acquire the ability to read ASCII braille
7. Appropriately utilize quality control to ensure dot quality, accurate braille, and accurate format
17. Demonstrate basic use of tactile graphic production methods
21. Have awareness of appropriate use of specialized codes: Nemeth, Music, Computer, Foreign Language and Chemistry
22. Possess the ability to read single-sided and interpointed braille
23. Understand simple graphics such as pie charts or simple graphs
24. Acquire the ability to produce 6-key computer direct entry braille
27. Acquire an appreciation and basic knowledge of how brailed texts are used and how blind students learn
28. Obtain NLS Literary Certification
29. Acquire knowledge of national certification requirements and types of certification
30. Acquire the ability to manually produce hard copy braille with a Perkins braillewriter and a slate and stylus
31. Acquire the knowledge of the evolution of braille and braille production

**FORMAT**

Correct placement of print to braille on a page.

3. Acquire basic knowledge of production process including formatting, transcribing, proofreading, correcting, and reproduction
4. Demonstrate basic troubleshooting and problem solving in formatting braille
5. Demonstrate proficiency in applying: *Braille Formats: Principles of Print to Braille Transcription*
7. Appropriately utilize quality control to ensure dot quality, accurate braille, and accurate format
9. Acquire techniques for quality control
11. Develop the ability to effectively interpret and appropriately describe pictures and graphics in print books
12. Understand and translate literary contents
17. Demonstrate basic use of tactile graphic production methods
22. Possess the ability to read single-sided and interpointed braille
THIRTY-ONE CRITICAL JOB TASKS NECESSARY FOR A BRAILLE TEXTBOOK TRANSCRIPTOR
October 17, 2001

23. Understand simple graphics such as pie charts or simple graphs
27. Acquire an appreciation and basic knowledge of how brailled texts are used and how blind students learn

TECHNOLOGY

Using software and hardware to produce braille textbooks.

2. Acquire the ability to use current braille transcription and translation software
8. Demonstrate a knowledge of computer applications to include programming techniques
13. Demonstrate computer literacy which includes knowledge of appropriate components
14. Acquire the knowledge of appropriate use of current scanning software to include imaging, editing, OCR enhancements
15. Create, zip/unzip, save and transfer different braille software formats
16. Demonstrate basic troubleshooting and problem solving techniques, such as software, computer equipment, and interfacing different equipment
18. Possess the ability to appropriately use network expertise
19. Use e-mail and appropriate attachments to transfer files
20. Acquire basic knowledge of braille production equipment
23. Understand simple graphics such as pie charts or simple graphs
24. Acquire the ability to produce 6-key computer direct entry braille
26. Obtain knowledge of various media commonly exported from publishers’ files

BUSINESS PRACTICES

Job practices that will develop for-profit strategies as a braille textbook transcriber.

9. Acquire techniques for quality control
18. Possess the ability to appropriately use network expertise
20. Acquire basic knowledge of braille production equipment
25. Develop knowledge in administering a small business and/or setting up private contracts

For information about the series of courses for the Braille Textbook Transcriber career, contact:

Vivian Seki
Northwest Vista College
3535 North Ellison Drive
San Antonio, TX 78251-4217
210-348-2081
E-mail: vseki@accd.edu
Northwest Vista College
Braille Textbook Transcriber (BRTT)
Course Descriptions
www.accd.edu/nvc/areas/braille

BRTT 1471 Reading and Writing Braille I
Prerequisite: COSC 1301
Fees: Laboratory
This course is an introduction to the rules for using contracted and uncontracted braille in the preparation of brailled documents. The main focus of the course is the completion of Lessons 1-11 of the Instrument Manual for Braille Transcribing. Additionally, students will gain experience with reading hard copy and simulated braille, writing braille using direct 6-key computer entry, and become familiar with a brailletwriter and a slate and stylus.

BRTT 1472 Reading and Writing Braille II
Prerequisite: BRTT 1471
Fees: Laboratory
The focus of this course is the completion of Lessons 12-20 of the Instrument Manual for Braille Transcribing with a concentration on further development of necessary skills required in transcribing books from print to braille. The manuscript required for NLS certification will be completed before receiving a grade. (Note: A student completing and submitting the manuscript, but lacking certification may enroll in “Textbook Braille Formatting” in the third semester).

BRTT 2378
Tactile Graphics
Prerequisite: BRTT 1471
Fees: Laboratory
This course introduces a variety of methods for creating tactile graphics. Content includes an overview of production equipment, tools, and supplies used for tactile graphics. Working with several media, students will create simple to complex raised line drawings including single and multiple line representations, charts, graphs, and maps. Lessons in writing picture descriptions, cartoon descriptions and basic transcribers notes will also be included.

BRTT 1271 Introduction to Other Codes
Prerequisite: BRTT 1471
Fees: Laboratory
An overview of specialized codes such as Nemeth, Music, Computer, and Chemistry is presented. Lessons will introduce the unique aspect and practical application of these codes and explain how the student can continue learning these specialized codes.
BRTT 2476 Textbook Braille Formatting I
Prerequisite:  BRTT 1472
Fees:  Laboratory
This course, the first of two formatting courses, concentrates on the special braille
formatting rules and techniques to be applied when transcribing print books. The *NBA
Braille Formats Course* (based on *BANA Braille Formats: Principles of Print to Braille
Transcription*) is the foundation for the course.
An in-depth study of rules 1-12 is the focus of this course.

BRTT 2477 Textbook Braille Formatting II
Prerequisite:  BRTT 2476
Fees:  Laboratory
The special braille formatting rules and techniques to be applied when transcribing
print books is continued in this course. An in-depth study of rules 13-19 plus a guided
hands-on formatting of a sample textbook aids the student in learning the complexities
of successfully formatting a book.

BRTT 2474 Technology for Braille Transcription I
Prerequisite:  BRTT 1472
Fees:  Laboratory
This course begins integrating technology into braille production. Content includes
scanning and OCR techniques to generate accessible files, and developing strategies
with Microsoft Word to resolve transcribing and translation issues. Students will be
introduced to braille translation software by learning the fundamentals of DBT
(Duxbury Braille Translator). Coursework will incorporate the principles learned in
“Textbook Braille Formatting” and will further develop proofreading skills when using
translation software.

BRTT 2478 Technology for Braille Transcription II
Prerequisite:  BRTT 1472
Fees:  Laboratory
Learning the fundamentals of MegaDots and Braille2000 completes the study of current
braille translation software. Students will continue to develop skills for preparing a
variety of files for translation by using Microsoft Word. Translation and transcribing
techniques will be extended to simple and complex publishers’ files. Applying the
principles learned in “Textbook Braille Formatting” will be continued, along with
increased focus on the proofreading of translated braille files.

BRTT 2164
Practicum - Braille Textbook Transcriber
Prerequisite: Approval of Program Coordinator
Fees:  Laboratory
Students will get practical experience in conducting braille transcribing as their own
business and have an opportunity to work on a Capstone Project to be discussed with
and monitored by their instructor.
What is a braille transcriber?

A braille transcriber determines how to most accurately present information from a print textbook into a braille version and then transcribes it into braille so that a student who is blind or has low vision gets the same benefits from the information as his or her sighted peers.

What skills must a braille transcriber have?

In addition to deductive reasoning, transcribers must have specialized computer skills to effectively transcribe a textbook into braille. They must be fluent in the English Literary Braille Code, be knowledgeable in the use of braille translation software, be able to import publishers’ electronic files, and be knowledgeable in formatting principles from Braille Authority of North America (BANA). Braille Formats: Principles of Print to Braille Transcription (1997). Louisville, KY: American Printing House for the Blind.

Formatting principles influence the placement of information on a page. This enables the reader to tactually pick out information presented in a print book, as quickly as a sighted reader gathers information by glancing at a page. The reader immediately can know there are footnotes, paragraphs, lists of items and tables by scanning the page with his/her hand. The formatting principles are highly structured and specific to braille.

What challenges do braille transcribers face?

Current print textbooks are highly visual and graphically rich, known in the publishing industry as “extreme” textbooks. The more colors, boxes, maps and artwork printed on the page, the longer it takes to format a book for the braille user. All the information must be presented to the reader in a clear and consistent manner, so they understand the context, as well as the content on the page.

Why does the job of braille transcribing require special training?

There are complex and distinct codes and rules that have to be mastered and executed to produce error-free textbooks. Up until now, braille transcribers have been trained and certified through a self-study correspondence course through the Library of Congress, National Library Service for the Blind and Physically Handicapped (NLS).

At the end of the correspondence course, the applicant develops and submits a manuscript and then applies for NLS literary braille certification. However, the self-study training does not integrate many critical areas necessary to become a proficient braille transcriber or a braille textbook transcriber, such as using textbook formatting and working with publishers’ electronic files. The NLS training program is the predominant way transcribers are trained now, but the reported rate of success is only 30 percent.
Who is currently transcribing textbooks?

Textbooks are currently transcribed by a very dedicated group of braille transcribers. There are some transcribers who receive pay for their work, but most transcribers are volunteers. Braille transcribers working throughout the United States have provided a tremendous legacy in braille textbook production. Braille transcribers have been ensuring that quality and professionalism are embedded in each book or instructional material they produce.

As the numbers of blind or low-vision children have grown over time and the pool of volunteer braille transcribers has decreased, states and local school districts cannot meet students’ ever-expanding demand for braille textbooks and ancillary learning materials. In addition, we know there is a limited pool of braille transcribers familiar with using publishers’ electronic files and appropriate textbook formatting.

What is the contribution of a braille transcriber to the education of blind and low-vision schoolchildren?

Access to the general education curriculum is vital to all students and when textbooks arrive late or not at all, students with visual impairments miss out on educational opportunities. This is a national issue with complex fiscal, technological and political implications.

Braille transcribers have a tremendous impact on the education of blind and low-vision students. Transcribers allow blind and low-vision students to be on equal footing in the classroom. They provide them with the same information that their sighted peers receive, but in the format they need. Braille textbook transcribers play an important role in helping students achieve their goals both now in their education and in their future endeavors.

Why is the development of the new career — braille textbook transcriber — so important?

There is a significant shortage of braille transcribers throughout the country. Because of this shortage, blind and visually impaired schoolchildren go weeks and sometimes months without the textbooks that their sighted peers have for their core or elective classes. This significant shortage of braille transcribers impacts the college-bound students too. It is estimated that the United States needs 380 full-time transcribers now, will need 735 additional transcribers in five years, and 1,020 additional transcribers in ten years.

Braille transcribers are not always paid for their invaluable work, and the U.S. Department of Labor does not recognize their job as a formal profession. Unless this changes through advocacy efforts, the children will continue to suffer. They will not have access to the general education curriculum and will not be learning on a par with their sighted peers.
What are the trends surrounding the career of braille textbook transcriber?
The AFB Textbooks and Instructional Materials Solutions Forum conducted three national surveys in 2000 concerning production and delivery of textbooks, training and recruitment of braille transcribers and access to multimedia textbooks (www.afb.org/education.asp). From the national surveys, and a response from 43 states, it was found that:

- Forty percent cited a need for more braille transcribers,
- One in every five textbooks arrives late,
- States recognize a need for more braille transcribers and admit there is a lack of recognition of a braille textbook transcriber as a bona fide job or career,
- Fifty-eight percent of the current full-time transcribers are volunteers,
- Only half of the full-time transcribers have attained certification by NLS,
- Blind children rely more on volunteers to produce their braille texts and materials than on paid employees, and
- Ninety percent of textbooks are produced from paper copies and into paper copies.

Why has a college curriculum been developed and what will it provide?
Despite the immense efforts of our current braille transcribers, the profession is not recognized by the U.S. Department of Labor or by businesses as a bona fide job or career. The college curriculum was developed to gain acceptance for the braille textbook transcriber career at the federal and state levels, and to ensure the future of quality braille for students and adults.

The results from the AFB Textbooks and Instructional Materials Solutions Forum’s 2000 surveys provided a clear direction for defining steps to eliminate the shortage of braille transcribers, providing timely access to textbooks and instructional materials, and increasing the quality and quantity of accessible materials. To see the surveys and fact sheets, go to www.afb.org/education.asp and to the production and training work groups.

The AFB Solutions Forum, in conjunction with the AFB National Education Program, AFB National Literacy Center and the Texas Education Agency, partnered with Northwest Vista College in San Antonio, Texas to develop a series of courses and a curriculum to train people to become braille textbook transcribers.

In August 2001, Northwest Vista College used a three-stage employability skills assessment process called WorkKeys™ to define the tasks and workplace skills necessary for the profession. Two ACT WorkKeys Occupational Profiling meetings were conducted by Northwest Vista College with nationally recognized braille transcribers who were NLS certified and knowledgeable of publishers’ files.

From the WorkKeys process, 31 tasks were found to be critical for the job/profession of a braille textbook transcriber. To view these tasks, visit the Training Work Group area at www.afb.org/education.asp. For more information about the braille textbook transcriber courses, visit Northwest Vista College at www.accd.edu/nvc/areas/braille.
**What does the pilot year of courses include at Northwest Vista College?**

In the pilot, there are 12 courses assigned to this four-semester program, which consists of 39 credit hours for NLS certification and a college certificate. Among other course objectives, the curriculum includes reading and writing braille, transcribing and formatting braille textbooks, working with publishers’ files, creating tactile graphics, technology for braille transcription and production, and managing a small business. The future goal for the college-based program is to replicate the curriculum and program at community colleges in strategic states across the United States. For more information about the college curriculum at Northwest Vista College, go to [www.accd.edu/nvc/areas/braille](http://www.accd.edu/nvc/areas/braille).

**How will the AFB and Verizon National Campaign address access to textbooks and eliminate the shortage of braille textbook transcribers?**

*The National Campaign for Literacy, Textbooks, Transcribers and Technology* is a public awareness and advocacy program promoting the new career of braille textbook transcriber at the federal and state levels and raising general awareness of the needs of blind and low-vision schoolchildren for timely access to textbooks and learning materials ([www.afb.org/verizon.asp](http://www.afb.org/verizon.asp)).

In addition, Erik Weihenmayer, legendary blind mountaineer, is serving pro-bono as Verizon Literacy Champion and Campaign spokesperson.

**The campaign has four distinct goal areas:**

1. Raise broad-based awareness across America of the needs of blind or low-vision schoolchildren for access to textbooks and instructional materials.
2. Achieve acceptance at the policy level for the new career and advocate for the employment of trained and credentialed transcribers.
3. Deliver broad access to the career course work by replicating the series of courses through community colleges across the country.
4. Promote the new career and access to the training to potential recruits across America.

**How does the publishing process work?**

The selection of textbooks is conducted in two different ways across the United States. Twenty states use the state adoption process where the state adopts the same textbooks for all school districts. Thirty states use the open territory process where every local school district selects the textbooks to be used that year. For the most part, states and local districts enter into contracts with publishers to create and publish the textbooks. Transcribers do not receive publishers’ files from the publisher. They receive the production order from an authorized entity such as a state braille production center or local school district.
Production and delivery of braille are handled differently in each state. Some states contract with transcribers in their own state and in other states to develop the braille files. Embossing and proofreading textbooks are handled in a variety of ways, but most often at a braille production center. Many states or local districts purchase the finished braille textbook from another production center in another state. Publishers do not pay the transcriber and publishers do not distribute braille textbooks.

For more information on braille production and delivery, go to www.afb.org/info_document_view.asp?documentid=1286.

What national support systems are available now for braille transcribers?
There are two membership organizations supporting braille transcribers. The National Braille Association (NBA) has been an active leader for more than 40 years in supporting braille transcribers as a membership service organization. The California Transcribers and Educators for the Visually Handicapped (CTEVH) is another membership group for braille transcribers. There are continuing education programs offered by both organizations. To receive their journals and additional information about their conferences and workshops, contact NBA at www.nationalbraille.org or at their headquarters in Rochester, New York, at 3 Townline Circle, Rochester, New York 14623-2513; phone: 585-427-8260 and CTEVH at www.ctevh.org; CTEVH, 741 North Vermont Ave., Los Angeles, California 90029; phone: 323-666-2211.

Selected Resources

American Foundation for the Blind
National Education Program
260 Treadway Plaza
Dallas, Texas 75235
214-352-7222
Fax: 214-352-3214
E-mail: siller@afb.net

American Foundation for the Blind
National Literacy Center
100 Peachtree Street, Suite 620
Atlanta, Georgia 30303
404-525-2303
Fax: 404-659-6957
E-mail: literacy@afb.net

American Foundation for the Blind
CareerConnect™ AFB TECH 949 Third Avenue, Suite 200 Huntington, WV 25701
304-523-8651 Fax: 304-523-8656 E-mail: careerconnect@afb.net
Selected Readings:

*Dots for Braille Literacy* (free newsletter from AFB’s National Literacy Center) — http://www.afb.org/info_documents.asp?collectionid=6

*CTEVH Journal*
CTEVH Publications
719 Boyer Road
Marysville, CA 95901
Phone: 530-742-8537

*NBA Bulletin*
National Braille Association
3 Townline Circle
Rochester, NY 14623-2513
Phone: 585-427-8260
Fax: 585 427-0263

Web Resources:


American Printing House for the Blind- www.aph.org

Braille Authority of North America – www.brailleauthority.org

Braille Institute Press— www.brailleinstitute.org

California Transcribers and Educators for the Visually Handicapped (CTEVH)— www.ctevh.org


Duxbury Systems, Inc. – www.duxburysystems.com

International Braille Research Center – www.braille.org


National Braille Association- www.nationalbraille.org

National Braille Press- www.nbp.org

Northwest Vista College— http://www.accd.edu/nvc/areas/braille
BRAILLE PRODUCTION THE DAISY WAY

The following information was provided to the AFB Solutions Forum by the DAISY Consortium (September 2001) and is used with permission.

by George Kerscher, Research Fellow
Project Manager to the DAISY Consortium
1203 Pineview Dr.
Missoula, MT 59802
E-mail: kerscher@montana.com
Phone: 406-549-4687

Abstract

The DAISY Consortium is developing the standards for the next generation of information technology for persons who are blind and print disabled (http://www.daisy.org). While DAISY is famous for development of the Digital Audio-based Information System, many people do not yet know that the specifications are comprehensive and include Etext and braille in the production techniques. This paper will explain how high quality braille can be produced using data prepared in the DAISY/NISO DTBook 3.0 XML specification currently under development.

Acknowledgements

I would like to thank Joe Sullivan from Duxbury and Aaron Leventhal from the Braille Planet for their contributions. Joe and I have worked together for years promoting descriptive markup in files used in production of braille. Joe and I have worked on many committees together developing this philosophy. Aaron graciously offered to review and assist in the development of this paper. Much of the content of this paper is based on the long relationship I have had with these two organizations and the fine work they have done.

Three types of DAISY Digital Talking Books (DTB)

The DAISY specification describes three types of DTB. One type is the full text and full audio (hybrid), another is a table of contents with full audio, and the final version is full text with no human recorded audio (synthetic speech would provide the audio component). Two of these three types of books are of interest to the braille producer. In the full text with audio, and the text only versions, the marked up text essential to braille production is available. Braille producers can use this data as the starting point for their braille production process.

NOTE: DAISY Consortium representatives are involved in the National Information Standards Organization (NISO) work on Digital Talking Books (DTB). Some organizations not part of DAISY also participate in these developments. This NISO and DAISY joint effort is producing the formal Document Type Definition (DTB) which in
this paper is being called the DAISY/NISO 3.0 XML DTD. Please don’t be confused by the terms DTB for digital talking book and DTD which stands for document type definition!

In the DAISY DTB there is a clear separation of the audio files and the text files encoded with the eXtensible Markup Language (XML). The linkage between the two separate files is the Synchronized Multimedia Integration Language (SMIL) files. This means that a braille producer can simply copy the XML files and move them directly into the braille production process.

**What does the XML file contain?**

The text of the whole book should be marked up in accordance to the DAISY/NISO XML 3.0 DTD specification. This means that each heading, paragraph, list item — essentially all the elements that make up the book are clearly and explicitly marked. There is no mistaking what is a heading or paragraph, or page numbers, because there are unique tags (marks) that identify the elements. The actual text is present and at the beginning of the portion of text is a tag and a matching end tag at the end of the text. There is no guesswork at all; everything is clearly identified.

The markup is similar (but much better) to what we see on the World Wide Web in HTML. Current HTML web sites use a lot of constructs designed to force appearance while failing to convey, or even obscuring, the true document structure. The visual constructs that are problematic in HTML are not allowed in the DAISY/NISO 3.0 XML DTD. However, the basic concepts are the same. For example in HTML and in our XML DTD a `<h1>` is found at the beginning of a heading. At the end of the heading is a `</h1>`. This clearly identifies the text between the begin tag and the end tag as a heading. The constructs from HTML that convey proper document structure are preserved in our DTD, but purely visual presentation are moved outside the DTD to styles where they belong.

**How Do XML Files Fit Into the Braille Production Process?**

The braille producers start by taking the completed XML files. These files should already have descriptions of figures and other graphics. These files are then “IMPORTED” into their braille translation software such as Duxbury or MegaDots. The braille translation software understands the markup in the files and translates the tags into the codes used in their systems. At this point the files are ready for examination by an experienced computerized braille transcriber. The work that remains is to look for difficult transcription problems.

Importing of the DAISY files is much different from other import facilities provided within braille transcription software. If you do not use a DAISY/NISO DTB XML file as input, the translation software must “GUESS” at the various elements. For example, if the translation software sees something on a line by itself, it guesses it is a heading and formats it accordingly. There are hundreds or perhaps thousands of guesses the software must make. Using the DAISY/NISO DTB XML files as input, eliminates the guesswork involved. This is a very straightforward translation process. I do not mean that this is simple software for the braille translation companies to write, but when it is
completed it is extremely accurate. One should not compare the importing of other types of files with DAISY/NISO DTB XML files!

The tagging provides the information for formatting of the braille files. Knowing the files were previously marked up, spell checked, figure descriptions added, and proof read takes this burden from the braille producer. This leaves only the most difficult of problems for the computerized braille transcriber to address. This maximizes the braille transcriber’s time and allows them to produce more braille with fewer resources.

It is expected that the most difficult problems will still need the attention of the braille transcriber to produce perfect braille. In many cases the braille output will be acceptable for many situations, but for textbooks used in school, especially at early grades, the braille transcriber’s attention will be necessary. Tables will be a problem that the transcriber will need to address. Also special rules of braille for the front matter will probably need to be manually formatted. There are also some items that require human intelligence to interpret. For example the letter “A” may mean the letter, or it may refer to “Group A.” The braille transcriber will need to treat these differently, but the computerized braille translation software will greatly assist them in this process.

**What Braille Translation Software Supports the DAISY/NISO XML 3.0 DTD?**

The DAISY/NISO DTBook3 DTD is under development and testing at the time of this paper submission. We have several braille software production companies reviewing the file specification. With the spread of DAISY throughout the world, we expect that most braille translation software will support the DAISY/NISO XML specification or risk losing large portions of their market share.

**This Sounds Too Good to be True! How Can This Be?**

There is no magic in this process. There is a shift in the production effort. Instead of spending countless hours on braille data input and proofing, the time is spent on the XML data creation and proofing processes. What we see is the convergence of the production techniques to produce Digital Talking Books and the braille production process.

**How To Produce More Books in XML?**

It is not easy to produce books in XML. We may find that we have just as much difficulty producing the XML as we have producing braille today. The first benefit is that the DTB is actually better with full text and that the skills of the trained transcriber are used more efficiently. However, there is the prospect that publishers themselves will be able to provide files in XML! Publishers still feel their primary product is the printed book. However, they see the trends moving to electronic books. Openebook (http://www.openebook.org) is a recent initiative among publishers, software developers and hardware manufacturers to define standards for electronic books. Openebook efforts are underway to define XML notation that can be used to deliver electronic books on handheld devices such as the Rocket Book and Soft Book. These devices are in their infancy, but promise to become more popular in the future. These products have no market unless there are books that conform to the specifications. The DAISY
Consortium is working to ensure a convergence of this mainstream technology and the developments within the DAISY Consortium.

**Conclusions**

1. DAISY DTB produced with full text is the perfect input for computerized braille translation software.

2. The DAISY/NISO 3.0 XML files have already had figure descriptions added.

3. The DAISY/NISO 3.0 XML files have already been spell checked and proofread.

4. Modern braille translation software will support sophisticated translation processes from DAISY/NISO XML files.

5. Many libraries around the world will elect to integrate their braille production processes with their DTB production.

6. Publishers of traditional printed books will begin to move to a production process that supports XML.

7. If your library is not yet part of the DAISY Consortium, it is clear that it is time to join!
eDESCRIPTION PROJECT: EXTENDED, ENHANCED, EDUCATIONAL DESCRIPTIONS

The following was provided to the AFB Solution Forum by WGBH/NCAM and is used with permission.

The Corporation for Public Broadcasting (CPB) WGBH National Center for Accessible Media (NCAM) proposes to adapt broadcast description methodologies for use with classroom media to improve access to and participation in the curricula for students with visual impairments. The use of visual materials in the field of education has grown at an enormous rate. The importance of accurate and effective verbal description in a visually rich learning environment is essential for students with limited vision if they are to access the information embedded in today’s visual media.

NCAM is analyzing, amending and expanding current description practices to create an eDescription methodology, which will build on current research on cognition in children who are visually impaired. Working with a team of highly qualified advisors, NCAM is exploring the potential of eDescription as a curriculum adaptation to provide access to content and meaning in software, video, illustration and other visual materials. The eDescription Project will also contribute to the advancement of theory, knowledge and practices related to the strategic use of eDescription as an instructional tool.

One of the major goals of the eDescription Project is to develop a conceptual framework that will guide the creation of effective description of visual educational materials. Drawing on what has been learned about audio description, this project is examining the potential of extended, enhanced, educational descriptions to assist students with a vision loss in obtaining factual and conceptual information more nearly equivalent to that obtained by sighted students.

eDescription includes “extended descriptions,” defined as the communication of key visual information which requires a longer time period than that allowed by pauses in the media. eDescription also includes “enhanced descriptions,” defined as additional information and cues specifically designed to address cognition issues experienced by children with visual impairment. Together, these techniques constitute an entirely new approach, which results in “educational descriptions.”

eDescription is similar to the audio narration provided on a number of PBS broadcasts as well as movies (including drama, nature, science, children’s programs, and documentaries). Description, like that done by WGBH Descriptive Video Service inserts description into spaces between dialogue sequences. In many educational programs, these spaces are simply too short to provide adequate information about what is being conveyed by still or moving images.

Using technology developed by NCAM, eDescription extends the narrative elements by pausing the video image while description continues. In this way it is possible to provide the student with a far more complete conceptual “picture” of what is appearing visually.
**eDescription** makes it possible to include additional details that children with vision pick up incidentally, thus supplementing the general knowledge acquired by the students with vision loss.

The same framework used for creating **eDescription** for video or multimedia can also be used for description of visuals within a book. Though some images in books have been included in recorded texts in the past, the quality of such descriptions has often varied greatly. It has also been a problem to know where to insert such description in the recorded book. The soon to be released “Digital Talking Book” format will make including **eDescription** easier. The reader will be able to turn the description on and off to suit individual reading needs.

NCAM is evaluating and refining the **eDescription** methodology with students, teachers and parents using segments of a major health education curriculum. NCAM is also soliciting input from students, teachers and parents about the potential role of **eDescription** in classroom and homework practices, and its contribution to independence.

Project results will serve all children with visual impairment but will most notably address challenges faced by mainstreamed students and general education teachers. Project results will apply to video, graphics, animation, illustrations, et al., presented and delivered in wide variety of media. Future delivery methods for **eDescription** files are many and scalable—from an audio tape delivered via regular mail to web-delivered audio direct from the publisher or from a server of a designated educational site or via digital television.

For more information contact:

Rick Ely Ed.D.  
**eDescription** Project Manager  
(617) 300-3401  
E-mail: rick_ely@wgbh.org

Terry Maggiore M.Ed., COMS  
**eDescription** Project Coordinator  
(617) 300-3469  
E-mail: terry_maggiore@wgbh.org

http://main.wgbh.org/wgbh/pages/ncam/edescription/

*Funding for this Project is provided by the U.S. Department Education through the Steppingstones of Technology Innovation for Students with Disabilities Program.*
The following information was submitted by WGBH/NCAM and is used with permission.

**The Problem: Current Educational Software is Inaccessible**

Educational software has become an important tool in our classrooms. Instructional materials are available as software or on the World Wide Web, and teachers are being trained to use the computers that are in their classrooms. Concern about the “Digital Divide” that is emerging as some students are exposed to technology, while others are not, has led to government and industry initiatives focused on disadvantaged students. Students with disabilities must be considered as more instructional materials move into digital form.

Educational software presents challenges for students with disabilities in a number of ways. While other students are using an interactive simulation to learn a biology lesson, the student with low vision may be sitting to one side listening to classmates as they describe what they are doing. Chances are, the sighted students will leave out some details and the visually impaired child will miss important information. Tools for graphing and solving equations in mathematics allow students today to approach math from an entirely new perspective, learning constructively rather than memorizing algorithms. But if blind students can’t use the software that makes such an exploration possible, they will not have the same valuable learning experiences that other students have. A student with a hearing impairment may be unable to hear instructions for a lesson which are given only in audio and, therefore, have no way to begin the assignment. In some cases, the child with a physical disability may be “excused” from the computer lesson and sent to another area of the room for a different activity. This lack of accessibility stigmatizes children by preventing them from using the same materials as their peers and limits their educational opportunities.

**Guidelines and Solutions are Available**

Educational software publishers interested in making electronic textbooks and other instructional materials useful to as many students as possible will be aided by a publication from the Corporation for Public Broadcasting (CPB)/WGBH National Center for Accessible Media (NCAM). “Making Educational Software Accessible: Design Guidelines Including Math and Science Solutions” is the result of a three-year, National Science Foundation funded effort by NCAM which offers a wealth of information for educational designers and developers.
“Making Educational Software Accessible: Design Guidelines Including Math and Science Solutions” is available free of charge in print and on the World Wide Web. Request print copies (bulk orders accepted) through Mary Watkins at 617-300-3700; Mary_Watkins@wgbh.org or read the guidelines online at: ncam.wgbh.org/cdrom.

In the process of creating these guidelines, NCAM staff extensively reviewed both existing educational software titles and the latest in access technology solutions. We also created two prototypes which demonstrate the accessibility solutions suggested. The prototypes are available for download from the document’s web page.

The guidelines are also expected to aid efforts by publishers of web-based media seeking to comply with existing and pending accessibility regulations on federal and state levels.

In this document, readers will find:

- a review of current policies requiring the use of accessible educational software;
- a basic understanding of the needs of users with different disabilities;
- a summary of various approaches to serve users with different disabilities;
- specific solutions for designing more accessible software;
- guidelines with specific checkpoints and detailed techniques for implementation.

Technical information covers common development environments and includes references to more detailed accessibility guidelines. In addition, specific guidelines on educational materials are included.

**CPB/WGBH National Center for Accessible Media (NCAM)**

NCAM and its fellow access departments at WGBH, The Caption Center and Descriptive Video Service®, make up the Media Access Group at WGBH. WGBH pioneered captioning and video description on television, the web and in movie theaters. NCAM is a founding member of the Web Accessibility Initiative (WAI) of the World Wide Web Consortium (W3C). As a research and development department, NCAM works with standards bodies, industry, consumer organizations and educators to develop and implement non-proprietary technical standards for multimedia, advanced television, and convergent media that ease implementation, foster growth and lay common groundwork for equal access to new technologies. For more information, visit access.wgbh.org.

**WGBH Boston**

WGBH Boston is the preeminent public broadcasting producer in America. More than one third of the Public Broadcasting Service (PBS) prime time lineup and companion web content is produced by WGBH, along with programming for public radio stations, educational services and outreach activities. WGBH informs, inspires, and entertains audiences around the world. For more information visit www.wgbh.org.
MEDIA ACCESS GENERATOR (MAGpie)

The following information was submitted by WGBH/NCAM and is used with permission.

Developers of web- and CD-ROM-based multimedia need an authoring tool for making their materials accessible to persons with disabilities. The Corporation for Public Broadcasting (CPB)/WGBH National Center for Accessible Media (NCAM) has developed such a tool, the Media Access Generator (MAGpie), for distribution in Software Development Kits (SDKs), on the web, CD-ROM and other methods. MAGpie is available free of charge from NCAM’s web page at: http://ncam.wgbh.org.

Using MAGpie, authors can add captions to three multimedia formats: Apple’s QuickTime, the World Wide Web Consortium’s Synchronized Multimedia Integration Language (SMIL) and Microsoft’s Synchronized Accessible Media Interchange (SAMI) format. MAGpie can also integrate audio descriptions into SMIL presentations.

MAGpie is the ideal authoring environment for multimedia specialists, publishing companies or service providers who want to add captions, subtitles and audio descriptions to their work. However, others will also benefit from its use. Research performed by WGBH has demonstrated that caption authoring is a valuable classroom activity. Children who produce caption files for short video clips tend to write more, and their writing skills improve more rapidly. MAGpie is friendly to those who are new to multimedia, educators and even to young users.

MAGpie version 2.01 is now available. This version of MAGpie is a Java-based application for Windows and Mac OSX with support for all media types supported by Windows Media, QuickTime, and Real.

Funding for MAGpie 1.0 came from the Trace Research and Development Center at the University of Wisconsin, as part of its Information Technology Access Rehabilitation Engineering Research Center which itself is funded by the U.S. Department of Education’s National Institute on Disability and Rehabilitation Research.

Funding for MAGpie 2.01 comes from the U.S. Department of Education’s National Institute on Disability and Rehabilitation Research and the Mitsubishi Electric America Foundation.

CPB/WGBH National Center for Accessible Media (NCAM)

NCAM and its fellow access departments at WGBH, The Caption Center and Descriptive Video Service®, make up the Media Access Group at WGBH. WGBH pioneered captioning and video description on television, the web and in movie theaters. NCAM is a founding member of the Web Accessibility Initiative (WAI) of the World Wide Web Consortium (W3C). As a research and development department, NCAM works with standards bodies, industry, consumer organizations and educators to develop and
implement non-proprietary technical standards for multimedia, advanced television, and convergent media that ease implementation, foster growth and lay common groundwork for equal access to new technologies. For more information, visit access.wgbh.org.

**WGBH Boston**

WGBH Boston is the preeminent public broadcasting producer in America. More than one-third of the Public Broadcasting Service (PBS) prime-time lineup and companion web content is produced by WGBH, along with programming for public radio stations, educational services and outreach activities. WGBH informs, inspires, and entertains audiences around the world. For more information visit www.wgbh.org.
ASSOCIATION OF INSTRUCTIONAL RESOURCE CENTERS FOR THE VISUALLY HANDICAPPED (AIRC VH): AN OVERVIEW

The following information was provided by the Association of Instructional Resource Centers for the Visually Handicapped (AIRC VH) and is used with permission.

The Association of Instructional Resource Centers for the Visually Handicapped (AIRC VH) is an organization of persons having statewide responsibility for the delivery of large print, braille and/or taped textbooks to school-aged students who are blind or have visual impairments. The mission of association members is to assist state education agencies in the delivery of materials and services to students in a timely manner and in an appropriate medium.

Most states have some form of “instructional resource center” which provides textbooks and instructional materials to schools for their students with visual impairments. The center in some states serves as a clearinghouse, ordering textbooks and shipping to school systems; other states have a depository, which also reclaim textbooks at the end of the year so they are available to loan to other schools; and still other states also include production facilities which enable them to produce materials that are not available through other sources.

Members of AIRCVH work within their individual states to provide accessible learning materials to students who are blind or visually impaired, but they also work with one another in an effort to ensure success at getting the right book to students at the right time. They strongly support activities that address critical issues in providing braille books which meet the highest quality standards and getting them into students’ hands on the day the books are needed.

AIRC VH actively participated in the development of the National Agenda for the Education of Children and Youths with Visual Impairments, Including Those with Multiple Disabilities. Following the 1996 passage of the Chafee Amendment to PL 104-197, the 1975 Copyright Act, AIRCVH presented a series of questions to the copyright office to further clarify issues and concerns that related to transferring information into accessible formats.

Members of the association were also active in the development of the document “Blind and Visually Impaired Students, Education Service Guidelines” published by the National Association of State Directors of Special Education in 1999. Individual members of AIRCVH have been active participants in the American Foundation for the Blind’s Textbooks and Instructional Materials Solutions Forum. Other members are working with Texas and the American Foundation for the Blind to establish standards and curriculum to enable braille transcribers to become professionals with degrees from an accredited institution while still maintaining standards established by the

AIRC VH members meet annually at the Annual Meeting of the American Printing House for the Blind in Louisville, Kentucky. No other formal meetings are scheduled, but work activities related to the goals of the association occur by telephone, e-mail, and meetings that coincide with other scheduled events. To find information about the materials center within a particular state, consult the membership directory at www.tsbvi.edu/textbooks/afb/airc.htm.
The following article appears in the journal “Library Hi Tech,” Volume 19, Number 1 ISSN 0737-8831 and is used with permission.

By George Kerscher

George Kerscher is Research Fellow at Recording for the Blind & Dyslexic (RFB&D) and Project Manager to the DAISY Consortium. E-mail: kerscher@montana.com.

Keywords: Disabled people, Information technology, Standards, Blind people.

Abstract: The DAISY Consortium created the first digital talking book (DTB) and this is now known worldwide as the DAISY format. The DAISY DTB is the application of existing worldwide standards used to define the next generation of information technology for people who are blind and print disabled. The acronym DAISY, digital audio based information system, is a name both for a reading system and for the consortium of libraries, nonprofit organizations and for-profit Friends of the Consortium around the world that spearhead the development of the International standard. This article will briefly trace the history of DAISY’s development and go on to explain the current activities and future plans for the single worldwide standard.

Electronic access: The research register for this journal is available at http://www.mcbup.com/research_registers. The current issue and full text archive of this journal is available at http://www.emerald-library.com/ft.

Roots of the DAISY Consortium

Libraries serving the blind have been around for many generations. Braille is the oldest format, but “talking books” started to evolve 50 years ago. In the 1970s, the analog cassette began to dominate the talking book service industry, upsetting the older “Clark & Smith” six-track format, and the open reel tape format. Unfortunately, the analog cassette came to be offered in a variety of incompatible forms. The better sounding commercial speed two-track stereo was used, but half speed monaural four-track systems were popular in North America. In other countries half-speed stereo complicated matters even more. This variety meant incompatibility in books and playback systems throughout the world. It was the advancing information technology that sparked thinking about the application of the technology for talking books.

In 1994 the Scandinavian Associations for the Blind led by the Danish Association of the Blind published the report, “The next generation of talking books.” The report was adopted by the European Blind Union (EBU) and served to guide developments; 1995 saw leaders emerge from the existing libraries for the blind worldwide. Nine
organizations launched the society-changing effort to develop the “next generation of information technology for persons who are blind and print disabled.” Many individuals contributed to the birthing process, but Kjell Hansson and Lars Sonnebo, from TPB Sweden, stand out as the fathers of the new emerging technology. Kjell’s infamous metaphor comparing scrolls of toilet paper containing print to the analog cassette painted a vivid picture in people’s minds. Many “reused” his irreverent comparison to encourage the transition to a technology-based age of information for persons with print disabilities.

The early efforts of developing a worldwide standard met with spurts and sputters, but Plextor, manufacturers of the famous CD-ROM drives, threw support behind the project. With the assistance of Labyrinten, a software development company in Sweden, the DAISY standard effort began to take shape. Three hundred CD-ROM playback systems were built by Plextor. These units, called “Plextalk” were shipped and tested throughout the world. Labyrinten recording software was used to master the first new versions of the technology in the disabled community. This time saw numerous changes in user interface design and implementation. It was a learning experience unlike anything else in the talking book industry.

At this same time, RFB&D (Recording for the Blind & Dyslexic) initiated their own digital audio browser effort based on current web technology. HTML and Real audio were used in the prototype implementation. At CSUN 1997 the DAISY group and Labyrinten representatives met with RFB&D and developers from Productivity Works to collaborate on harmonization of the emerging technology. It was here where worldwide consensus started to snowball. In Sigtuna, Sweden, the technical experts met to discuss the new designs and agree to a new direction. In July in Tokyo and finally at the end of the summer in Copenhagen, the bonds between semantic structure and the acoustic structure formed.

The four meetings earmarked the transition within the fledgling DAISY Consortium. As a whole, the DAISY Consortium wisely chose to use the emerging multimedia standards from the World Wide Web Consortium (W3C) and apply these existing standards to the application of talking books. RFB&D was now ready to join the DAISY Consortium. “Digital talking books” is the term that became popular and everybody in the consortium set their sights on the second version of the DAISY DTB. Currently, ten full member organizations guide the consortium with expertise (and money) and more than 30 Associate members and Friends make up the DAISY Consortium.

**DAISY 2.0, Based on Existing International Standards**

In June of 1998, the World Wide Web Consortium (W3C), the standards setting body of the Internet, approved the synchronized multimedia integration language (SMIL). The DAISY Consortium was well represented in the development of this standard by Markku Hakkinen from Productivity Works and by myself. It took the DAISY Consortium only three months to incorporate the SMIL specification into DTB and publish the first international standard based on existing W3C standards for DTB. It was September 1998 when the DAISY 2.0 specification was approved and published on the DAISY web site. The DAISY 2.0 standard is an application of both SMIL and HTML.
The DAISY 2.0 specification is designed to provide persons who are blind and print disabled with the ability to “navigate” a digital human recording by headings and page numbers. Headings placed in a strict hierarchy can be navigated quickly and easily. The hierarchy can be collapsed and the user can move chapter-by-chapter through the book. Incrementally expand the navigation center and sections or subsections are exposed for navigation and reading. Alternatively, input a page number and users go directly to the top of the page. This functionality was a direct result of the extensive developments of user requirements and of the field testing conducted worldwide. The specification allows for distribution through the Internet by streaming or by download, but most current implementations are using CD-ROM for distribution. A CD-ROM using MPEG compression allows more than 40 hours of high quality digital sound on a single CD. In addition to the Plextalk, VisuAide has produced a portable CD-ROM playback system called “Victor,” named after the famous author Victor Hugo. DAISY DTB can also be played on a multimedia computer using LpPlayer by Labyrinten and Productivity Works.

One year later, September 1999, the DAISY specification was slightly enhanced. DAISY 2.01 gave the users the ability to turn on or off the automatic reading of footnotes and figure descriptions. In addition, the 2.01 specification added XML support for full text synchronization. Concurrently, the DAISY Consortium published the Structure Guidelines that explains how the text should be created with XML tagging. Application of the Structure Guidelines is an absolute necessity for consistent usage of the standard in each country and organization.

Tools for Creating DAISY DTB

The first software used to produce DAISY 2.0 books was developed by Labyrinten under an agreement with the Japanese Society for the Rehabilitation of Persons with Disabilities (JSRPD). The “Sigtuna Recorder” (Sigtuna is the name of the town in Sweden where the agreement was crafted) was a modification of the original software developed for the first DAISY DTB. Hiroshi Kawamura, director of JSRPD, made available the SigtUna software without cost by JSRPD to any DAISY Consortium member and to interested organizations in developing countries.

However, the DAISY Consortium envisioned many advancements in the DAISY standard and started the task of developing a professional production tool. The DAISY Consortium negotiated a pre-license agreement with the International Structured Audio Team (ISAT), a coalition between Plextor, Productivity Works, and Labyrinten, to develop the professional production environment. The Product was called LpStudio/Pro (L from Labyrinten and P from Productivity Works). The DAISY Consortium agreed to do the beta testing for the software development project. The extensive requirements the DAISY Consortium put forward meant a long product development cycle, but functionality that would ensure its use in the wide variety of production environments and provide the best product to the end-users.

After two years of development and extensive testing, the software was launched on March 28, 2000. This was a milestone for the DAISY Consortium and the future of DTB worldwide. With this software and the development of the “Basic Training Course,” the proliferation of DAISY DTB could begin.
Building Expertise, the Key to Implementation

The key to a successful implementation plan lies with building expertise throughout the DAISY Consortium. “Train the Trainers” courses, regional training centers, technical conferences, and an extensive technical helpdesk are the supporting facilities designed to develop experts within every organization in the DAISY Consortium. Please see the article in this issue on “Worldwide training and technical support for DAISY” (pp. 1931) for a detailed explanation of the plans for developing expertise in the DAISY Consortium.

DAISY and NISO Working Toward Version 3.0 and Beyond

Strategically, the DAISY Consortium decided to collaborate with all emerging systems to replace talking books that may compete with the DAISY standard. The thinking was that the consortium should participate in any similar activity and bring our experiences with us to the discussions. Any good ideas would be incorporated into the DAISY system and we would assist the other groups to avoid making mistakes. The DAISY Consortium wholeheartedly joined with the National Library Service for the Blind and Physically Handicapped (NLS) to work through the National Information Standards Organization (NISO) to examine the future direction talking books should take.

The collaboration of the many members of the DAISY Consortium and NLS through the NISO framework has been a total success. All organizations are working together to make sure there is one worldwide standard. The current draft is becoming known as the DAISY /NISO 3.0 specification. These efforts are using W3C specifications, as does the current DAISY standard. For detailed information on these efforts, please see the article in this issue on “Digital talking book standards developed by NLS and partners under NISO auspices” (pp. 1924).

Supporting Braille and E-books with DAISY Specifications

As soon as it became clear that full text synchronized with the human narration was the ideal form of a DTB, it also became clear that excellent braille could be produced from the full text. Unlike braille production from scanning or rekeying, the full text in a DAISY/NISO DTB is marked up using XML notation. Having the text fully marked up eliminates the guesswork from braille translation software. Extreme precision can be attained automatically. Joe Sullivan, president of Duxbury, has been a longtime advocate of using markup, but the problem has always been getting correctly marked up data. Now with the movement toward a worldwide standard, efforts are underway to use this technology to facilitate braille production. NLS has contracted with Duxbury for the development of a DAISY/NISO braille translation module that will be incorporated into the Duxbury system.

It is more difficult to create the full text and full audio instead of just the headings and page numbers along with the human recording, but the final product has much greater functionality. Likewise, it is popular to use the full text in conjunction with synthetic speech and not even use digitally recorded human speech. For these reasons, the DAISY Consortium has joined the “Open eBook Forum” (OEBF) as this emerging technology starts to produce eBooks. The OEBF activity has the potential to make mainstream books available as text. The text can be used in the production process for DAISY DTB,
making it more cost effective to produce the full text and full audio. Again, the DAISY Consortium sees the strategic importance of collaborating with the OEBF to push for converging standards.

The organizations in the industrialized world are now making the plans to start the distribution of DAISY DTB in the next few years. DAISY distribution is in full swing in Japan, but other countries are a little further behind. Each organization sets its launch plans individually. Most of the libraries feel they need a sizeable collection of DAISY books before they can begin serving their consumers. Many organizations in developing countries see the importance of this technology as well.

Once the organizations are providing DTB to their clients, the possibility of sharing titles between organizations and countries will be explored. To do this, copyright issues will need to be addressed on a global basis. The DAISY Consortium is exploring these issues as one of the major activities in the overall strategic plan.

**Joining the DAISY Consortium**

Three categories of membership are available in the DAISY Consortium:

1. **Full members.** This is intended for large nonprofit libraries for the blind and print disabled or regional coalitions of such organizations that want to direct the DAISY Consortium. There is substantial monetary and time commitments for full members.

2. **Associate membership.** This is intended for smaller organizations that wish to participate in the DAISY Consortium’s work. Access to the production software, training materials, and participation on work teams is available. The annual cost of membership is set each year at the General Meeting of the DAISY Consortium and is currently at $2,500 U.S. dollars per year.

3. **Friends of the Consortium.** For-profit companies can participate in the mission of the DAISY Consortium by joining as Friends. A wide variety of companies are expected to join as Friends, with the low cost of membership set at $2,500.

If your organization or company wants to join the DAISY Consortium, you should send e-mail to: daisy-board@svb.nl. The Board will promptly reply and provide any additional information and an application form. Please visit the DAISY Consortium web site for complete details!
Further reading

DAISY Consortium Web Site (http://www.daisy.org)
DAISY Specifications and Guidelines (http://www.daisy.org/products/menupps.htm)
World Wide Web Consortium (W3C) (http://www.w3.org)
Recording For the Blind & Dyslexic (RFB&D) (http://www.rfbd.org)
DAISY/NISO developments (http://www.loc.gov/nls/niso)
Labyrinthen (http://www.labyrinthen.com)
Productivity Works (http://www.prodworks.com)
Plextor Inc. (http://www.plextor.com)
VisuAide (http://www.visuaide.com)
Japanese Society for the Rehabilitation of Persons with Disabilities (JSRPD)
(http://www.dinf.org)
Open eBook Forum (OEBF) (http://www.openebook.org)

GUIDELINES TO STRUCTURED MARKUP FOR THE DAISY DIGITAL TALKING BOOK (DTB)

The following information was provided by the Digital Audio-based Information System (DAISY) Consortium and is used with permission.

**Part I: Introduction to Structured Markup**

These guidelines are written to assist producers of talking books. They focus on how the DAISY Digital Talking Book (DTB), is be to marked up or “tagged” to clearly define the structure of the book.

The objective of these guidelines is to recommend how DTBs should be tagged to provide the end user an understanding of the structure of the book, and to introduce means to navigate through the DTB.

The guidelines will show how to recognize the structure elements (e.g., prefaces, chapters, sections, etc.) in a print or electronic textbook, and how to tag those elements using Extensible Markup Language (XML). Throughout these guidelines “book” refers to any type of document, including magazines, workbooks, reference works, etc.

The amount of structure and the number of links set by the DTB producer determine the level of access available to the end user. The more structure and links there are, the greater the access and navigation points. These guidelines offer producers great flexibility in selecting the most suitable approach. However, once the degree of the markup is chosen, it is strongly recommended that directions for tagging provided in these guidelines be followed closely to ensure the markup is “valid.” Markup is said to be valid when it strictly follows a set of rules called a Document Type Definition (DTD), described below.

The DAISY Structure Guidelines describe how to correctly apply the tags from the DTD. The DTD, its correct application according to these guidelines, and the supporting SMIL and HTML/XML files constitute the DAISY standard.

Familiarity with XML markup and with authoring and validation tools is required for those working at a detailed level with structuring according to the DAISY standard.

This introduction presents some of the general aspects of structuring a DTB. Examples of various categories of DAISY DTBs are given from the simplest (audio and title only) to the most complex (audio and full text). Markup is explained, and the order in which content is presented to the end user is discussed. Hierarchy, nesting, and navigation are examined.
The DAISY Digital Talking Book

The DAISY DTB is a collection of digital files (from this point onward referred to simply as “files”) which provides an accessible representation of the printed book for people who are blind, visually impaired and print disabled. These files may contain digital audio recordings of human speech, marked up text, and/or a range of machine-readable files.

The structure of the book is designated by the XML tags and is accessible to the reader by use of a browser or a dedicated playback device. The DAISY DTB utilizes the technology of the Internet with some specialized applications added to provide greatly improved access to the information.

The DAISY standard supports any of the following classes:

- Audio with Title element only: DTB without structure. This is the simplest class of DTB and is used for books where structure will not be applied. The XML file contains only the title of the book, and other required notation. The book must be read linearly. Direct access to points within the DTB is not possible.
- Audio with NCC only (see “The NCC” below): DTB with structure. The XML file contains the structure of the book and may contain links to features such as narrated footnotes, etc. This is the most common form of DTB and is ideal for stand-alone players.
- Audio with NCC and partial text: DTB with structure and some additional text. The XML file contains the structure of the book and the text of components where keyword searching and direct access to the text would be beneficial, e.g., index, glossary, etc.
- Audio and full text: DTB with structure and complete text and audio. This form of a DTB is the most complex but provides the greatest level of access. The XML file contains the structure and the full text of the book. The audio and the text are synchronized.
- Full text and some audio: DTB with structure, complete text and limited audio. The XML file contains the structure and the text of the book. The audio files contain recordings of parts of the text. This type of DTB could be used for a dictionary where only pronunciations were provided in audio form.
- Text and no audio: E-text with structure. The XML file contains the structure and text of the book.

There are no audio files. XML provides the producer with the ability to structure a book in great detail. Compared to HTML markup, XML increases markup options and makes real structure and nesting possible.

A DTB produced under the DAISY specification consists of some or all of the following files:

- An XML file containing some or all of the text of the book with appropriate markup
- Audio files containing the human voice recording of the book
- SMIL (Synchronized Multimedia Integration Language) files containing information linking the audio and XML files
NCC.htm - The Navigation Control Centre — a file containing all points in the book to which the user may navigate

dtdbook3.dtd - The digital talking book DTD, listing the tags defined for use with DTBs and rules for their application

**Dtbook3 DTD**

The Document Type Definition (DTD) used for digital talking books is the Dtbook3 DTD. Its filename is dtbook3.dtd. It is a machine-readable list of allowable tags, the attributes that may modify them, and rules on where the tags may be used. For example, sentence tags ( `<s>` ) can be used inside paragraph tags ( `<p>` ), but not the other way around. To verify that a document has been marked up in accordance with a DTD, one runs a program called a validating parser that compares the markup with the DTD and lists any errors in applying tags, attributes, etc.

Because the DTD is written to be read by a computer it is not easy for a human to understand. The “Expanded DTD” contains the same information as the Dtbook3 DTD but in a format that is more usable by humans. It contains a discussion of DTDs, an alphabetical list of the elements (tags) included in the Dtbook3 DTD, clear statements of what tags can be used inside each element and where, in turn, each element can be used, and information on the attributes allowed for each element. Attributes that must be used whenever a specific tag is used are marked as “required” for that tag. Those that are optional are labeled “implied.” The latest version of the DTD and its associated Expanded DTD can be found at www.loc.gov/nls/niso.

**The NCC**

The NCC (Navigation Control Centre) is a critical component of the user interface of the book in that it provides a view of all the points in a text to which a user may navigate. Each navigation point in the NCC is linked through the SMIL file to the corresponding location in the audio and XML files, providing direct access to that location. The NCC may not be identical to the table of contents (TOC) of the printed edition. (It will usually contain more elements of the book than the TOC does.) The NCC is generated from the XML markup. The way in which the markup is applied will determine what is contained within the NCC.

**Why Markup?**

An analogue book on cassette without tone indexing does not allow the end user to navigate to points within the book. A digital talking book without markup is equally inaccessible.

When a book is prepared for recording for analogue cassette format, a chapter and an appendix usually fit in the same level of the tone index hierarchy and are therefore treated in the same way. In terms of access, distinguishing these elements as different from each other is unimportant. Each is identified by a tone or a set number of tones.

This is not the case when producing a DTB. In the digital world, distinguishing one structural element from another is of great importance; when an element is identified and marked up, properties special to that element can be assigned to it, resulting in
increased flexibility and enhanced navigation for the end user. For example, in an analogue recording the narrator pronounces or spells out an acronym, as appropriate. In a DTB containing a text file that may be accessed by a browser with synthetic speech it is important for the markup to indicate if the acronym should be spelled out or pronounced. Whether the acronym is to be spelled or pronounced is a property assigned to the acronym tag.

Furthermore, when elements are identified they can be displayed according to user needs. A user may not want to hear the sidebars in a book. If the sidebars are identified and marked up with the sidebar tag the end user can choose to skip them, listen to them as they occur, or hear only the sidebars.

In short, markup is the identification and tagging of the components of a text. The more detailed the markup, the greater the access provided to the end user.

**Markup Tags**

Tags are the elements used to markup a book. A tag is basically text that a computer program can understand. Tags are surrounded by angle brackets, “<” and “>” (less than and greater than) which tell the computer that the text within the brackets is information upon which it needs to act. Tags are generally used in pairs to mark the start and end of a tagged item. Note that the end tag contains a slash “/.” In the following example, the <q> tag is used to mark a short quotation:

As Yogi Berra said, <q> “It ain’t over ‘til it’s over.” </q>

The <q> tag indicates the beginning of the quote and the </q> tag indicates the end of the quote.

Please note that in a DTB the tags are not displayed or rendered in any way.

**Attributes**

An attribute functions somewhat like an adjective to provide more information about the structure a tag identifies. One of the most commonly used attributes is “class.” In the following example, class= “chapter” indicates that the “h1” tag is marking a chapter heading: <h1 class= “chapter” >Darwin’s Formative Years</h1>. The attribute “id” is heavily used to uniquely identify each structural element of the book. Other uses of attributes include indicating whether or not an item may be “turned off” as part of a group of items the user wishes to skip, and indicating if an acronym should be pronounced as a word or spelled out letter by letter, as mentioned earlier.

An attribute, if used, must appear in the start tag and the value of the attribute (in the above case, chapter) must be in quotes. In most cases the use of attributes is optional. Note, tags for which they are required will be clearly identified in Part II of these guidelines.
**Required Tags**

The following tags are required for a book to be valid to the Dtbook3 DTD. The complete DAISY Digital Talking book is surrounded by the `<dtbook3>` and `</dtbook3>` tags. Within these, the `<head>` and `</head>` and `<book>` and `</book>` tags must also be present. The `<head>` tags identify information about the book that is separate from the content. The `<book>` tags enclose the whole of the book. The following example illustrates how these tags are used.

```
<dtbook3>
<head>
Information About the Book
</head>
<body>
The entire content of the book, including cover information, etc.
</body>
</dtbook3>
```

Front Matter, Body Matter, and Rear Matter

Within “<book>” the content should generally be divided into three sections called front matter, body matter and rear matter, presented in that order.

**Front Matter**

The front matter consists of information found in the preliminary pages of a book (e.g., title, author, book jacket material, foreword, acknowledgments, dedication, and table of contents) as well as information added by the talking book producer (e.g., date of recording, narrator, studio, special copyright message). The title element must be presented first. See Information Object: Front Matter in Part II(a): Major Structures.

**Body Matter**

The body matter of a book consists of the basic content of the document as distinguished from prefatory and supplementary materials. The body matter may be divided into parts, chapters, sections, etc. See Information Object: Body Matter in Part II(a): Major Structures.

**Rear Matter**

The rear matter consists of material following the main body of the book. Examples are: appendices, bibliographies, alphabetical indexes, etc. These items should be presented in the sequence found in the printed book. See Information Object: Rear Matter in Part II(a): Major Structures.

In summary, the following example shows the use of `<frontmatter>`, `<bodymatter>`, and `<rearmatter>` tags within `<book>`:

```
<book>
<frontmatter>
```
Structure and Hierarchy

The main elements of a document, such as parts, chapters, sections, stanzas, etc., and their interrelationships, constitute its structure. These are ordinarily arranged hierarchically. For example, a novel consisting of an introduction and ten chapters has a very simple structure of eleven elements all at the same hierarchical level. On the other hand, a textbook containing parts, chapters, and sections has a more complex structure with text elements at three hierarchical levels: parts at the highest level, chapters at the middle level, and sections at the lowest level. Appropriate markup is used to identify the proper hierarchical structure of a document.

Levels

Levels describe the relative position of the major structural elements of a book. The hierarchy they define provides the end user with the ability to navigate within the DTB. Therefore it is critical that the markup of levels is correct.

Two methods of marking up levels are allowed by the Dtbook3 DTD. The first uses six tags: <level>, <level2>, <level3>, etc., up through <level6>, with the highest level of a book tagged as <level>. The second method uses a single <level> tag to mark all levels, with differences between the levels defined by the “depth” attribute. (See “Attributes” above; see also Alternative Markup in Part II(a): Major Structures). In the following examples and discussion, only the level 1 through level 6 method is described.

A level is marked up in the following way:

1. Determine at which level the structural component (part, chapter, section, etc.) is to be placed and use the class attribute to name it.

   <level class=“chapter”>

If the highest level of the book is “Part” the tag should read <level class=“part”> and, if the next level consists of “Chapter,” the second level should read <level2 class=“chapter”>. If a book is made up of chapters which contain sections, the chapters should be tagged <level class=“chapter”> and the sections tagged as level <level2 class=“section”>. In a book with one level (chapters) only the <level class=“chapter”> tag would be used.

It is not necessary to use the class attribute names shown in the examples in these guidelines (part, chapter, section, etc.). A level can be called anything that doesn’t
violate basic naming conventions (spaces, colons, commas, and periods cannot be used in attribute names). <level class="kazong"> is a valid name, even if it is not very descriptive. DTB producers should assign names to levels using their local language. For example: <level class="kapitel"> (Nordic for chapter).

If the structural component has a heading in the print book, mark it using the tags <h1> through <h6>. The number of the level and the heading must be identical (h1 for level, h2 for level2, etc.). The class attribute value used in the level tag must also be used within the heading tag.

For example: <level class="chapter">
<h1 class="chapter">Darwin’s Formative Years</h1>

The level tags are the container for the part, chapter, etc., while the h1 to h6 tags mark the heading for that part, chapter, etc. At the end of the structural component being contained by the level it is necessary to insert the level end tag: </level2> (end of level 2), </level> (end of level).

For further discussion of levels, see Information Object: Levels in Part II(a) Major Structures.

Nesting

According to the Daisy Structure Guidelines, components at different levels in the hierarchy must be nested, that is, contained one within the other. This means that a component at a lower level must fit completely inside the higher level. In other words, when a second tag is opened before the previous tag is closed, proper nesting must be observed—the second tag must be closed before the first is closed.

Valid markup: <level> <level2> </level2> </level>

Invalid markup: <level> <level2> </level> </level2>

In addition, when marking up levels using the level to level6 tags, the tags must be used in sequence. For example, a level3 must be preceded by a level2, and a level2 by a level1. A level3 element (e.g., section) that is not inside a level2 element (e.g., chapter) will be invalid to the DTD. If the document is run through a validation process (via a parser) the invalid markup will be flagged.

Navigation and Hierarchy

The hierarchy in the DTB reflects the hierarchy in the print book. The markup used in the DTB to represent the hierarchy determines the extent of navigation available to the end user. In most cases, only structural components with headings should be identified using the level to level6 tags. Components such as acknowledgments or dedication sometimes appear in the print book without a heading, in which case they should be marked up with the <div> tag (See Major Structures).

The producer must impose a structural scheme in the digital talking book when it is absent from the print book. In some cases where the structural scheme is unclear, it may
be necessary to promote a level, add a level or, flatten the hierarchy. As long as the final result is a well-structured digital talking book the producer has the flexibility to do this. For example, sometimes there is a discrepancy between the appearance of a heading, as indicated by typography, and the apparent hierarchy in the printed book. A subheading printed in the same typeface as level 3 headings in that book may appear as the first heading following a chapter heading at level 1. This could be due to various reasons. First, there may be no true hierarchy in the book and the typography used could reflect an aspect of content rather than hierarchy. In such cases it would be possible to flatten the hierarchy in the DTB, placing such headings at an appropriate superior level. Second, there may be a hierarchy in the book which is not correctly represented by the typography. In this case the actual hierarchy should be reflected in the DTB regardless of the typography.

Sequential Structure

The contents of a DTB should be presented to the end user in the order in which they appear in the printed book. That sequence does not necessarily relate to the physical location of the digital information in a DTB, or to the order in which the contents are narrated. Proper sequence is especially important for the end user who does not navigate randomly through the DTB, but instead listens to it from beginning to end.

A presentation sequence should be established where none exists in the original document. For example, some material such as pictures, sidebars, boxes etc. “float” within the surrounding text. That is, they do not fall at a clearly identified point within the text. They are positioned on the print page for visual effect and may not be meant to be read at a single specific point within the surrounding text. The talking book producer must establish the sequence in which such elements are presented within the surrounding text.

Such floating information may be vital for the understanding of the continuous text, but text and floating information may also function more or less independently of each another. When such material is inserted into the text this should be done close to existing reference points or else close to the most relevant point in the text, without disrupting the narrative. Because sighted listeners and low-vision customers may use the DTB as a support for visual reading, it is important to insert this kind of material on the same page as it occurs in the printed book, if possible.

Some books rely strongly on visual presentation and have no continuous text. When there is no apparent order in the printed book an order must be established for the DTB. This is done according to the conventions of the producing country. For example, in the western world a left to right, top to bottom sequence would be appropriate.

In a DTB it may sometimes be beneficial to move selected material, (e.g., picture captions) from its location in the print book and gather it into a section created for the DTB. This section should be placed at an appropriate point within the overall sequential structure, often as part of the rear matter.
Page Identification

General Instructions
It is not a requirement that pages be individually tagged in a DTB, but it is strongly recommended for textbooks or books that may be used for study purposes. When tagging the pages of a book, all pages should be included. Unnumbered pages are tagged without being assigned a page number.

To aid in navigation, each page number should be placed at the top of the page preceding the first text on the page, regardless of its location in the printed book. This allows the “Go To Page” feature of most players to navigate directly to the top of a given page, so that playback begins with the requested page and includes the full content of that page.

Books Containing Blank Pages
Blank pages should be tagged and assigned the appropriate page number regardless of whether it appears in the print book. The listener should also receive aural confirmation of the existence of blank pages. For example: “Page 43 —blank page.”

See Inline Elements: Information Object: Page Numbers for a more complete discussion of this topic.

Producer’s Notes
Information added to the DTB by the producer should be tagged as producer’s notes using the <prodnote> or <prodin1> tags. “Prodnote” is used to tag notes in block settings (where the producer’s note is a separate paragraph or group of paragraphs) and “prodin1” is used in inline settings (where the note consists of one or more sentences contained within a larger block of text). Producer’s notes may be used in the front matter, body matter or rear matter of a DTB. In the front matter, producer’s notes may contain information such as a special copyright message, differences between the DTB and the print book, narrator’s name and production date, etc. In addition, “How to use this DTB” may contain a general description of the structure of the book, number of levels, navigation features, etc., without reference to any specific playback platform. The body matter will often contain producer’s notes incorporating descriptions of pictures, diagrams, maps, etc. Producer’s notes in the rear matter may contain information about the production of the DTB that is not included in the front matter.

The producer should classify producer’s notes as either required or optional via the “render” attribute. The end user may then choose to have the material that is classified as optional turned on or off. “How to use this DTB” would typically be classified as required whereas descriptions of pictures could be classified as optional.

Copyright @ 1999 DAISY Consortium
Used by permission
NATIONAL LIBRARY SERVICE FOR THE BLIND AND PHYSICALLY HANDICAPTED: DIGITAL PLANS AND PROGRESS

The following article appears in the journal “Library Hi Tech,” Volume 19, Number 1, ISSN 0737-8831 and is used with permission.

by John Cookson and Lloyd Rasmussen

John Cookson (jcoo@loc.gov) and Lloyd Rasmussen (lras@loc.gov) are both based at the National Library Service for the Blind and Physically Handicapped (NLS), The Library of Congress, Washington, DC, USA.

Keywords: Disabled people, Information technology, Blind people, Information services.

Abstract: The National Library Service (NLS) produces about 2,000 talking books and 50 magazines per year on specially formatted cassette tape for free distribution to a readership of about 764,000. Cassettes and special players are delivered by U.S. Postal Service from a network of 138 participating libraries. To control the cost of technical obsolescence and to meet patron and sponsor expectations, NLS will replace this analog system with a digital system over the next ten years.

Electronic access: The research register for this journal is available at http://www.mcbup.com/research_registers. The current issue and full text archive of this journal is available at http://www.emerald-library.com/ft.

Background

The increasing prevalence, popularity, and economy of digital electronics motivates the National Library Service (NLS) to work rapidly toward a completely digital audio service. This means using digital methods throughout the production and distribution stream, from studio recording of digital original masters and digital collection management to digital product distribution and playback. The length and complexity of the transition are consequences of size. NLS annually circulates about 22 million audio books and magazines nationwide and supports the use of about 721,000 cassette playback units. Further information on NLS, including the agency’s mission, organization and history can be found on the NLS web site [1]; see, particularly, the area titled “About NLS” [2], where “Basic facts about NLS” and other summary information can be found.

Plan

The National Library Service (NLS) produces about 2,000 talking books and 50 magazines per year on specially formatted cassette tape for free distribution to a
readership of about 764,000. Cassettes and special players are delivered by U.S. Postal Service from a network of 138 participating libraries. To control the cost of technical obsolescence and to meet patron and sponsor expectations, NLS will replace this analog system with a digital system over the next ten years. In response to the high-risk digital-transition challenge, NLS has published a summary master plan and has made significant progress toward its implementation. The plan can be found on the NLS web site under “Digital talking books: planning for the future” [3]. Of particular interest are the articles “Planning for the future” and “Twenty steps to next-generation NLS technology.” In our synopsis of implementation presented below, we will refer to specific topics mentioned in the cited articles.

**Progress**

NLS’s implementation activity has been focused on three major project areas:

1. our digital audio development project;
2. our standards-setting effort; and
3. local research and development.

**Digital audio development project**

Immediately following its inception in September 1998, this NLS committee identified three areas for pursuit of our digital future:

1. cost modeling;
2. product simulation; and
3. collection access.

**Cost modeling**

One of the essential components of technology-transition decision-making is relative cost. In the simplest terms, we must know the cost of providing service using the incumbent technology, we must be able to project this cost out to a ten-year horizon, and we must be able to estimate the cost of the digital alternative. To this end, we have engaged a commercial firm with expertise in cost modeling to build a software tool that will enable us to make the required estimates and support decision making.

When a technical advancement, such as dense solid-state memory, is introduced into the consumer entertainment market, a plethora of competitive products are introduced at premium prices. Market pressures and the quest for standards cause losers to disappear, while demand causes winners to fall in price, sometimes precipitously. On the other hand, older technology can experience price escalation and availability problems as demand declines. Our model is designed to capture and depict these phenomena so that we can identify more economical technology as well as the best time and level of investment to recommend. When subject to critical scrutiny, the model’s inputs and computational procedures must be able to engender credibility and confidence. As of this writing, working in consonance with the contractor, NLS has drafted a data dictionary that defines the name, meaning, and source of each data element used in the model.
We have also reviewed some of the computational procedures that the model will use to compare various technologies that NLS might consider. We anticipate the review process to be completed by mid-March and delivery of a prototype by mid-May. The prototype will allow users to evaluate the input-output interface, check computational validity, and find bugs. Although it is very unlikely that NLS will implement a CD-ROM-based system, for purposes of test and verification, the design team is under contract to demonstrate a comparison between the use of cassette tape and CD-ROM. The model should be fully operational by mid-September, and we look forward to making it an evolving working tool that will be updated and maintained throughout the technology-transition process.

Collection access

The last step in the technology-transition process is to gradually replace cassette players with portable digital playback devices. This final step in the transition will be built upon changes in digital production, storage, and distribution methods that are made far in advance of providing digital players. Our plans are to have a digitally mastered collection of about 10,000 titles available no later than 2008. To this end, NLS has published its intent to require all of its contract producers to phase in digital original mastering over the next four years. In support of this requirement that will involve the writing and review of technical specifications, NLS studio personnel are testing a digital mastering system in-house. This effort is intended to build expertise while providing the first titles for a digital collection, and will be followed by another in-house studio installation and the exploration of efficient methods for quality checking of digital material.

In parallel with the innovation in digital mastering, NLS is exploring the selective conversion of audio in the analog collection to a digital format. In one multi-state center we have installed a system that efficiently uses analog-to-digital conversion to make digital cassette copies of open-reel analog masters. Besides building expertise in efficient and high-quality digital conversion, the computer-based system permits archiving on CD-ROM and quality enhancement of older recordings. Testing and evaluation of these capabilities is presently in progress.

As digital original masters become available from the NLS recording studio and contract producers, we intend to experimentally store them on media and in formats designed to facilitate a particular function. There will be a shelf or archive copy on CD-ROM in the same format as the digital original master, most likely a WAV file of 16-bit PCM sampled at 44.1 kHz. There will also be a version stored on a large magnetic disk array (not connected to the Internet) that could be an exact copy of the archive copy or a version that has been formatted by a data-reduction algorithm such as MPEG Layer 3. The archive will teach us about problems in long-term storage, and the disk array will permit experiments in formatting and data reduction. A prototype system with about 90GB of storage is presently in place at NLS. This system cannot be connected to the Internet because the technology for the protection of intellectual property is in development. This kind of technology comes under the general heading of Digital Rights Management (DRM), and is the subject of intense discussion in the publishing and library communities. There are many complex issues on the table, and we are following events closely so that any system that we eventually adopt will be acceptable to rights owners.
Product simulation

The production, management, and playback of digital products involves the development and maintenance of computer software. As this assertion suggests, required software can be divided into the three identified categories. Our approach to audio production software is to use off-the-shelf products that drive digital mastering equipment and produce WAV files. Using other production software to help build a digital talking book (DTB) from the audio files, plus whatever part of the corresponding text is available for integration, is an area that will receive more attention as the need for product simulation comes into focus. Programs that can help generate and validate XML, as well as programs to time-align audio with the corresponding text, will be evaluated.

For the management of digital products our initial approach will be to use conventional file management software found in popular computer operating systems. As the collection expands we will consider the use of software more attuned to our particular data set. In this case there may be an opportunity to use some of the software presently used to manage the audio material that is part of the Library of Congress’s Digital Repository Project.

One of our most challenging and interesting software requirements is the need to simulate future playback equipment. This software will allow us to check the feasibility of putting various features into portable hardware, assist us in the development of user interfaces, and permit us to test the compatibility of DTBs. We have done some experiments locally with software components such as systems for interactive control of playback speed without pitch distortion, but have yet to build a fully functional system. We intend to survey the commercial software market to determine approximate cost and level of interest. Our request for information will appear in the Commerce Business Daily during the second quarter of this calendar year. We expect to be able to identify the required software expertise at an affordable price. An appreciation for the complexity of this undertaking is apparent from the DTB feature list [4].

Standards setting

Under the auspices of the National Information Standards Organization, an affiliate of the International Standards Organization, NLS is leading a group of experts in the development of a DTB standard. For a more detailed discussion of why and how the standards process was begun, please see “Talking books: toward a digital model”[5], our paper delivered at CSUN 3/97.

Because the development of this standard plays such a central role in our digital strategy and because it has such pervasive and persistent implications, we treat it with a separate article in this special ITD issue. Please see “Digital talking book standards developed by NLS and partners under NISO auspices” (pp. 19-24) [6].

Local R&D

In support of our progress toward a fully digital future, NLS has undertaken an eight-point in-house technical research and development program. The thrust of this program is threefold: evaluate potential DTB components, build expertise competent to develop
technical specifications, and maintain a clear view of where consumer products are headed. Specific areas under study include audio data reduction algorithms (e.g. MPEG Layer 3), variable rate playback methods, text-to-speech programs, and user interfacing hardware. For a complete list of topics please see our planning document, “Digital talking book: technical activity planning” [7].

Besides building and maintaining digital expertise, our R&D program has yielded some interesting results. In the area of variable rate playback, for example, we have tested an algorithm from Enounce Inc. [8] called TimePlay, and found it to produce high-quality audio with real-time user control. We have conducted experiments in the use of MPEG Layer 3 and found that at a 10-to-1 data reduction ratio few listeners can distinguish the original from the processed audio. We have recently acquired and listened to Lernout & Hauspie’s state-of-the-art speech synthesis software called RealSpeak, noting performance that is good and interesting, but not equivalent to rendition by a talented narrator. For more detail on progress in these and the other R&D areas, please see “Digital talking book technical activity: summary report” [9].

Some of the areas that we are closely following in the consumer marketplace include the emergence of electronic books, both audio and text-based. Of particular interest are new reading models offered by Audible and Gemstar. Audible plans to target the auto commuter market with frequently updated material from newspapers and magazines as well as novels and other leisure reading are being developed. They distribute encrypted spoken audio via the Internet to proprietary devices for playback on an auto sound system. Their significant investors include Microsoft, and there will be an effort to offer audio synchronized with text on Microsoft-supported platforms. Gemstar, the company with a dominant interest in TV Guide and VCR Plus, has recently acquired Softbook and RocketBook. Both of these enterprises market text-based reader devices that display Internet-delivered encrypted content that is accessible only on a specific reader. Gemstar plans to expand reader options, include audio capability, and mount a large advertising campaign. It hopes to get about 35 million consumer units into service within about five years. One possible sales strategy will be modeled on the cell phone, where the hardware is offered at well below manufacturing cost with the purchase of a minimum value of content. At NLS we have purchased both Softbook and RocketBook readers as well as an Audible player and sample material for evaluation. At this time the players are not suitable for use by blind and physically handicapped individuals, but if the market is opened to competing devices, there is reason to evaluate any promising product. Our R&D program will include these evaluations. A de facto industry standard for content may also be a competitive outcome that we will both monitor and influence through participation in Open eBook discussions. Open eBook is a consortium of companies that have drafted a standard for electronic text so that it can be displayed by any device conforming to the standard. For more details please see the Open eBook website [10].

Conclusion

Converting NLS from an analog cassette-based talking-book system to a digital enterprise with a readership of over 764,000 is a complex and challenging task. We are approaching the task in a step-by-step manner, as outlined in the plan cited above, and view it as an opportunity to enhance user satisfaction through the introduction of advanced technology.
Notes

1 http://www.loc.gov/nls
2 http://www.loc.gov/nls/reference/facts-books.html
3 http://www.loc.gov/nls/dtb.html
4 http://www.loc.gov/nls/niso
5 http://bubl.ac.uk/journals/lis/com/itad/v04n0197/article2.htm
6 anotherarticle.htm
7 http://www.loc.gov/nls/promotional/digtb.html
8 http://www.enounce.net/
9 http://www.loc.gov/nls/promotional/techo899.html
10 http://www.openebook.org/

The following article appears in the journal “Library Hi Tech,” Volume 19, Number 1, ISSN 0737-8831 and is used with permission.

By John Cookson, Michael Moodie, and Lloyd Rasmussen

John Cookson (jcoo@loc.gov), Michael Moodie (mmoo@loc.gov) and Lloyd Rasmussen (lras@loc.gov) are all based at the National Library for the Blind and Physically Handicapped (NLS), The Library of Congress, Washington, DC, USA.

Keywords: Disabled people, Information technology, Standards, Blind people, Books.

Abstract: The functionality, compatibility, and longevity planned for future digital talking books require clear, exact definitions of component format and content. NLS will achieve this by working with a diverse team of experts to establish an applicable standard. This article outlines the plan, describes progress, and indicates what further work is necessary to complete the standard.

Electronic access: The research register for this journal is available at http://www.mcbup.com/research_registers. The current issue and full text archive of this journal is available at http://www.emerald-library.com/ft.

Overview

Under the auspices of the National Information Standards Organization (NISO), a standards developer accredited by the American National Standards Institute, NLS is leading a committee of experts in the development of a digital talking book (DTB) standard. For a more detailed discussion of why and how the standards process was begun, please see our CSUN 97 paper, titled: “Talking books: toward a digital model”[1].

The committee has taken a general approach to a DTB standard to accommodate a wide variety of books, users, producers, and playback devices. There is interest in compatibility with commercial electronic books as well as ease of interaction on an international basis. To this end there is common membership with groups of similar interest, specifically, the DAISY Consortium, the World Wide Web Consortium, and the Open eBook Forum. This perspective allows us to utilize rather than duplicate prior work and enhances the standard’s prospects for longevity and support. The committee’s membership may be found on the NISO Standards Committee site [2]. A DTB is envisioned to be, in its fullest implementation, a group of digitally encoded files containing an audio portion recorded in human speech; the full text of the work in electronic form, marked with the tags of a descriptive markup language; and a linking file that synchronizes the text and audio portions.
As this document illustrates, such a structure will allow the DTB user a broad range of capabilities not possible with cassette talking books. The standard uses concepts and components found in other open web-based standards, specifically, Open eBook, Synchronized Multimedia Integration Language (SMIL), and Extensible Markup Language (XML). For more details on these please see:

- Open eBook Forum [3].
- Synchronized Multimedia [4].
- Extensible Markup Language (XML) [5].

The standard covers three different classes of players from very simple to very sophisticated and six different types of books, again, from simple to complex. All text files use the ASCII character set. For an overview of the larger NLS digital audio development project please see the companion article in this issue entitled (pp. 15-18), “National library service for the blind and physically handicapped: digital plans and progress.”

**Components**

The provisions of the NISO DTB standard are expressed in two different kinds of documents: normative and formative. Normative documents define the characteristics of a product required for standard compliance. Informative documents provide general information about the standard and recommend ways to achieve compliance. The informative documents presently consist of the following:

(1) *Prioritized list of features for digital talking book playback devices.* As the name indicates, this document describes characteristics of DTB playback systems. It allows for three different types of players: very simple hand-helds, mainly for linear leisure reading; more complex portables, mainly for students and professionals; and user-supplied computer-based players capable of supporting the most sophisticated features. Features are prioritized as essential, highly desirable, or useful for each type of player, and include functions such as variable-speed reading, book-marking, and the ability to immediately access items listed in a table of contents. The full feature set may be found at the Digital Talking Book Standards Committee’s document titled, “Playback device guidelines”[6].

(2) *Document navigation features list.* Although the prioritized feature set mentioned above contains general navigation requirements, the topic is complex enough to motivate a separate explanatory document. The Navigation Features List [7] describes mechanisms for immediate random access to selected areas of a book, and other capabilities such as searching, highlighting, excerpting, and skipping user-selected elements.

(3) *Structuring guidelines for digital talking books.* The Structuring Guidelines document tells DTB producers how to put XML tags into text so that the relationships between components are properly represented. It suggests where tags from the allowable set should be inserted into a document and indicates the proper syntax. For example, `<p>` marks the beginning of a paragraph and the end is marked by `</p>`. Consult the document titled, “DAISY structure guidelines”[8] for more information.
(4) *Open eBook Standard.* We refer to this standard because it represents an industry effort to achieve compatibility among various playback devices and content from various producers. We recognize that for the widest and most enduring support it is advisable to converge on standards that dominate the consumer market. Moreover, eBook participants have a keen and authoritative interest in resolving difficult issues such as digital rights management (DRM) methods and metadata requirements. One section of the eBook standard that is of particular interest is the package file. This file lists the components of a given product and indicates various relationships among them. For example, the spine area of the package file lists product files in a logical linear reading order. It appears that with minor modifications, the package file specification, which is embodied in an XML document type definition (DTD), would be suitable for use in the DTB standard. The modifications would expand the allowed file types to include various audio formats.

The normative documents that comprise the standard presently consist of the following:

(1) *Digital talking book (DTB); Document type definition (DTD).* This technical paper defines what XML tags are to be used to indicate the structure of a particular document and the proper syntax for their use. As with all DTDs, it is typically used by parser software to verify that target documents are “well formed” and “valid,” i.e. are properly marked up. A DTD is typically read only by a computer. The application of this DTD is the subject of the Structuring Guidelines. For a view of the DTD and its history, please see the document titled, “Document type definition (DTD) for digital talking books” [9].

(2) *DTB Bookmark DTD.* This technical paper defines the structure, syntax, and content of a bookmark file. Bookmark files are portable files to be composed and read by various playback devices. They are designed to allow a user to set a large number of bookmarks or highlight many sections and attach text or audio labels to them. To ensure compatibility, it is necessary to define a standard format. This DTD is nearing completion. In service it would be directly used only by player software, not by the patron.

(3) *DTB navigation control center for XML applications (NCX) DTD.* This technical paper defines the structure, syntax, and content of a file called the Navigation Control Center that is used by a player to provide a direct access to various areas of the book being read. The NCX is typically built by software and accessed directly only by player software. This DTD is nearing completion.

(4) *DTB package file DTD.* This technical paper defines the structure, syntax, and content of a file called the package file. The concept and most of the details are borrowed from the Open eBook Forum. The package file would be built by software with producer intervention and accessed directly only by playback software. This DTD is posted on the Open eBook site and suggested modifications will be the subject of discussions at the eBook Forum.

(5) *DTB file specification.* This technical paper defines the types of ASCII (text) and binary (audio and image) files that are allowed in a DTB. Most of the text files are of the XML type and consist of the following:
Book text with tags added to indicate its structure, e.g. RevStd.XML.
Package file to identify the DTB, list contents, include metadata, e.g. RevStd.OPF.
SMIL file for fast access and synchronization of text with audio, e.g. RevStd.SMIL.
NCX file to enable fast access to book components, e.g. RevStd.NCX.
Bookmark file containing points of interest marked by the user, e.g. RevStd.BKM.

There is one other type of text file besides XML: CSS files that tell the player how to present the material to the user, e.g. RevStd.CSS files that tell the player how to present the material to the user, e.g. RevStd.CSS.

Binary files can be divided into two classes, audio and image. Audio files are as follows:

- PCM files represent audio with numeric samples like music CDS, e.g. RevStdFwd.WAV.
- ADPCM files are similar to PCM but more compact, e.g. RevStdIntro.WAV.
- MPEG files are very compact but have adequate fidelity, e.g. RevStdHist.MP3.

Binary image files in formats such as JPEG are also allowed, but the set of allowed formats has not yet been determined.

**Sample book**

On the basis of their relative audio and text content, the specification identifies six different classes of books listed below. The producer will select the class for a particular book on the basis of production cost, e.g. no. 6 (low) versus no. 4 (high); the book’s topic and structure, e.g. novel versus cookbook; and patron need, e.g. textbook for classroom use versus leisure reading.

1. audio with only the title in text; access is similar to audio cassette;
2. audio with NCX only; allows direct access to segments, e.g. parts, chapters, sections, and subsections, via a text table of contents;
3. audio with NCX and partial text; access is as in no. 2; partial text example might be an index;
4. audio with NCX and full text; access is as in no. 2; plus direct audio access at the paragraph or sentence level;
5. full text with NCX and minimal audio (e.g. dictionary); access as in no. 4;
6. text only; synthesized audio only; access similar to a word processor is possible.

To help clarify concepts found in this paper we present an example of a DTB in terms of five components. Because it is the most comprehensive type we choose an example from class no. 4, audio with full text.

1. **Package file.** The package file contains general information about the book such as the title, subject, ISBN, and brief description. It contains an inventory of all of the files in the product, a linear order of presentation, and other information to help the player quickly find selected points in the book. Excerpts from the package file follow:

   <dc:Subject> library information networks</dc:Subject>
(2) **XML text.** The XML text is a file representing the source document as tagged to indicate structure and component relationships. The XML tags tell a playback device exactly what each block of text is and allows the device to present material appropriately. The DTB for a book such as a novel recorded by NLS would typically have no text component, except perhaps a table of contents. The DTB for a textbook recorded by Recording for the Blind and Dyslexic (RFB&D), or a reference work produced by NLS, however, might have the full text as a component. Excerpts taken from the text tile of the sample book presented above follow:

<ul><li>Foreword 1</li></ul>
<ul><li>History 1</li></ul>
<ul><li>Development of Standards 2</li></ul>
<ul><li>Structure of the National Network 4</li></ul>
<ul><li>Acknowledgments 6</li></ul>
<ul><li>Introduction 7</li></ul>
<ul><li>Standards 16</li></ul>

<level1 class="forward" id="lvl1_3"><pagenum id="p 1" page="normal">1</pagenum> <h1 id="h1_3">Foreword</h1> <level1 id="lvl1_3"> <h2 id="h2_1">History</h2> Today’s network is a confederation of 56 regional libraries, 86 subregional libraries, and two multistate centers serving eligible readers and is the result of more than 100 years development and experience. Before the turn of the century, library service for blind people was initiated by several libraries throughout the USA. The Boston Public Library established a department for the blind in 1868 after receiving eight embossed volumes. Between 1882 and 1903 public libraries in Philadelphia, Chicago, New York City, and Detroit established circulating collections
of embossed books for the blind. New York was the first state to create a department for
the blind in a state library.</p>

(3) **NCX file.** The XML text file excerpted above has tags within it at all of the points
that a reader can access directly. In theory, a player could locate them on demand from
the XML file, however, this would pose a significant computational burden on the
player and might make response time uncomfortably long. To make entry points more
readily available, the standard includes a Navigation Control Center (NCX) that lists
key entry points and makes access faster. In the following excerpt each <audio> tag
indicates the audio clip for the heading of an entry point, e.g. the narration saying
“Foreword,” the <text> tag shows what would appear on the screen of a PC-based
player (useful for readers with visual impairment or reading disabilities), and the
<content> tag holds the link to the synchronized text and audio of the given section of
the document.

```xml
<?xml:stylesheet type="text/css" href="ncx12.css"?>
<!DOCTYPE ncx SYSTEM "ncx17.dtd">
<ncx>
<head>
<title> Revised Standards and Guidelines of Service for the Library of Congress
Network of Libraries for the Blind and Physically Handicapped 1995</title>
</head>
<doctitle>
<text> Revised Standards and Guidelines of Service for the Library of Congress
Network of Libraries for the Blind and Physically Handicapped 1995</text>
<audio src="RevStd.MP3"/>
</doctitle>
<NavStruct id="main" class="main">
<navLevel levelNumber="1">
<navObject class="level1" id="lvl1_3">
<text>Foreword</text>
<audio src="RevStdFwd.MP3" clipBegin="00:01.5" clipEnd="00:02.0"/>
<content src="RevStd.SMIL#h1_3"/>
</navObject>
<navLevel levelNumber="2">
<navObject class="level2" id="2_1">
<text>History</text>
<audio src="RevStdFwd.MP3" clipBegin="00:03.4" clipEnd="00:03.9"/>
<content src="RevStd.SMIL#h2_1"/>
</navObject>
</navLevel>
</navStruct>
</ncx>
```

(4) **Audio.** A typical DTB will have as its largest component a set of digital audio files
that contain a narrated rendition of the book. The specification will allow a variety of
audio formats such as PCM, ADPCM, and MPEG Levels 2 and 3. The final set of
supported formats has not yet been specified. Because they are usually quite large, we
do not provide an example within this document.

(5) **SMIL.** Except for a text-only DTB, every DTB will have one or more SMIL files. This
entity relates text to the corresponding audio in terms of specific timing. It instructs the
player, for example, to display a particular line of text while playing audio from a
particular point in a designated audio file. Envision a user issuing a command to a player such as “go to Chapter 5.” The player reacts by finding information in the NCX that points to an entry in a SMIL file that in turn will cause the player to begin displaying text and playing audio at Chapter 5. Response is rapid because all of the necessary information is at hand; the player need not scan the text file for “Chapter 5” and try to figure out where and from which file to begin playing audio. SMIL files are generated by computer software from the XML text file and timing information generated by authoring software or audio analysis software. Excerpts from a SMIL file follow:

<smil>
<head>
<meta name="title" content="Revised Standards and Guidelines of Service for the Library of Congress Network of Libraries for the Blind and Physically Handicapped 1995"/>
<layout>
<body>
<seq>
<par id="p1" uGroup="pagenum">
<text region="text" src="RevStd.XML#p 1"/>
<audio src="RevStdFwd.MP3" clipBegin="0s" clipEnd="0. 9s"/>
</par>
<par id="p2" uGroup="pagenum">
<text region="text" src="RevStd.XML#p2"/>
<audio src="RevStdFwd.MP3" clipBegin="00:53.9" clipEnd="00:54.6"/>
</par>

**Validation and testing**

The committee will develop software systems and standard books to support validation and testing. Standard books will consist of one of each class of DTB. These books will be carefully built and rigorously checked for conformance with the specification. They will serve as benchmarks for testing players. They will help developers build compatible players and will enable evaluators to verify that player features are properly implemented.

In the process of building standard books it may be convenient to write software to help check their consistency and accuracy, for example, software to verify that all of the files mentioned in the package file are present and have the expected format. Such software could screen books for conformance to the specification.

The largest software effort will be the writing of PC-based players; there may be several based on different program components. Players will serve several purposes. They will confirm that the specification can be implemented with a PC and test the conformance of books to the specification. They will indicate the relative difficulty and expense in implementing various player features and help with interface design.

Validation and testing software is considered necessary support for the specification, but not an integral technical component.
Conclusion

Although there are additional technical components of the specification not mentioned in this article, the ones described above constitute the core of the specification. They are presented to give the reader a concise view of the essential elements and an insight into the complexity of DTBs. The NISO DTB committee targeted September 2000 for making a draft specification available for comment on the NISO web site. Observers can monitor our progress by occasionally checking news items on the NLS web site.

Notes

1 http://bubl.ac.uk/journals/lis/com/itad/v04n0197/article2.htm
2 http://www.niso.org/commitaq.html
3 http://openebook.org/
4 http://www.w3c.org/AudioVideo/
5 http://www.w3c.org/XML/
6 http://www.loc.gov/nls/niso/features.htm
7 http://www.loc.gov/nls/niso/navigation.htm
8 http://www.daisy.org/dtbook/guidelines/draft/structguide.htm
9 http://www.loc.gov/nls/niso/dtd.htm

RECORDING FOR THE BLIND AND DYSEXIC (RFB&D)
QUESTIONS AND ANSWERS

The following information was provided by Recording for the Blind & Dyslexic (RFB&D) and is used with permission.

What is Recording for the Blind & Dyslexic (RFB&D)?

RFB&D is the nation’s educational library for people who cannot effectively read standard print because of a disability such as a visual impairment or a learning disability like dyslexia. Across the United States, more than 91,000 students use RFB&D’s taped textbooks. Currently, RFB&D has over 83,000 titles in its Master Tape Library, ranging from Dr. Seuss to Introduction to Biology to Quantum Physics and Black’s Law Dictionary.

Our mission is to create opportunities for individual success by providing, and promoting the effective use of, accessible educational materials. Our vision is for all people to have equal access to the printed word.

Recording for the Blind - as we were originally known - was founded in 1948 by New York City philanthropist Anne T. Macdonald in the attic of the Yorkville Branch of the New York Public Library. Mrs. Macdonald’s idea to record textbooks for blind students was inspired by a number of letters received by the library from blinded veterans of World War II who wanted to pursue a college education on the GI Bill but could not because college texts were not readily accessible.

From those beginnings, RFB&D grew to include textbooks and other educational materials at all academic levels, from kindergarten through graduate school. In 1995, we changed our name to Recording for the Blind & Dyslexic to reflect the growing number of people with learning disabilities who use our services as a successful accommodation.

What are print disabilities?

Print disabilities are impairments that prevent people from reading standard print due to a visual, perceptual or physical disability. RFB&D believes that all people should have ready access to the printed word - regardless of their disability.

How does RFB&D help people with dyslexia?

Dyslexia, the most common type of learning disability, refers to difficulty with reading. RFB&D taped textbooks provide an accommodation for students with dyslexia because they encourage a multisensory approach to learning. Students report that hearing the words while reading along greatly enhances their comprehension, reading speed and retention. In fact, recent studies have confirmed that people with dyslexia show greater activity in the part of the brain that processes sound and less activity in the area where the written word is processed.
How are RFB&D textbooks different from other audio books?

Unlike other companies that provide popular titles and periodicals, RFB&D provides only textbooks, educational and reference materials to people with disabilities who learn through listening. Another difference is the equipment. RFB&D uses four-track audio tapes and tape players instead of the standard two-track tapes most commonly used by the general public. This means that more recorded material fits onto fewer tapes.

Is RFB&D keeping pace with advances in technology in education?

RFB&D is now beginning to transition from analog to digital recording which combines the human voice and synchronized electronic text. By late 2002, RFB&D will have available to our members a core library of up to 3,500 of our most requested titles on CD-ROM. Digital audio textbooks can be played on a specialized CD player or on a standard multi-media PC. Additionally, textbooks on CD-ROM level the playing field for students who learn through listening by providing immediate access to information and unprecedented navigation by page or chapter. These functionalities make digital textbooks more effective study tools. CD textbooks from RFB&D will also offer new convenience for students. The contents of a standard textbook can be accessed from a single compact disk which will hold up to 45 hours of recorded material; a standard textbook requires eight to twelve four-track cassette tapes.

How are books converted into taped textbooks?

More than 5,700 skilled volunteers in 32 studios across the United States read and record textbooks used by RFB&D members. While all readers are welcome, there is always a need for readers specializing in math, the sciences, computers, foreign languages, the fine arts and music. RFB&D requires readers have expertise in the subjects they are reading to ensure fluent, accurate and consistent presentation of material as well as detailed descriptions of any visual material in the book such as graphs, charts, maps or diagrams. A training period is required for all volunteers, who may also help with educational outreach, fundraising, public relations and computer coding reference books.

Where is RFB&D located?

Member relationships are maintained and orders are received, processed and shipped from the Master Tape Library at RFB&D's national headquarters in Princeton, NJ. Nationwide, 32 volunteer recording studios are located in 30 cities:

Peoria, AZ
New Haven, CT
Boston, MA
Phoenix, AZ
Washington, DC
Lenox, MA
El Segundo, CA
Boca Raton, FL
Williamstown, MA
Los Angeles, CA

Miami, FL
Troy, MI
Palo Alto, CA
Athens, GA
Princeton, NJ
Santa Ana, CA
Chicago, IL
New York, NY
Santa Barbara, CA
Naperville, IL
How is RFB&D funded?

In fiscal year 2000, a full 82% of every dollar donated went directly into services for our members. As a 501 (c)(3) nonprofit organization, RFB&D relies on the generosity of private donations from individuals, corporations and foundations, whose financial and personal contributions fund more than 61 percent of RFB&D’s budget. RFB&D also receives funding from the federal government and some state governments. Volunteer services accounted for nearly $16 million of RFB&D’s budget in fiscal 2000.

Who can use RFB&D’s services?

Anyone who can provide documentation of a print disability is eligible to become a member of RFB&D.

For new individual memberships, there is a nominal one-time sign-up fee of $50. The yearly membership fee is $25. These fees are charged to cover a portion of costs - RFB&D incurs no profit from these fees.

Students may also become members through their school. Schools may join RFB&D through the Annual Institutional Membership (AIM) program. Currently, there are nearly 4,000 schools, colleges and school districts registered with the AIM program. RFB&D has also launched an educational outreach initiative. Its goal is to provide one-on-one help in grades K-12, educating teachers, students and parents about accommodations for students with learning disabilities.

How can I contact RFB&D?

For information about volunteering, membership or making a donation, contact RFB&D’s national headquarters at 20 Roszel Rd., Princeton, NJ 08540, call (800) 803-7201 or visit RFB&D’s web site at www.rfbd.org.
USING DIGITAL TALKING BOOKS IN SCHOOLS:  
RFB&D’S TOP PROJECT

The following article appears in the journal “Library Hi Tech,” Volume 19, Number 1, ISSN 0737-8831 and is used with permission.

By Steve Noble

Steve Noble is a Policy Analyst at Kentucky Assistive Technology Service Network, Louisville, Kentucky, USA. E-mail: Steve.Noble@mail.state.ky.us.

Keywords: Disabled people, Information technology, Schools, Blind people, Books

Abstract: Recording for the Blind & Dyslexic (RFB&D) is a national nonprofit organization that provides educational and professional books in accessible media formats to people with print disabilities. The principal aim of RFB&D’s TOP project is to experiment with using digital talking books (DTBs) in an educational setting, while focusing particular attention on the ability to provide DTBs over computer networks. The first in-class testing cycle began with the Fall 1999 semester.

Electronic access: The research register for this journal is available at http://www.mcbup.com/research_registers. The current issue and full text archive of this journal is available at http://www.emerald-library.com/ft.

Project background

Recording for the Blind & Dyslexic (RFB&D) is a national nonprofit organization that provides educational and professional books in accessible media formats to people with print disabilities. RFB&D currently serves over 80,000 active members. RFB&D’s library consists of over 80,000 titles in audio format, with an additional 1,000 titles available in e-text format.

In an effort to make use of the growing potential to record and deliver audio books to users in computer-based environments, RFB&D began developing its digital audio program in 1996, which eventually led to the creation of several digital talking books (DTBs) in CD-ROM format. Since DTBs can potentially be utilized over computer networks, RFB&D applied for and was subsequently awarded a grant from the United States Department of Commerce to study network delivery of DTBs.

The top grant

The National Telecommunications and Information Administration (NTIA) was created by President Carter in 1978 as the primary federal agency responsible for telecommunications and information policy-making. In the 22 years since its founding, the NTIA has been one of the leading federal agencies involved in nurturing the civilian development of the Internet and other communication networks. In 1993, Congress
established the NTIA federal grant program; originally called the Telecommunications and Information Infrastructure Assistance Program (TIAP), this federal funding program was renamed as the Technology Opportunities Program (TOP) in early 2000. The goal of the TOP grant funding initiative is to spur innovative uses of communication networks in the service of the public interest, thus improving the public’s access to education, health care, public safety, and other related services. Further information about TOP may be found on the NTIA web site [1].

RFB&D’s TOP grant funding commenced in October 1998, with a total project budget of $819,723. Of this total budget, the TOP grant authorized a federal funding outlay of $348,891 with a required non-federal match of $434,832. Our matching funds are being supplied by a composite of corporate and foundation gifts. The original grant period was set for a period of two years, but a requested one-year extension will give RFB&D until 30 September 2001 to complete the project.

Mission and scope

The principal aim of RFB&D’s TOP project is to experiment with using DTBs in an educational setting, while focusing particular attention on the ability to provide DTBs over computer networks. Generally speaking, the project is designed as a consumer trial in which information gleaned from students using DTBs in schools will be fed back to RFB&D for the purpose of increasing overall product utility, as well as amassing a wealth of useful anecdotal data concerning the practical implications of delivering accessible textbooks over computer networks.

Key concepts

Following are some of the specific concepts central to this project:

- Students will use DTB technology in a genuine learning environment. Each student will be supplied with books which he or she needs for course work, and will use these books within the context of his or her normal curriculum. This is seen as a way to reinforce each student’s motivation to use the new DTB technology, and should help to ensure the integrity of the students’ feedback. Unlike previous DTB consumer testing, this is the first time the technology is being used in an educational setting anywhere in the world.

- Participants in this study include a mix of students with various types and degrees of print disabilities. As one would expect, most student participants have some form of learning disability, while a smaller percentage of students are blind or have low vision. In some cases, students have more than one disability. Most students are educated in a mainstream school environment, but some attend specialized residential schools.

- Schools that have been selected to take part in this classroom-based testing project represent a cross section of educational, social and economic levels and broad geographic diversity. A total of five schools are taking part in the study: Arizona State University (Tempe, Arizona); the University of Montana (Missoula, Montana); the Texas School for the Blind and Visually Impaired (Austin, Texas); the Henry M.
Gunn High School (Palo Alto, California); and the North Dade Middle School (Miami, Florida).

A variety of DTB formats and playback technologies will be utilized. Students will be primarily using structured audio books which lack the full electronic text, but several full-text audio books are being introduced as the study progresses. Students began the study exclusively using stand-alone PlexTalk and Victor DTB players which allow complete access to the books’ audio content. In order to utilize the full potential of full-text audio books, however, students will increasingly use computers to play back DTBs. These computers are equipped with Lp-Player software which will display the print portion of full-text audio books as a video output while at the same time playing the audio content of the book. Since the text and audio are synchronized, students will see the text highlighted on the screen as it is being read, and the text will automatically scroll down the screen as the book is being read. This playback technique may be of great benefit to some students with learning disabilities.

Current status

Student recruitment
The first in-class testing cycle began with the Fall 1999 semester. The initial recruitment goal was set at a total of 25 students, distributed at an average of five students per each of the five sites. This initial group of 25 will remain as a cohort group through the life of the study. In each subsequent test cycle, an additional group of 25 new students will be recruited, and they will rotate in and out of the study. New students will be asked to join the cohort group when any of the initial 25 leave the study. Beginning with the Spring 2000 cycle, the student group thus increased to a combined total of 50 students. A continuing maximum number of 50 students per cycle (both new and continuing) will thereby be allowed to participate for the remainder of the project time span. Following this process will ensure that the project goal of including a minimum of 120 unique students over the life of the project (five test cycles) is met, while also helping maintain the ability to do longitudinal studies of changes in student behavior and attitudes over the two years of classroom testing.

Title selection and production
Since one of the project’s key concepts calls for students to use DTBs of textbooks needed in the classroom, title selection and prompt production are critical factors. With as much advance notice as possible, school contacts must obtain each participant’s curriculum for a given test cycle, and forward the list of books to RFB&D library and production staff. A selection process then takes place where various priorities and production concerns are weighed for each prospective title. Selection factors include such factors as size, subject matter and complexity of the written text, the number of students who could use the same title, and the circulation frequency of the title in RFB&D’s library of tapes.

Once the title selections have been made, books are slated for production as DTBs. If the decision is made to produce a particular title as a structured audio book, then existing analog open reel tape masters may be used to produce the DTB. Using an automated
process developed by RFB&D, audio tracks from tape masters are converted into digital files at high speed, while beep-tone indexing information found in the audio is utilized to build the DTB’s structure.

When the decision is made to produce a title as a full-text audio DTB, the book is typically built from scratch rather than using a conversion process. Once the printed text has been scanned or keyed in, and the necessary tagging and hand-coding has been done, the text is then slated for recording. Most recording is currently being done with Lp-studio Pro recording software. Typically, books chosen for this type of production have been titles of limited complexity and short to moderate in length.

Early returns

The project has just finished the second of five test cycles, and only a limited amount of information is available to date. However, from the data that have been gathered it is clear that students have found the utility of DTBs to be far above that of any other form of accessible texts they have used before. In particular, the ability to navigate through the structure of a book or to go directly to any page of the text with only the push of a few keys is seen as a vast improvement over existing analog audio books.

Perhaps the most challenging task RFB&D has tackled in running the project thus far has been simply getting the DTBs produced. When RFB&D was awarded the TOP grant in 1998 there were no production tools available, and no automated conversion process had then been developed. Thus RFB&D was faced with the difficult position of creating and perfecting production systems and procedures, while at the same time having to devote significant resources to producing content. This situation led to some difficulties in producing a sufficient number of unique titles early enough to be introduced to all students during the Fall 1999 test cycle, though by the Spring 2000 cycle most of these problems had been overcome. Prospects for the future test cycles now seem to be well on track.

One of the most intriguing aspects of the testing initiative will be happening in the Fall 2000 test cycle when it is expected that all school sites will be in a position to deliver DTBs over their computer networks. Each school will have DTB files stored on drives connected to their local network that will allow students to pull up books for playback at various campus locations. This may be in the classroom and/or library or resource room, and perhaps even in a student’s dorm room if a secured connection is available. Such a scenario has already been successfully tested at the Texas School for the Blind and Visually Impaired, and represents the first time network delivery of DTBs has been accomplished.
It is hoped that the continuing success of RFB&D’s testing initiative will help pave the way for the future network delivery of accessible textbooks across the country. Providing necessary copyright protection mechanisms are developed and incorporated in future DTBs, it may even be possible to incorporate some type of Internet delivery service which would allow students in virtually any location to log on and read accessible books whenever they want. However, since DTB files are very large, it may be some time before typical users’ Internet connectivity makes this dream a reality. But for the community or students and other researchers with disabilities, it is certainly nice to know that this reality is now closer than ever.

**Note**


**Reference**

CENTER FOR APPLIED SPECIAL TECHNOLOGY (CAST) AT A GLANCE

The following has been provided by the Center for Applied Special Technology (CAST) and is used with permission.

Founded in 1984, the mission of the Center for Applied Special Technology (CAST) is to expand educational opportunities for all individuals, including those with disabilities, through the development and innovative use of computer technology. The educational focus of CAST is increasing access to and achievement within the general education curriculum for ALL students through Universal Design for Learning™. Co-Executive Directors of CAST are David Rose, Ed.D., and Anne Meyer, Ed.D.

Selected National Programs

- The National Center on Accessing the General Curriculum: A five-year initiative funded by the U.S. Department of Education’s Office of Special Education Programs (OSEP) to provide a vision of how new curricula, teaching practices, and policies can be woven together to create practical approaches for improved access to the general curriculum by students with disabilities.

- The National Consortium on Universal Design for Learning: An online community of educators and other professionals dedicated to developing systemic practice models that better serve the educational needs of all students.

- The Universal Learning Center: An Internet-based service, to be launched in September 2001, which will provide students, teachers, administrators and parents with immediate access to digital core curriculum materials that support a diverse range of K-12 students, including those with disabilities.


Products and Services

- Bobby SM: A Public Service for Web Accessibility - A free web-based public service, offered through CAST’s web site at www.cast.org/bobby, Bobby helps professional and non-expert web designers analyze their web sites for accessibility to all users, including people with disabilities.

WiggleWorks®— The first universally designed mainstream literacy series, co-developed with Scholastic Inc. and released in 1993, that uses electronic media to make curricula accessible to a wide variety of learners.

Workshops and Institutes

- Summer Institute on Universal Design for Learning (August 6-9, 2001): Educators attended the hands-on workshop, “Teaching ALL Students: Universal Design for Learning,” which highlighted a new approach to teaching diverse learners through flexible applications of technology tools, networks, and digital content.

- Summer Computer Camp (July 23 - August 3, 2001): Held annually, the summer computer camp brings together students aged 10-14, with and without special needs, to hone their Internet researching skills by exploring a common theme working individually and in collaboration.

Impact and Reach (Year 2000 statistics)

- 5,700 - the number of general and special education teachers, technology specialists, curriculum specialists, administrators, and others who have participated in CAST’s research programs in schools or attended CAST presentations throughout the country.

- 20,500 - the number of copies sold of Learning to Read in the Computer Age, a seminal print and online book by CAST Co-Executive Directors Drs. David Rose and Anne Meyer.

- 75,000 - the number of downloads annually of the Bobby program to test large corporate web sites.

- 200,000 and 4,500 - the number of school-aged children and adults, respectively, who are using the CAST eReader™ in schools, homes, and adult literacy programs.

- 215,000 - the number of people who read CAST’s publications and visit the CAST web site annually.

- 1 million - the number of hits annually to the Bobby web site.

- 5 million - the number of web pages Bobby evaluates annually, by conservative estimates.

Awards and Recognition

- 2000 Winner, Ron Mace Designing for the 21st Century Award
- 2000 Winner, Association of Access Engineering Specialists Excellence in Access Award
- 1999 Finalist, Computerworld Smithsonian Awards
- 1998 Finalist, SAP/Stevie Wonder Vision Awards
- 1993 Winner, Computerworld Smithsonian Awards
Current Partnerships

**Colleges and universities:**
Harvard University, Boston College, Boston University, Lesley University

**Publishers and software developers:**
Scholastic Inc., Houghton Mifflin, Holt Rinehart & Winston, EBSCO Publishing,
Association for Supervision and Curriculum Development (ASCD)

**Corporations:**
Microsoft, IBM, Sun Microsystems

**Media:**
WGBH Public Television

**Government Agencies:**
The U.S. Department of Education Office of Special Education Programs (OSEP)

**National organizations:**
The Council for Exceptional Children (CEC), the Educational Development Corporation
(EDC); the Parent Advocacy Coalition for Educational Rights (PACER), the Trace Center
at the University of Wisconsin

**International organizations:**
The World Wide Web Consortium’s Web Accessibility Initiative (WAI), the World
Institute on Disability
About CAST

The following information was provided by the Center for Applied Special Technology and is used with permission.

Since its founding in 1984, CAST (the not-for-profit Center for Applied Special Technology in Peabody, Massachusetts) has developed a unique blend of expertise in education and technology. Combining the latest neuroscience research with innovative uses of emerging technologies, CAST educators have devoted themselves to expanding educational opportunities for all students, especially those with disabilities.

Early on, CAST’s founders and co-executive directors, David Rose, Ed.D., and Anne Meyer, Ed.D., became convinced that new technologies offer significant learning opportunities for students with a range of abilities and disabilities. By focusing on the challenges faced by learners who are “in the margins” – those for whom ordinary print-based curricular materials and approaches do not work well – CAST developed Universal Design for Learning (UDL), a new educational paradigm that capitalizes on the adaptability of new technologies to maximize learning opportunities for all students (see www.cast.org for further information about UDL).

In recognition of the potential of Universal Design for Learning, in late 1999, the U.S. Department of Education selected CAST to lead the National Center on Accessing the General Curriculum (www.cast.org/ncac). CAST and its National Center partners, Harvard Children’s Initiative/Harvard Law School, Boston College School of Education, the Council for Exceptional Children, and the Parents Advocacy Coalition for Educational Rights (PACER) are charged with providing leadership to key stakeholders on improving achievement within the general education curriculum for students with disabilities.

CAST’s expertise in the universal design of educational technology has resulted in several commercially successful products that support access to the general curriculum. With Scholastic Inc., CAST developed WiggleWorks® the first universally designed mainstream literacy series that uses electronic media to make curricula accessible to a wide variety of learners. The CAST eReader™, a text-to-speech supported software tool, is widely distributed to public schools, adult and family literacy programs, libraries, community colleges, and job training programs. In partnership with Houghton Mifflin, CAST has customized eReader to create accessible electronic textbooks for statewide adoption in California. CAST is widely known for its development of Bobby (www.cast.org/bobby), the premier Internet-based tool that checks web sites for accessibility to individuals with disabilities and provides recommendations to correct access barriers.
CAST’s commitment to harnessing the power inherent in accessible, digital learning materials is inspiring growing numbers of educators, publishers, and policymakers. In July 2001, CAST testified before the U.S. Senate Appropriations Committee on the future of technology in education. In April 2002, the Association for Supervision and Curriculum Development (ASCD), published Rose and Meyers’ foundational book, Teaching Every Student in the Digital Age: Universal Design for Learning. With the potential of reaching 165,000 educators through ASCD’s membership base alone, CAST intends the book and its accompanying web site (www.cast.org/teachingeverystudent) to be practical resources for teachers across the nation to use in implementing UDL approaches (including accessible digital text) in their classrooms.

Current CAST initiatives focus both on making accessible digital educational materials widely available and creating Universal Learning Editions — digital versions of core curricular materials that contain embedded supports for learning and assessment.

**The Universal Learning Center**

The Universal Learning Center (ULC) is a new web-based service that provides teachers with immediate access to accessible digital curriculum materials to support learning in K-12 students with disabilities. This groundbreaking service addresses a critical challenge that public schools throughout the nation face — to ensure that all students, including those with disabilities, have access to the resources that will enable them to achieve high educational standards in general education classrooms.

CAST is piloting the ULC in 15 high schools across the country and will soon pilot the service in key leadership states, including California. The ULC is comprised of a library of digital content and a resource center to support educators in integrating digital materials into their classrooms. Registered users will be able to locate accessible digital curricular materials and download them according to applicable copyright laws and under business rules established by the owners of the content. The ULC will serve only those eligible under the Individuals with Disabilities Education Act ( IDEA) who have Individualized Education Programs (IEP’s).

**Universal Learning Editions**

Currently, CAST is involved in a multi-million dollar effort to develop Universal Learning Editions (ULE’s), web- and CD-ROM-based versions of widely used literature, textbooks, and other curricular materials. ULE’s combine digital text, multimedia, and embedded learning supports in innovative ways to support the acquisition of reading skills in a variety of learners. These flexible learning environments incorporate the following key characteristics:

- ULE’s are built on a strong theoretical and research base, incorporating current research in how the brain learns, promising practices in electronic literacies, and CAST’s Universal Design for Learning theory.
ULE’s offer a variety of accessibility features, such as multiple ways of representing material (text, video, graphics, audio, animation), text-to-speech, decoding supports, and keyboard equivalents for mouse commands for students with physical challenges.

ULE’s provide an interactive learning experience that includes embedded goal setting, learning supports that can be reduced or removed as the student progresses, and embedded continuous assessment.

ULE’s help students to acquire not only content knowledge but also the higher-level comprehension skills necessary to become engaged, self-aware learners.

ULE’s extend the ability of teachers in inclusive classrooms to set learning goals that are achievable by every student in the class.

CAST is developing prototypes and researching the effectiveness of ULE’s in a variety of genres, subjects, ages, and with diverse populations. For example, in its Strategic Learning Editions project funded by the U.S. Department of Education’s Office of Special Education Programs, CAST is investigating the effectiveness of ULE’s in supporting reading comprehension strategies in middle school students with learning disabilities (see accompanying article for an example of CAST’s ULE work).
THINKING READERS: HELPING STUDENTS TAKE CHARGE OF THEIR LEARNING

By Lucinda M. O’Neill

(Reprinted by Permission of Exceptional Parent, 1-800-372-7368; http://www.eparent.com)

Two middle school students reading a popular young adult novel stopped their reading to tell the teacher, “They should turn this book into a movie!” Another student reading a different novel for teen-aged readers commented, “I feel like I’m in the story. Like I’m the characters.” When asked if she would recommend the novel to others, a third student wrote, “It is a very good book because it is all about friendship, and that’s what kids need in life.”

Perhaps these comments would not be remarkable if enthusiastic, skilled readers had made them. But these students are struggling readers for whom books are often a source of frustration and something to be avoided. That is, until they became participants in a new research study at CAST about the Thinking Reader, a computer-supported reading environment that integrates well-researched reading comprehension strategies into digitized versions of appealing, age-appropriate novels (Dalton, Pisha, Coyne, Eagleton, & Deysher, 2001).

Building on Reading Research

The Thinking Reader employs key principles of Universal Design for Learning (Rose & Meyer, 2000), supporting students’ word recognition, strategy use, and engagement. Universal Design for Learning uses the flexibility of computer technology to help make the curriculum accessible and appropriate for students with different backgrounds, learning styles, abilities, and disabilities. The Thinking Reader also draws on the Reciprocal Teaching Method (RTM), an instructional approach developed in the mid-1980’s by renowned educator Annemarie Sullivan Palincsar to help students learn to read strategically—i.e., for meaning. A dialogue between teacher and students is central to RTM, with teacher and students taking turns leading the dialogue as they use four key strategies to enhance reading comprehension: summarizing, asking questions, clarifying, and predicting.

Despite a wealth of research over the last 25 years demonstrating the positive impact of reading strategy instruction on students’ comprehension, very little strategy instruction takes place in today’s classrooms. Strategy instruction is not an easy task for teachers, who need time and practice to become proficient at it. Nor is learning how to be a strategic reader an easy task for students. With funding from the U.S. Department of Education’s Office of Special Education Programs, the CAST study investigates how a software program with embedded strategy supports can extend the teacher’s capacity to meet the varied, changing needs of each student in the class.
According to CAST’s Dr. Maya Eagleton, struggling readers are typically taught to read using books that are written for much younger readers. Because the subject matter is not appropriate to the students’ age level, they get bored and remain unengaged in reading. The Thinking Reader differs from other approaches by providing students with access to grade-level novels—in accessible digital format—that they might not be able to read otherwise.

**Using the Software to Read Age-Appropriate Literature**

On a recent day at a middle school north of Boston, 16 students with learning disabilities sit down at their computers in the resource room and don headphones to read the assigned novel. Using the text-to-speech feature, which highlights each word as it reads it aloud, each student moves quickly through a chapter of a critically acclaimed adventure novel. Giving students with word decoding problems the option of listening to the novel allows them to focus on the meaning of the story. This is not to say these students do not get help with decoding; they do. But their teacher provides that instruction separately, using reading materials at the right instructional level.

The seventh-graders’ interest in the story and their motivation to read it successfully are apparent. Some students with learning disabilities are now reading for 30 minutes at a stretch. As one student put it, “Usually when I read, I get bored after two or three pages. But this keeps me interested.”

Classroom observations of students reading with and without the computer supports suggest students using the computers have the edge when it comes to staying focused on reading. “Students in the technology-based classes tend to be more on task and engaged in the learning. They are enjoying the fact that they are able to be successful in this environment,” says CAST’s Dr. Bridget Dalton, who is directing the study. “For many of these students, it is the first time they are able to read the same books their classmates are enjoying.”

**Engagement Levels are High**

Although data on student achievement will not be available until the project’s completion, teacher and student responses have been positive. One resource room teacher observes a new sense of pride and independence among the students using the Thinking Reader software. “Everyone is part of the same activity, even the students who are reading at a slower pace than others in the group,” she says. Using the software, the students can see their own progress toward the goal of becoming independent readers.

The students’ comments in their work logs show they are bringing their own emotions and experiences to the novels they are reading. In response to the trials faced by the main character in the adventure novel, a boy who survives on his own for many days in the Canadian wilderness, one student wrote: “If I was (the boy) I would look for food all night long. I would not starve myself. . . If I had a house in the woods I would let (the boy) come in if I knew him.” Another student wrote, “I feel bad for (the boy) because I would feel lonely.”
Teachers report that their students are feeling more confident in their reading and that more students are participating in class discussions. “Two boys asked me if I had any more books by (the author of the adventure novel),” noted one teacher. Another boy asked when he could buy the software so that he could use it to read books at home. One special education teacher now includes the Thinking Reader in his Individualized Education Program (IEP) for his students with learning disabilities.

Students can learn to be better readers. Students at all levels can take charge of their own learning. Through the use of age-appropriate, appealing literature, variable levels of support and challenge, and student control over access to help, students can be more successful. With the Thinking Reader, CAST hopes to demonstrate that innovative software, providing both access and key instructional supports, can play an important role in developing readers who are strategic, engaged, and self-aware learners.

References:


Acknowledgment:

The Thinking Reader project, formally titled Engaging the Text: Reciprocal Teaching and Questioning Strategies in a Scaffolded Learning Environment, is supported by the Office of Special Education Programs, U.S. Department of Education, Award No. H324D980051. Bart Pisha, Ed.D., is Principal Investigator for the project. Opinions expressed herein are those of the author and do not necessarily represent the position of the U.S. Department of Education.
The following was provided by the Center for Applied Special Technology (CAST) and is used with permission.

By David H. Rose, Ed.D., Co-Executive Director of CAST

Mr. Chairman, and Members of the Subcommittee, it is an honor to be asked to testify at this important hearing on Education and Technology. My name is David Rose and I am the co-executive director of CAST, the Center for Applied Special Technology and principal investigator of the National Center for Access to the General Curriculum, an OSEP-funded cooperative agreement. I welcome the opportunity to speak with you today. The fact that I have been asked to testify on the educational technology needs of students with disabilities demonstrates that Congress understands the critical importance of education technology for all learners.

Members of this Committee were central to the passage of numerous pieces of landmark legislation over the past 30 years, including Section 504 of the Rehabilitation Act of 1973, the Individuals with Disabilities Education Act of 1975, Section 508 of the Rehabilitation Act of 1988 and 1998, and the Americans with Disabilities Act in 1990. Because of these laws, many things formerly thought to be impossible for individuals with disabilities are now commonplace.

Now, individuals with disabilities have a right to a free appropriate public school education, and can expect to find physically accessible educational buildings. Tragically, however, most curricula — the materials and methods for learning found inside these newly accessible buildings — are in fact not available or accessible to students with disabilities.

This moment in history, when innovative new educational technologies are proliferating, presents a unique and urgent opportunity to right this injustice. If we seize this opportunity, we will see people with disabilities making the contributions to our society envisioned and supported by past landmark legislation. Further, the strategic appropriation of funds at this time will result in more effective use of educational dollars and a subsequent reduction in the number of people entering SSI and SSDI programs because they are not qualified to work in the jobs of the future. Very significant benefits will accrue not only to children with disabilities, but to all children.

I will describe three key areas in educational technology significant for students with disabilities: assistive technology, digital curricula, and universal design. In each area, I offer specific recommendations for Congress.
Assistive Technologies

Most current successes of technology for individuals with disabilities are examples of “adaptive” or “assistive” technologies. Assistive technologies are applications (either hardware or software) designed specifically to assist disabled individuals in overcoming barriers. Examples include:

Matthew, 3rd grader with physical disabilities who cannot speak or use his arms or legs, uses electronic switches to drive a wheelchair and operate his computer to write and communicate.

Katherine, a 6th grader who is blind, uses screen reader technologies to navigate the Internet and do her social studies homework.

Nina, who has a brain injury that causes her to be aphasic, uses an electronic augmentative communication device to speak to her friends and collaborate on schoolwork.

Even more spectacular assistive technologies are under development, including devices that can be implanted in the brain for hearing, for vision, for control of paralyzed muscles. These essential uses of technology for individuals with disabilities will require sustained federal support. There is simply not enough profit in developing for these “low incidence” students to attract the investments of the private sector.

Recommendations Regarding Assistive Technologies

1) Congress should continue to fund IDEA Part D research and technology development to ensure that new assistive and augmentative technologies are developed, particularly those that interface with new learning technologies (see below) and those that support cognitive as well as sensory and physical access.

2) Congress should support, through technical assistance grants or contracts, the training of assistive technology specialists so that every school district has access to trained individuals who can teach children to use these powerful technologies in a timely fashion, can assist their parents in understanding and advocating for their use, and can assist teachers and administrators in successful classroom implementation of assistive technologies.

Digital Curricula

That recommendation notwithstanding, it is dangerous to view assistive technology as the sole focus of educational technology for students with disabilities. Such an orientation places the emphasis of intervention on the individual rather than the learning environment. Developing powerful technologies to overcome barriers must be balanced by designing environments with fewer barriers. The lesson of the ADA is that small affordances built in everywhere, like curb cuts and ramps, are as critical for access as are assistive technologies like motorized wheelchairs.
The same is true for educational materials and methods. We need to use the new technologies not only to overcome existing learning barriers but also to design learning environments with fewer barriers right from the start.

In the Concord, New Hampshire public schools, teachers and parents are engaged in the painstaking task of digitizing much of their printed curricular materials into the computer. They are working to create “digital versions” of the printed materials used in their schools. Why are they going to all this trouble?

They are doing this work because digital versions of the books are much better for students with disabilities. The difference is not in the content - the digital versions have exactly the same content. The difference is in the way that content is displayed.

In print versions the content is permanently on paper. Its display is fixed, unchangeable, “one size fits all.” In digital versions, content is presented dynamically by the computer. As a result, content can be displayed in many different ways, adjusting to many different learners.

Imagine, for example, a digital version of “To Kill a Mockingbird” for a 10th grade classroom:

Sarah, a student with low vision, can display the text in a very large font so she can see it.

Bill, a student who is blind, can have the computer display the text as spoken words or have the computer print it on a braille printer.

Jennifer, a student with severe physical disabilities can change the display (e.g. turn the pages) with a single blink of her eye.

Michael, a student with dyslexia, can click on a difficult word to have the computer read it aloud or link it instantly to a context-based definition.

In these ways, digital versions of traditional curricular materials can effectively reduce barriers to learning, thereby reducing the costs associated with expensive adaptations and pull-out programs.

With digital curricula, we can reduce barriers and we can do much more. In a recently completed research study (with technology developed under support from U.S. Department of Education’s Office of Special Education Programs), researchers at CAST digitized books being used to teach reading and embedded research-based strategies for improving reading comprehension into the new, flexible, digital texts. Nearly all of the 109 students in the study had learning disabilities and were performing at least two grade levels below their peers. Because of the digital texts, the level of access and support for reading comprehension could be adjusted closely to each child-providing the foundation for highly efficient learning.

The results were stunning - the students who used the digital texts found them more accessible, enjoyable, and empowering than traditional books, and they learned reading comprehension strategies much more effectively, showing highly significant
improvements (achieving a half year’s progress after reading only three novels) on later standardized tests of reading comprehension. The control group, comparable learning-disabled students who used traditional printed books, showed no significant progress at all. Further, where this approach was used, students exhibited fewer behavioral problems because they were engaged in the learning activity.

Where can schools get these kinds of digital books? Local solutions are far too inefficient. While many schools across the country, like Concord, have begun to digitize their own books, the duplication of effort wastes valuable resources. And it will get worse. As more schools engage in digitizing printed curriculum, more resources will be poured into a redundant, inefficient effort. Schools and national publishers also face a bewildering and contradictory array of local requirements and formats.

A new piece of proposed legislation, the Instructional Materials Accessibility Act of 2001, is critical. This bill provides for the establishment of a single national electronic file format to be used by publishers when creating electronic versions of texts. A consistent standard will greatly facilitate the timely and efficient conversion of textbooks into digital versions that are accessible to students with disabilities: e.g. braille, large print, digital audio and other specialized formats like those that I have been describing. The proposed bill further calls for a national electronic file repository—a central and efficient solution to replace a hodge-podge of local ones.

OSEP, under part D of IDEA, is supporting efforts that further the development of digital curriculum. For example, OSEP funds the National Center on Accessing the General Curriculum housed at CAST. Research, design, development, dissemination, and training relating to digital curriculum materials urgently needs expanded support.

Recommendations Regarding Digital Curricula:

1) Congress should support the points proposed in the Instructional Materials Accessibility Act of 2001, including standardized file formats and a national repository of available digital curricular content.

2) Congress should support dissemination and training for teachers, administrators, and parents.

3) Congress should support ongoing research and development in the design, development, and release of digital curricula infused with the best research-based accommodations and enhancements for individuals with disabilities and their peers.

Universal Design of Learning Technologies

Making traditional books and printed materials accessible via new technology is a necessary but not sufficient step if all learners are to find the opportunities they deserve. In effect, we are still using new technologies to do old things. My colleagues on this panel have been describing ways to use powerful new technologies to do NEW things — to engage all students in active experimentation at a level impossible in “traditional” classrooms, to communicate about learning with other students all over the world, to evaluate their own learning, to construct problem solutions in social groups, to create
and edit new kinds of media well beyond the limits of writing text. These technologies prepare students for their future.

Unfortunately, the design of most of these learning technologies does not consider students with disabilities. As a result, innumerable new barriers for students with disabilities are being created inadvertently every day. These powerful new learning technologies are in their infancy, as yet unformed. Once formed, disseminated, and in use, these technologies will have to be retrofitted, or new assistive technologies designed, to overcome the new barriers being designed while we are discussing these issues.

An analogy well known to members of this panel will illustrate my point. Several decades ago, the new technology of television was inaccessible for viewers who were deaf. Eventually, decoder boxes to display captions improved access to television for deaf viewers. The cost of this retrofitted technology, several hundred dollars per television, still excluded many people. Legislation requiring televisions to include caption display technology led to the development of small decoder chips costing pennies apiece that were then included on all new televisions. The beneficiaries of this high quality, efficient technology include not only those who are deaf, but also hearing individuals, in gyms and noisy airports, spouses retiring at different times, and individuals learning English as a second language.

The concept of building accessibility into learning technology from the start is an example of what is called Universal Design. Well-executed Universal Design leads to less expensive solutions and better outcomes for all learners. At this moment in history, with rapid proliferation of learning technologies, it is imperative that we make Universal Design an urgent, high priority.

The recent history of Section 508 illustrates the potential national problem if we wait. Most government web sites were originally created with little or no awareness of disability access options. The mandate to make such sites accessible has led to enormous expense in retrofitting these designs—adding electronic “ramps” after the designs were completed. Had the knowledge of Universal Design approaches been available, time and dollars could have been saved, and more people could have enjoyed access to these important sites from the beginning.

To ensure that learning technologies work for all learners, Congress can take the same kind of leadership as it did in legislating 508 for the workplace - in this case in the “learning place.”

**Recommendations Regarding Universal Design of Learning Technologies**

1) Congress should require that any educational technology developed, maintained, procured, or used by the federal government should be universally designed.

2) Congress should require that all educational programs administered or supported by the Federal Government use universally designed educational technology.

3) To ensure rapid dissemination of universally designed educational technologies, Congress should support the development of research-based guidelines for school
districts, publishers, parents, and administrators on how to evaluate and select universally designed educational technologies.

4) Congress should provide funding for continued research and development in designing, implementing, and integrating better universally designed educational technologies.

Summary

I commend the Congress for its leadership and its commitment to students with disabilities. Fundamental to this commitment, and to all of the things I have recommended, is the leadership implicit in IDEA. I strongly support the commitment to fund this foundational legislation for our future.

In the innovative area of educational technology it is essential not only to provide support under Part B of IDEA, it is also essential to fund discretionary programs for technology research, training, and dissemination - those under Part D. Without that support we will miss the opportunity, just at this propitious moment, to turn the power of educational technology in a direction that will leave none of our children behind.

In specific, I have made recommendations in three areas:

1) Assistive technologies. These individual technologies are essential to overcome the barriers that students with disabilities face. Congress should support their continued development into areas where barriers remain, including cognitive as well as sensory and motor issues, and should fund technical assistance to school districts so that they can be effective consumers of these powerful technologies.

2) Digital Curricula. Most existing classroom technologies are still print based - making it very difficult to use assistive technologies, and even more difficult to individualize the curriculum in ways that are necessary for students with disabilities. Congress should provide legislation requiring that all curricula be made available in digital format so that it can be easily customized and made accessible for all students and that Congress fund a central place where teachers and parents can locate these resources.

3) Universal Design of Learning Technologies. As new technologies are developed for schools, they should be made accessible to all of the students in the school, right from the start. Congress should support efforts to make guidelines for the universal design of such technologies, to research and develop such technologies, to provide training and technical support to schools and parents. Congress should also provide leadership by requiring, purchasing, maintaining, and disseminating such technologies in all of its programs.
The over-arching recommendation that I make to you is that we extend the same kinds of protections now afforded to physical spaces and to information in the workplace to a new area, the most important space for our future - learning space. Our future as a culture depends on us to make learning spaces, those most precious spaces in the lives of our children, accessible and supportive of every single child. I believe that if we make the learning spaces of our schools accessible to all of our children, we will save both the short-term costs of poorly educating our children in the present and the long-term costs of NOT educating them for their future. This approach will save resources, but most importantly, it will save children. Thank you.
NATIONAL FILE FORMAT ADVISORY PANEL

U.S. Department of Education
Ex-Officio

Robert Pasternack, Asst. Sec., Office of Special Education and Rehabilitative Services
robert.pasternack@ed.gov

Stephanie Lee, OSEP Director
stephanie.lee@ed.gov
202-205-5507

Louis Danielson, OSEP Research to Practice Division Director
louis.danielson@ed.gov

NCAC Project Officer

Bonnie Jones, OSEP
Bonnie.jones@ed.gov

CAST/National Center on Accessing the General Curriculum (NCAC)

Chuck Hitchcock
NCAC Project Director
CAST, Inc.
40 Harvard Mills Square
Wakefield, MA 01880-3233
chitchcock@cast.org
781-245-2212

David Rose
NCAC Principal Investigator
CAST, Inc.
40 Harvard Mills Square
Wakefield, MA 01880-3233
drose@cast.org
781-245-2212

Bob Dolan
Project Technical Support
CAST, Inc.
40 Harvard Mills Square
Wakefield, MA 01880-3233
bdolan@cast.org
781-245-2212

Consumer/Advocacy Group

Mary Ann Siller
Director, National Education Program
American Foundation for the Blind
260 Treadway Plaza, Exchange Park
Dallas, Texas 75235
siller@afb.net
(214) 352-7222, ext 15
Paul Schroeder
Vice President of Government Relations
American Foundation for the Blind
820 First Street, N.E., Suite 400
Washington, DC 20002
pws@afb.net
(202) 408-0200

Curtis Chong
Director of Field Operations and Access Technology
Iowa Department for the Blind
524 Fourth Street
Des Moines, Iowa 50309
Phone: 515-281-1361
Email: chong curtis@blind.state.ia.us
Mark Richert  
Executive Director  
Association for Education & Rehabilitation of the Blind & Visually Impaired  
4600 Duke Street, #430  
P.O. Box 22397  
Alexandria, VA 22304  
markr@aerbvi.org  
703-823-9690

Melanie Brunson  
Director of Advocacy and Governmental Affairs  
AMERICAN COUNCIL OF THE BLIND  
1155 15th Street NW  
Suite 1004, Washington, DC 20005  
Mbrunson@acb.org  
202-467-5081

Barbara Cheadle  
President National Organization of Parents of Blind Children, a Division of the NFB 1800 Johnson Street,  
Baltimore, MD 21230  
BCheadle@nfb.org  
(410) 659-9314 ext. 360

Robin Church  
Learning Disabilities Association  
Assistant Vice President for Education  
Executive Director of Kennedy Krieger School  
Kennedy Krieger Institute  
3825 Greenspring Avenue  
Baltimore, MD 21205  
churchr@kennedykrieger.org  
(443) 923-7800

Randall Boone  
Council for Learning Disabilities  
University of Nevada Las Vegas  
Dept. of Education  
4505 Maryland Parkway  
Box 453014  
Las Vegas, NV 89154-3014  
rboone@nevada.edu  702-895-3331

Sheldon Horowitz  
Director of Professional Services  
National Center for Learning Disabilities  
381 Park Avenue South, Suite 1401  
New York, NY 10016  
shhorowitz@ncld.org  
212-545-7510, ext. 216

Alice Parker  
National Association of State Directors of Special Education  
Assistant Superintendent and Director Special Education, California Department of Education  
428 J. Street, 5th Floor  
Sacramento, CA 95814  
aparker@cde.ca.gov  
916-445-4602

Susan LaVenture  
Executive Director  
National Association for Parents of Children with Visual Impairments (NAPVI)  
P.O. Box 317  
Watertown, MA 02471  
susan.laventure@perkins.org  
(617) 972-7441

Muffi Lavigne  
Information and Referral Coordinator  
United Cerebral Palsy Association (UCPA)  
1660 L Street, N.W., Ste. 700  
Washington, DC 20036  
mlavigne@ucpa.org  
202-776-0406

Michael M. Behrman  
Professor, Graduate School of Education  
George Mason University  
MSN 4B4  
4400 University Drive  
Fairfax, VA 22030-4444  
mbehrman@gmu.edu  
703-993-3670

June 2003
Michael Wehmeyer
Associate Professor, Special Education
1122 W. Campus Rd.
JRP, Room 538
University of Kansas
Lawrence, KS 66045-3101
wehmeyer@ku.edu
(785) 864-0723

Irvin Shapell, Publisher
Woodbine House
6510 Bells Mill Road
Bethesda, MD 20817
207-741-2576
207-741-2578 (fax)
ptclyde@maine.rr.com

Donna Palley
Concord School District
16 Runford Street
Concord, NH 03301
dpall@csd.k12.nh.us
(603) 225-0815

Jim Allan
Texas School for the Blind and Visually Impaired
1100 W. 45th St.
Austin, TX 78756
jimallan@tsbvi.edu
512-206-9315

Technical Group

Joe Sullivan
President
Duxbury Systems
Duxbury Systems, Inc.
270 Littleton Rd., Unit 6
Westford, MA 01886-3523
joe@duxsys.com
978-692-3000 ext 308

Larry Skutchan
Technology Project Leader
The American Printing House for the Blind, Inc.
1839 Frankfort Avenue
P.O. Box 6085
Louisville, KY 40206-0085
lskutchan@aph.org
502-899-2314

Eileen Curran
Vice President for Education Services
National Braille Press
88 St. Stephen Street
Boston, MA 02115
ecurran@nbp.org
617-266-6160 x17

James Pritchett
Project Manager, Digital Audio
Recording for the Blind and Dyslexic
20 Roszel Road
Princeton, NJ 08540
jpritchett@rfbd.org
609-243-7608

Steve McBride
Chair, Electronic Instructional Materials Committee
National Association of State Textbook Administrators
West Virginia Department of Education
1900 Kanawha Boulevard
E. Charleston, WV 25305
smcbride@access.K12.wv.us
304-558-2691

Kim Hartsell
Project Director
Georgia Project for Assistive Technology
528 Forest Parkway, Suite C
Forest Park, GA 30297
khartsel@doe.k12.ga.us
404-362-2024
Melonie C. Warfel
Director, 
World Wide Standards
Adobe Systems, Inc.
8201 Greensboro Dr., Suite 301
McLean, VA 22102
mel@adobe.com
Tel: 703/883-2816
Fax: 703/883-2850

Gary Moulton
Microsoft Accessible Technology Group
Microsoft Corporation, One Microsoft
Way, Redmond, WA  98052
garymo@microsoft.com
425-703-4929

Madeleine Rothberg
Director of Research and Development
National Center for Accessible Media
WGBH Boston
125 Western Avenue
Boston, MA 02134
madeleine_rothberg@wgbh.org
617-300-2492

Michael Moodie
Research and Development Officer
National Library Service for the Blind and Physically Handicapped Library of Congress
1291 Taylor Street, NW
Washington, DC 20011
mmoo@loc.gov
202-707-5108

Rick Ferrie
Vice President/General Manager
Mazer Corporation
The Schraff Center
529 Main Street, Suite 212
Boston, MA 02129
Rick_ferrie@mazer.com
617-241-2244  x111

Gene Golovchinsky
Sr. Research Scientist
FX Palo Alto Laboratory, Inc.
3400 Hillview Ave, Bldg. 4
Palo Alto, CA 94304
gene@fxpal.com
(650) 813-7361

Dave A. Schleppenbach
ghBraille, LLC
Purdue Technology Center
3000 Kent Avenue
West Lafayette, IN 47906
engage@ghbraille.com
(765) 775-4534

Martin Hensel
President
Texterity Inc.
144 Turnpike Road
Southborough, Massachusetts 01772
mhensel@texterity.com
508.804.3020

Feasibility Group

Skip Stahl
CAST, Inc.
40 Harvard Mills Square
Wakefield, MA 01880-3233
sstahl@cast.org
781-245-2212

John Roberts
National Institute of Standards and Technology (NIST)
100 Bureau Drive, Stop 8951
Gaithersburg, MD 20899-8951
john.roberts@nist.gov
(301) 975-5683

Margaret E. Bausch
Department of Special Education and Rehabilitation Counseling
229 Taylor Education Building
University of Kentucky
Lexington, KY 40506-0001
meb@uky.edu
859/257-8810
Steve Driesler
Executive Director, School Division
Association of American Publishers
50F Street, N.W.
Washington, DC 20001
sdriesler@publishers.org
202-220-4549

Pearce McNulty
Houghton Mifflin Company
222 Berkeley Street
Boston, MA 02116
pearce_mcnulty@hmco.com
617-351-5504

Alex Mlawsky
Glencoe/McGraw Hill
8787 Orion Place
Columbus, OH 43240-4027
alex_mlawsky@mcgraw-hill.com
614-430-4383

George Kerscher
Senior Officer, Accessible Information
DAISY Consortium
Open Ebook Forum
Recording for the Blind and Dyslexic
1203 Pineview Dr.
Missoula, MT 59802
kerscher@montana.com
406/549-4687

Martha Minow
Harvard Children’s Initiative
Harvard Law School
Griswold 407, Harvard Law School
1563 Massachussetts Avenue,
Cambridge, MA 02138
minow@law.harvard.edu
As part of its efforts to ensure that No Child is Left Behind, The U.S. Department of Education seeks to ensure that no child face an inaccessible curriculum – that raises barriers to progress rather than opportunities for learning. Unfortunately, too many students with disabilities do find inaccessible curricula in their classrooms.

As a step towards overcoming that impediment, the Department has asked the National Center on Accessing the Curriculum, housed at the Center for Applied Special Technologies (CAST), to lead an effort to develop a voluntary National File Format for the electronic transmission of instructional materials for students with disabilities.

I. The Need for A National File Format

The promise of digital materials for accessibility

The traditional print-based materials that dominate classrooms raise barriers for many students with disabilities. For students who cannot see the words or images on a page, cannot hold a book or turn its pages, cannot decode the text or cannot comprehend the syntax that supports the written word, each experience different challenges, and each may require different supports to extract meaning from information that is “book bound.” For each of them, however, there is a common barrier – the centuries old fixed format of the printed book.

Modern digital materials can present the same content as printed books, but in a format that is much more flexible and accessible. For students who cannot see the words or images, the digital version can be produced in Braille or voice, and provide descriptions of the images. For students who cannot hold the printed book or turn its pages, the virtual pages of a digital book can be turned with a slight press of a switch. For students who cannot decode the text, any word can be automatically read aloud. For students who lack the background vocabulary in the text, definitions (in English or another language) can be provided with a simple click.

The advantage of digital books is that these alternatives, and many others, can be available on an individual basis – available for students who need them, invisible or non-distracting for those who don’t. Such customizable alternatives can substantially reduce the barriers found in traditional texts, reducing the effects of what are commonly called “print disabilities.”
The promise unfulfilled: barriers to access

There is great promise in using new electronic materials to improve access to the curriculum, but that promise is not being adequately realized. Very few students with disabilities presently have access to the accessible books they need for several reasons. In some cases, the problem is technical – schools do not have the technology they need to properly provide accessible versions to students, even if they had such versions. In other cases, the problem is ignorance – many teachers and schools do not understand the issue of access or the potential solutions that are available.

But for many students the problem is a frustrating distribution system; students cannot obtain the accessible materials they need in a timely fashion. Present policies and procedures for disseminating accessible materials are archaic and inefficient, raising barriers rather than opportunities. Indeed, every element of the complex distribution system faces impediments:

1) Publishers are presently unable, largely because of outdated copyright policies, to manufacture and distribute accessible digital versions directly to students in much the same efficient way they do their print versions. Instead they, and their consumers, must depend upon various independent third parties to render the printed books accessible. This dependency on third parties for re-designing and re-distributing accessible materials is not only an impediment to efficient distribution, it also raises concerns for the publisher and consumer about quality control, digital rights management, etc. Most importantly, this process ensures that there are no financial incentives to the publisher for facilitating the process of getting materials to students who need them, or for improving the quality of their original materials for students with disabilities. Publishers who nonetheless try to support the process by providing digital versions of their materials to third parties face a bewildering array of requests for different formats and versions from different states, disability organizations and individual teachers and students.

2) Since schools and school districts cannot get accessible versions of their curricular materials from the same sources as they get their “regular” materials, they must turn to other agencies and organizations that specialize in “re-publishing” accessible versions, or they must create them themselves. Either path is complicated and time consuming; districts must identify the format (or formats) they will need for individual students and for the differing technologies available in their various schools and classrooms, select a vendor or process for creating the necessary formats and then order materials, develop a repository and distribution system to match versions to individual students and technologies, and develop local capacity for utilizing and supporting teaches in using accessible versions. All of this is vastly complicated by the fact that there are a variety of technologies and formats. These complicated procedures interpose a delay that often stretches for months and all too often results in materials arriving in classrooms long after the need has passed.
3) **Not-for-profit agencies or vendors** have emerged to meet the widespread need for accessible materials in schools. These agencies — called “authorized entities” in the Chafee amendment — transform inaccessible published materials (like books) into more accessible versions. The largest of these (like RFB+D, APB) are national and have long served students by creating alternative versions (audio, large print, Braille, etc.) of print materials. Because of the advantages of digital materials, many of these agencies have begun migrating to digital versions as a better way to serve their clients. But their progress is hampered by the diversity of potential formats. For example, differing publishers tend to use different proprietary formats or templates for digital production and distribution. As a result of that format complexity, it is difficult for “authorized entities” to develop an efficient process – most find it easier to begin with the printed book itself, then recreate a digital version backwards from that. Format complexities similarly inhibit the production and distribution from vendors to students. Since there is no standard format, different states and districts (even schools or classrooms) may request differing formats or versions, enormously complicating the processes of production and distribution. The lack of uniform format thus impedes both the evolution to superior digital materials, and their timely delivery to individual students.

4) **Teachers**, in turn, face many impediments to using digital accessible versions in their classrooms, impediments that are exacerbated by complexities in format and technology. They have two choices. First, they can determine a format that is appropriate for their student(s) and compatible with their existing classroom technology and then find a vendor or repository that can supply it. Or, they can accept a format provided for them and then adapt their classroom technologies to the format provided for them and find training in how to navigate and use it in their classrooms. Either of these is complicated when each vendor or repository may provide different formats and player technologies that teachers will have to learn to use.

5) **Students** with disabilities continue to face learning materials that are inaccessible in many different formats, from print to digital.

**Fulfilling the promise: a national file format**

While there are many barriers to accessibility, the problems that are caused by multiple formats are particularly frustrating and easily remedied. The adoption of a common, or standard, format is a simplifying step that has been crucial to progress in many other fields – from railroads (adopting a common track gauge), to video technology (adopting a common format for DVD, and HDTV). Similarly, progress in accessibility will be greatly abetted by defining a common national file format. With that single change, a number of barriers in the educational materials distribution system can be addressed.

1) With one clear and consistent file format to produce, **publishers** would be able to deliver a high quality digital version expeditiously and simultaneously to all authorized entities for further conversion and distribution.
2) With one consistent file format coming from different publishers, "authorized entities" would be able to efficiently transform these common formats into accessible formats (accessible digital versions and printed Braille, for example) and deliver them to local schools and school districts expeditiously.

3) With one basic digital format from vendors, schools and school districts could adopt vastly simpler, less costly, and more timely methods for acquiring materials, storing and retrieving them, purchasing additional assistive technologies, and training teachers and others in their use.

4) With one basic digital format from their districts, teachers could get their accessible materials in a timely fashion, in a consistent format that will work with their classroom technologies, and in a consistent format that will be easier for them to learn.

5) With one basic file format, students would finally get the accessible materials they need, when they need them.

II. The Process for Defining a National File Format

What is a National File Format?

A file format is a specification for filing electronic information so that the content can be accurately and efficiently retrieved. Just as a library or home filing system requires some sort of organizational scheme to retrieve the information from it, an electronic book or file also requires a consistent organization or format to retrieve the information from it.

Slightly more technically, electronic information is stored in an electronic file type with a data structure, referred to as the format, so that the content stored is usable by one or more application programs (word processor, web browser, assistive technology program). Because of the consistent format, an application program can recognize and access data within the file. Several common file formats are Microsoft WORD documents (.doc), Adobe Acrobat (.pdf), and web pages (.html).

Some file formats have been developed specifically to enhance accessibility – for example to facilitate the use of assistive technologies, like screenreaders. Some examples of formats developed to enhance accessibility are accessible HTML, ANSI/NISO Z39.86-2002 (DAISY Digital Talking Book) and “tagged” PDF.

The goal of the National File Format Expert Panel is to assemble a National File Format (NFF) that will represent the best attempt of a broad team of knowledgeable experts and consumers to define a common format, one that can serve as a foundation for accessible educational materials. Such a common format will benefit the entire nation: states,
districts, publishers, advocates, disability organizations, parents, and, most importantly, students with a range of disabilities.

**What is the process for arriving at a National File Format?**

At the direction of and in consultation with the Department of Education, the National Center has assembled a NFF Expert Panel consisting of 40 members, representing: 1) consumers, including advocacy groups and state and local educational representatives; 2) technical experts such as assistive technology professionals, textbook administrators, software developers, standards organizations, and data conversion experts; and 3) feasibility experts encompassing national standards agencies, curriculum publishers, technology researchers, and ex-officio members from the Department of Education. The charge of the Expert Panel is to present the Secretary of Education with “a set of technical specifications to facilitate the efficient delivery of accessible instructional materials, a timeline for the implementation of the proposed standards, and process for assessing the success of standards implementation.”

In order to accomplish this work, the National Center for Accessing the General Curriculum (NCAC) intends to convene a series of at least three Expert Panel meetings over the next seven months to address the interests of each of the three key constituencies represented by the panel members: the Consumer Group, the Technical Group, and the Feasibility Group. The Department of Education has established a compressed timeline for this work, which underscores the urgent need to ensure a highly efficient design for each meeting.

For the first convening, scheduled on January 7, 2003, the Expert Panel will address the needs of the Consumer constituency, and begin the process of developing a list of the features and functionality that the NFF must address. CAST is requesting that each participating organization representing the Consumer constituency submit a “wish list” of the features and functionality that would benefit their constituent students. The Consumer Group should provide this information to Skip Stahl at CAST, sstahl@cast.org no later than January 2, 2003, before the first Expert Panel meeting. During this same period, CAST will be seeking comments from other interested consumers who are not members of the Expert Panel.

These public comments and Consumer Group “wish lists” will inform the initial discussion at the January 7, 2003 convening. Based on the discussion and input from this Expert Panel meeting, CAST will consolidate and prioritize these “wish lists” into a proposed NFF features and functionality working list. By the end of January 2003, CAST will circulate this proposed working list among the Expert Panel members for comment and feedback. Expert Panel members will have the opportunity to discuss and revise the proposed working list through online discussions at the web site CAST has established for the Expert Panel. Additionally, CAST will schedule a brief follow-up meeting/telephone conference in early February to approve the recommended features and functionality. (Accommodations can be arranged for those participants residing...
outside the Washington metropolitan area who are unable to utilize the telephone conference service).

At the second convening on March 11, 2003, the Expert Panel will address the interests of the Technical Group, and begin the process of developing the technical specifications for a NFF for accessible instructional materials. Prior to the meeting, representatives from the Technical Group will be asked to review existing file formats, accessibility guidelines and emerging technologies in the context of the “wish list” and submit their recommendations and concerns relevant to the technical specifications no later than March 4, 2003. The goal of this Expert Panel meeting will be to initiate the process for defining standards to implement the features and functionality list. As with the first convening, CAST will coordinate the comments and feedback provided by the Expert Panel members, and will circulate proposed technical standards by the middle of March 2003. Expert Panel members will have the opportunity to discuss and revise these proposed technical standards at the NFF Expert Panel web site, and a follow-up meeting/telephone conference at the end of March 2003.

At the third and final convening, currently scheduled for June 10, 2003, the Expert Panel will assess the market influences, the intellectual property constraints, and the protocols and procedures necessary to ensure the widespread adoption of voluntary standards. As with the previous convenings, the Feasibility Group representatives will be asked to submit their comments to CAST no later than June 2, 2003. Once again, CAST will circulate a proposed set of recommendations to the Expert Panel members following the convening, and provide the Expert Panel with an opportunity to discuss and revise the recommendations through the NFF web site and a follow-up meeting/telephone conference.

What are the Background Technical Assumptions for developing a National File Format?

The NFF is envisioned to be the foundation format provided by publishers and other curriculum developers for subsequent transformation into accessible digital outputs. Most considerations relating to the NFF have centered on XML (Extensible Markup Language) as the core technology for the storage of digital information. Extensible Markup Language (XML) is a syntax for marking up data or information. One of the most significant benefits of XML is that it is possible to generate multiple output formats easily and efficiently from a single XML source. This would be considerably more difficult if the source formats were HTML, PDF, Quark or RTF.

III. The Role of CAST and the National Center on Accessing the General Curriculum

CAST’s investment in convening the NFF Expert Panel is a logical extension of its leadership of the National Center on Accessing the General Curriculum (NCAC). The mandate for the National Center was established by the Office of Special Education Programs following the authorization of IDEA ‘97, which anticipated the need for a national entity to identify and assess instructional and curriculum-based practices,
procedures and policies that would facilitate the achievement of students with special needs: to expand their access, participation and progress in the general education curriculum.

The NFF initiative clearly addresses the “access” component of the IDEA ‘97 mandate. Students who are unable to access instructional materials usually find it impossible to participate, let alone progress, in classroom activities. Because the National Center partners and CAST believe that the provision of accessible, flexible curriculum materials is a fundamental prerequisite to enhancing achievement, stewardship of the NFF Expert Panel was a welcome assignment.

CAST and the National Center partners believe that accessible curriculum resources are essential components of a responsive system of instruction. We also believe that accessibility is the first step towards guaranteeing both the full participation and optimal progress of students with special needs.

CAST and the National Center bring not only its experience to the NFF initiative, but a strong commitment to all three components of the IDEA ‘97 mandate: access, participation and progress. We believe that the NFF deliberations can significantly address this mandate with technical specifications that are: 1) extensible (able to be added to in the future); and 2) open and non-proprietary (to maximize the possibility of unfettered and continual contribution by stakeholders).
THE UNIVERSAL LEARNING CENTER: HELPING TEACHERS AND PARENTS FIND ACCESSIBLE ELECTRONIC LEARNING MATERIALS FOR STUDENTS WITH DISABILITIES

The following article appears in the September 2001 issue of *Exceptional Parent* and is used with permission of the author.

By Lucinda M. O’Neill

“I am a Secondary Reading and Dyslexia teacher. I have trouble finding textbooks for my students in any type of electronic form. We have to scan them all into the computer and it would be so nice to find them. Any ideas?”

“I have done several searches for (electronic versions of) lower elementary children’s books, but have not been very successful. Perhaps it is because most are not in the public domain. I want to use the books with middle-school-aged children who are reading at 1st or 2nd grade level. Does anyone know of very low reading level children’s books that are already online?”

“I am also struggling to find (electronic) text for students who are emergent readers. I think we all need to become advocates, speaking to all the companies that develop software for students who are struggling readers - they need to know we are desperate! We are spending so much time scanning in books that would be better spent working with students.”

These recent pleas in an online forum hosted by CAST, a nonprofit educational research and development organization, tell the story: Teachers are frustrated, and in some cases desperate, in their search to find electronic versions of books and other learning materials to help their students with disabilities gain access to and master the general curriculum.

For students with disabilities, electronic, or digital, text offers many advantages over print-based materials. Digital content can be displayed in many formats—text and images, but also sound, moving images, captioned video, and more. Students who have low vision can adjust the color and size of text and background on a computer screen; spoken text can be slowed down for struggling readers. Going further, digital text can incorporate learning supports such as embedded hyperlinks to dictionaries and encyclopedias to build background knowledge, prompts to support reading comprehension, and electronic notepads and visual organizers.

Imagine, then, a one-stop resource where teachers could quickly find electronic versions of curricular materials and the resources and supports they need to use them effectively, even for the next day’s lesson. CAST is creating such a resource with its new Universal Learning Center (ULC), a web-based service (www.ulc.cast.org) that will enable...
teachers, students, administrators, and parents to locate and acquire accessible digital content and software tools to help them meet the needs of individual learners, especially those with disabilities. While full access to the ULC will eventually be offered on a subscription basis, the service is currently available as a pilot program for interested teachers to try out at no cost.

Maximizing the Educational Potential of the Web

ULC Co-Director Skip Stahl says that the ULC “grew out of the awareness that school districts nationwide were routinely digitizing their own instructional materials—a highly redundant and inefficient effort. CAST recognized the potential—through the web—to develop a centralized repository and a content ‘locator’ to help teachers, parents, and students find the materials that fit their needs.”

The web has dramatically increased the ease of distributing learning materials. The ULC will draw on the effectiveness of the web, incorporating a searchable database or ‘locator,’ a repository of digital content, and resources for teachers who are integrating digital materials into their classrooms. Because not all digital materials are accessible to screen readers and other assistive devices used by students with disabilities, those available through the ULC will be carefully chosen to meet this criterion.

Reflecting Current Research in Universal Design for Learning

The ULC is founded on the principles of Universal Design for Learning (UDL), an innovative approach developed by CAST. Facilitated by digital text, UDL is a powerful alternative to the print-only curriculum, particularly for students with physical challenges, learning disabilities, low literacy skills, attention disorders, and those who may have difficulty learning from traditional print-based materials. Universally designed materials offer flexible options for diverse learners, including multiple representations of content, multiple ways for students to act on that content and express knowledge, and multiple ways of engaging students in the learning task at hand.

An Idea Whose Time Has Come

The ULC is uniquely positioned to respond to recent changes in the educational climate. Federal special education mandates—IDEA ’97 and Section 504 of the Rehabilitation Act of 1973—require that students with disabilities have access to, participate in, and progress within the general education curriculum. Yet textbooks and many other core components of the general education curriculum remain inaccessible to students with disabilities and unsupportive of students with diverse learning needs. Moreover, student outcomes and teacher effectiveness are increasingly being measured by high stakes tests that must be taken by all students, including those with disabilities. Yet the high stakes tests themselves are frequently inaccessible.

With less than 5% of special needs students in general education classrooms going on to postsecondary education and fewer still reaching graduate school, a staggering number are being left behind by an educational system that fails to meet their needs. The ULC offers hope to students who are shut out of educational advancement because of inaccessible learning materials.
The increasing use of technology in schools makes a service such as the ULC both feasible and desirable. With 14% of schools now subscribing to online services that deliver instructional content, publishers are eager to stake a claim in this potentially huge market. Major educational publishers are scrambling to provide web-based alternatives to traditional print-based materials, ranging from interactive digital textbooks to collections of web-based tools designed for teachers, students, and parents. A wealth of web-based instructional content services are now available, offering such features as online lesson plans, links to reference materials, searchable databases, and rating systems correlated to state standards. Riverdeep Interactive Learning (www.riverdeep.com), for example, correlates its curriculum content offerings with textbooks and state standards.

What distinguishes the ULC from other content repositories is its focus on accessible digital materials. The service will host accessible digital curriculum materials that are not available elsewhere. If a published work already exists in an accessible format on another web site, the ULC will identify it and provide a link to it. The ULC’s rating system will enable teachers to determine the accessibility of the materials for specific students and their compatibility with specific assistive technologies.

The ULC has received significant start-up funding from the Emily Hall Tremaine Foundation. The U.S. Department of Education has also provided initial funding for the ULC through the National Center on Accessing the General Curriculum (NCAC), a cooperative partnership among CAST and the Council for Exceptional Children, Harvard Law School/Harvard Children’s Initiative, Boston College School of Education, and the Parent Advocacy Coalition for Educational Rights (PACER) to address the challenge of making the general curriculum accessible to all learners.

**Linking Teachers and Publishers**

The ULC’s accessibility focus is catching the attention of educational publishers. According to Stahl, “Large textbook adoption states (such as Texas) are requiring their curricula to be accessible to students with disabilities. So publishers need and want to get their materials online. We are working with several educational publishers to help them provide educational materials in digital format.” Stahl and ULC Co-Director Rick Bowes see curriculum publishers as critical partners in the ULC. Bowes sees the service as a facilitator creating a link between users (teachers, parents, students) and content sources (publishers). “By partnering with publishers, we will make significant strides in making the general curriculum accessible to all learners.”

**A Resource for Teachers and Parents**

While making content available is the ULC’s first challenge, making it useful to teachers and beneficial to students is another. The ULC will act as a resource to support teachers in their efforts to employ digital curricula by providing access to professional development and information on promising practices.

According to Stahl, supporting educators is a critical goal of the ULC. “Teachers are the ones who have to deliver this ‘accessible general curriculum’ to their students. They need to know they will have help in meeting IDEA policy and mandated state standards. It’s not just about access.” The ULC will also address the needs of parents, who often feel...
their children’s schools’ resources are too limited or the approach to instruction not sufficiently innovative. Parents are scheduled to have access to the ULC in early 2003, enabling them to directly support their children’s efforts at home. The ULC expects to also offer online communications forums for parents to share with one another their experience, wisdom, and resources for supporting their children with disabilities.

A Year From Now

Creating a comprehensive repository of K-12 digital curricular materials is a huge undertaking, so the ULC is beginning by featuring social studies and literature content for grades 9 and 10. Moving forward, the ULC will provide access to digital versions of an increasingly wide range of subject areas for all grade levels.

Initially, copyright-protected digital materials will be available for downloading and use only by students entitled to digital materials under disability legislation (the Chaffee Amendment to the Copyright Act). During 2002, however, the ULC plans to add e-commerce capabilities, allowing publishers to charge for the use of their digital content where appropriate. At that point, the ULC’s content repository will be able to support the digital curriculum needs of all students, not just those students for whom accessibility is an issue.

In summarizing CAST’s vision for the ULC, Bowes says: “We’re looking forward to collaborating with teachers, publishers, disability groups and others as the ULC expands its resources. Our goal is to make the ULC an indispensable resource for those serving the learning needs of the more than five million children with documented disabilities and the many millions of other struggling learners for whom new learning technologies and digital content can make a life-changing difference.”

Resources

The Curriculum Web Site Awards were launched in 1998 to identify the best K-12 on-line curriculum materials in every content area. The Awards rate educational sites annually, including both free and fee-based services. For more information, see http://www.camagazine.com/article.php?articleID=3179.

Lucinda M. O’Neill is a staff writer at CAST, the nonprofit Center for Applied Special Technology in Wakefield, Mass.
ASSOCIATION OF AMERICAN PUBLISHERS:
PUBLISHER CONTACT LIST FOR BRAILLE-RELATED 
MATERIALS AND QUESTIONS

This information was provided by the Association of American Publishers and is used 
with permission.

June 2003

AAP School Division publishers have designated the following individuals within their 
respective companies who may be contacted for braille-related materials and questions. 
For further information contact Julie Copty, AAP School Division, 
jcopty@publishers.org.

Mary Lou Beals  
Scott Foresman (Primary Materials K-6)  
1900 East Lake Ave.  
Glenview, IL 60025  
847-486-2221  
marylou.beals@awl.com

Patrick Connolly  
Pearson Education  
Prentice Hall (Secondary Division)  
160 Gould St.  
Needham Heights, MA 02494  
781-455-1327  
patrick.connolly@phschool.com

Dena Greene  
Macmillan/McGraw-Hill (Primary Materials K-6)  
Two Penn Plaza, 21st Fl.  
New York, NY 10121  
212-904-5229  
dena_greene@mcgraw-hill.com

Barbara Beitz  
McDougal Littell  
1560 Sherman Ave.  
Evanston, IL 60202  
847-424-3159  
barb_jarrow@hmco.com
Loretta Marion
Scholastic Inc.
524 Broadway
New York, NY 10012
212-965-7268
lmarion@scholastic.com

Pearce McNulty
Houghton Mifflin Co.
222 Berkeley St.
Boston, MA 02116
617-351-5504
pearce_mcnulty@hmco.com

Alex Mlawsky
Glencoe/McGraw-Hill
8787 Orion Place
Columbus, OH 43240
614-430-4383
alex_mlawsky@mcgraw-hill.com

Lorraine Simonelo
Harcourt School Publishers
6277 Sea Harbor Dr.
Orlando, FL 32887
407-345-3458
lsimonello@harcourt.com

Irene Belinsky
Pearson Learning
299 Jefferson Rd.
Parsippany, NJ 07054
973-739-8298
Irene.belinsky@pearsonlearning.com
CONVERSION VENDORS

The following information appears on AFB Solutions Forum Web pages. Being included on the list should not be considered an endorsement by the AFB Solutions Forum.

| Gina Gordon  
Interactive Composition Corporation 
1466 NW Naito Parkway 
Suite 200 
Portland, OR 97209 
503-221-9911 - phone 
503-221-0956 - fax 
www.iccorp.com 
scott@iccorp.com | ICC is a publishing production company with a long history as a technical supplier to college textbook publishers. As a full service supplier we handle everything from copyediting and permissions development to interior design, LaTeX, Quark, and Framemaker + SGML composition, technical illustration, interactive web publishing and data conversion (from legacy files or hard copy). We specialize in crafting production processes that fit each customer’s publishing needs, whether for print or electronic media. On the technical side, ICC has been working with tagged data for nearly ten years. We are proficient in SGML and XML coding, and can accommodate proprietary tagging schemes as well. We currently have a staff of over 100 people working on eBook conversions and other interactive web products. This staff includes programmers, designers, technical artists, proofreaders, and project managers. We also have effective file management procedures to ensure efficient production, reliable archiving, and easy repurposing. |
| Druanne Martin  
Manager, ePublishing Services 
OverDrive, Inc. 
216-573-6886, 
ext. 401- phone 
dmartin@overdrive.com | OverDrive has converted over a thousand titles, including numerous academic titles and textbooks, into HTML and XML for leading publishers worldwide. As manager of the conversion services department, I can offer a team of professionals with Masters degrees in English and Reading. Many of my team members are former teachers who have chosen to dedicate themselves to creating eBooks that replicate as closely as possible every detail in the original text. We have a proven track record and pride ourselves on converting text to the highest level of accuracy within the conversion industry and within set time deadlines. |
<table>
<thead>
<tr>
<th>Company</th>
<th>Contact Details</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barnes &amp; Noble Digital</td>
<td>Barnes &amp; Noble, Inc. 122 Fifth Ave., 4th Floor New York, NY 10011</td>
<td>We would be interested in doing XML conversions. We have done similar work for the Library of Congress.</td>
</tr>
<tr>
<td>John Ferguson</td>
<td>Administrative Coordinator Impressions Book and Journal Services, Inc. 2016 Winnebago St. Madison, WI 53704</td>
<td>Impressions produces books and journals in print and electronic forms for a wide range of publishers, professionals, trade, medical, legal, scientific/technical, scholarly, reference, and college publishing. Provides XML conversion services.</td>
</tr>
<tr>
<td>Jean Baptiste de Vathaire</td>
<td>Imprimerie des Presse Universitaires de France BP 80, 41102 Vendome Cedex, France</td>
<td>We produce books and eBooks. We specialize in XML and OEB conversion. We developed several applications and procedures to convert from Word, Xpress, FrameMaker, Ventura, and so on to XML or OEB.</td>
</tr>
<tr>
<td>Suzanne Serway</td>
<td>TechBooks 11150 Main St., Suite 402 Fairfax, VA 22030 703-352-0001 ext. 127</td>
<td>TechBooks is a global company committed to delivering tomorrow’s publishing technology to publishers. TechBooks professionals prepare content for any media from print, the web, online databases, eBooks, or wireless devices. Note: TechBooks is being used to test conversion to XML.</td>
</tr>
<tr>
<td>David Lindrum</td>
<td>Sr. Dir. Epistemology and Pedagogy NetLibrary, Inc. <a href="mailto:david@netlibrary.com">david@netlibrary.com</a></td>
<td>All books we work with have the markup in XML or an XML-like manner before being stored and presented as digital texts.</td>
</tr>
<tr>
<td>Anders Buhl</td>
<td>Autotext A/S <a href="mailto:ab@autotext.com">ab@autotext.com</a></td>
<td>This company specializes in XML conversion.</td>
</tr>
</tbody>
</table>
| Mariuca Talpes  
Electronic Publishing  
Manager  
SOFTWIN  
Software Developments  
P.O. Box CP 18-138  
Bucharest, Romania  
40-1-233-0780 – phone  
40-1-233-0763 – fax  
matalpes@softwin.ro  
www.publishing.ro  
www.softwin.ro |
|--------------------------------------------------|
| SOFTWIN is a private Romania company active in  
the Data Conversion, Software Development and  
eCRM fields. Founded in 1990, SOFTWIN has been  
ISO 9001 certified since 1998. Our company  
employs at this moment about 300 people. The  
Data Conversion Dept. has more than 80 full-time  
employees and 100 part-time collaborators. We  
offer our clients a complete production cycle, from  
document analysis and DTD development to SML/  
SGML tagging and style sheet creation. Moreover,  
we can develop search/index and CD applications,  
eBooks. We usually work in teams organized in  
domain areas (chemistry, medicine, libraries, etc.).  
Our staff has specialized in XML/SGML standards  
and editors like Autor Editor, Xmetal,  
FrameMaker, SGML. We have also integrated to  
this process a team of programmers; they develop  
for every project automatization tools in languages  
like XML, XSL, CSS, X-schema, X-link, JADE, Perl  
and FrameMaker. Since 1994 SOFTWIN teams  
have developed more than 1000 projects  
converting books and magazines. The different  
fields include: literature, physics, chemistry,  
medicine and law, financial forms and reports. We  
have started this year book conversion to the new  
OEB format for the US market, and we intend to  
ipvoke ourselves more in this direction. To this  
goal, we have assigned a team of programmers to  
develop custom tools for supporting conversion  
from different formats (Quark, PDF, Word) to  
different XML-based outputs (HTML, OEB or  
simply XML). |

| Karthik Srinivasan  
Lason Systems Inc.  
50 W. Big Beaver Rd.  
Suite 350  
Troy, MI 48084-8445  
248-526-1800 – phone  
248-526-1866 – fax  
karthiks@lason.com  
www.lason.com |
|--------------------------------------------------|
| Conversion services relating to SGML.XML/HTML  
and eBook conversion. |
<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
<th>Conversion Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tom O’Brien</td>
<td>Apex Data Services Inc.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acer conversion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>vendors, specializing in XML and doing a significant and growing number of textbooks.</td>
</tr>
<tr>
<td>Mark Gross</td>
<td>Data Conversion Laboratory</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>prepares digital content for electronic publishing and the web. Converts a variety of information, from all major word processing, typesetting, document formats and paper. Creates XML, SGML, OeB, HTML, and all other structured formats for e-Commerce, electronic publishing, technical documentation and online information services.</td>
</tr>
<tr>
<td>Tony Grantz</td>
<td>American Printing House for the Blind</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Founded in 1858, the American Printing House for the Blind (APH) is the world’s largest company devoted solely to creating products and services for people who are visually impaired. We are interested in helping publishers and transcripters increase production of alternate materials. To support this objective, we have developed software to convert Quark™ files to text files in various formats. We have worked with transcripters to ensure that these files are fully useful in a braille production environment, incorporating the special requirements for conversion to that medium. Our past conversion work has satisfied both the transcripters and the publishers, and has been completed well within timelines. Please fax or e-mail your requirements for a prompt review and response.</td>
</tr>
<tr>
<td>Martin W. Hensel</td>
<td>Texterity, Inc.</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Texterity is a leading provider of outsourced ePublishing services. We enable fast, cost-effective automated transformation of published pages into multiple electronic formats. Texterity leverages XML the new standard for information and e-commerce, to relieve conversion and production bottlenecks faced by publishers.</td>
</tr>
<tr>
<td>Name</td>
<td>Company</td>
<td>Services Provided</td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Steve Potash</td>
<td>OverDrive, Inc.</td>
<td>is a leading provider of enterprise Digital Rights Management (DRM) and associated digital media solutions enabling the management and distribution of premium digital content over global networks.</td>
</tr>
<tr>
<td>Gordon Dyck</td>
<td>GeniSoft</td>
<td>is a first generation ePublisher with expertise spanning the earliest beginnings of the electronic publishing industry. GeniSoft provides a premiere service for content providers to publish their work in any format they desire, whether it is Open eBook Standard, custom CD-ROMs, PDF, HTML or XML.</td>
</tr>
<tr>
<td>Sharon von See</td>
<td>TechAdapt, Inc.</td>
<td>formats materials using the Open eBook (OeB), DAISY/NISO or any other HTML/XML based markup standard. Formatted works can be converted into electronic books (eBooks) in Microsoft Reader format, translated into braille by certifield braille transcribers, or incorporated along with digital audio recordings to create Digital Talking Books (DTBs). We also have strong experience formatting books for optimum readability using HTML and XML/XSL, with intelligent use of hyperlinks for navigation and full compliance with current accessibility standards. Electronic book services include: conversion from text, Quark, Adobe or other electronic formats into the Open eBook format; scanning and OCR conversion of paper materials; text layout and creation or conversion of graphics and thumbnail images; final production of electronic books for both the desktop and Pocket PC versions of the popular Microsoft Reader software and encryption of materials to ensure the appropriate level of digital rights management.</td>
</tr>
</tbody>
</table>
The following information was prepared for the AFB Solutions Forum.

By Michael Moodie, Research and Development Officer, National Library Service for the Blind and Physically Handicapped

On March 6, 2002, the American National Standards Institute (ANSI) formally approved, as an American National Standard ANSI/NISO Z39.86-2002, specifications for the Digital Talking Book (DTB). The standard was developed by a committee working under the auspices of the National Information Standards Organization (NISO).

The standard represents the results of over four years of effort by an international team representing a broad range of stakeholders dedicated to providing alternative format materials to print-disabled readers. It is built on specifications and needs formulated by blind and visually impaired users, who were heavily involved in every aspect of the development effort.

ABOUT THE DTB STANDARD

The DTB standard is important because it makes possible a powerful, flexible reading system that easily adapts to different types of documents and different user needs. A DTB is a collection of electronic files arranged to present information to the target population via alternative media. These media can include: human or synthetic speech, refreshable braille, or visual display (e.g., large print).

When these files are created and assembled into a DTB in compliance with this standard, a wide range of features can be offered:

- rapid, flexible navigation;
- bookmarking and highlighting;
- keyword searching;
- spelling of words on demand;
- user control over the presentation of selected items (e.g., footnotes, page numbers, etc.).

These features enable readers with visual and physical disabilities to access the information in DTBs flexibly and efficiently. This functionality also benefits persons with learning or reading disabilities, allowing these readers to receive this information through multiple senses.
DTBs developed to this standard can include content in text form, marked up with an XML element set (DTBook) developed for the DTB application. The DTBook element set will likely have wide application beyond digital talking books as it was designed to enable the production of documents in a variety of accessible formats, especially braille. At least one U.S. braille software firm (Duxbury Systems, Inc.) has developed a program that imports files in DTBook format and automatically creates properly formatted grade 2 braille, though some additional work by a knowledgeable braillist will often be necessary, depending on the complexity of the file.

Work is underway to pass national legislation known as the Instructional Materials Accessibility Act (IMAA) which, among other aspects, would create a national standard for textbook files provided by publishers in electronic form. The DTBook format is a strong candidate for such a role.

DEVELOPMENT OF THE DTB STANDARD

The DTB standard is a result of many years work and much collaboration. The full committee met eleven times across the United States and Canada and smaller working groups met countless times in person and via conference calls and e-mail.

Wherever possible, standards or specifications developed by other groups were used. This draft standard incorporates or references many existing specifications, in whole or in part, including several developed by the World Wide Web Consortium (W3C) and one from the Open eBook Forum (OEBF).

A number of Standards Committee members participate on working groups of other standards bodies, including the W3C’s Synchronized Multimedia Working Group and the OEBF’s Publication Structure Working Group (PSWG). Cooperation was especially fruitful with the latter group. Our mutual interest in navigation mechanisms resulted in the PSWG adopting the basic features of a navigation control file developed for the DTB. In turn, the PSWG added enhancements that were incorporated into the NISO standard.

The standard was built on a foundation of predecessor specifications created by the DAISY Consortium. Members of DAISY contributed greatly to the development of the ANSI/NISO DTB standard and DAISY has adopted the standard as the latest in their series, calling it “DAISY 3.”

LINKS

The National Library Service for the Blind and Physically Handicapped (NLS), Library of Congress, chaired the NISO DTB committee and houses on its web site (www.loc.gov/nls/z3986) a number of documents developed in support of the standard. The site also contains links to the standard itself on the NISO web site.

The DAISY (Digital Audio-based Information System) Consortium (www.daisy.org) is an international consortium developing specifications and tools in support of digital talking books. A set of “Structure Guidelines” on the use of the DTBook element set is maintained on the DAISY web site.
JOINT TECHNOLOGY TASK FORCE (JTTF): ELECTRONIC FILE FORMAT ANALYSIS

The following information appears on web pages of the AFB Solutions Forum and is used with permission.

A critical project from the Electronic Files and Research and Development Work Group is the Joint Technology Task Force (JTTF). The JTTF began on June 15, 2000 in Washington, D.C. when AFB, Association of American Publishers (AAP), and Recording for the Blind and Dyslexic (RFB&D) brought publishers and the technology specialists in the field of blindness together to discuss new technologies and the capabilities for advanced electronic file conversion that allows greater accessibility to both the visually impaired community and general user of eBooks. At this historic meeting, topics discussed included the development of a cross-platform standard for electronic files, dual stream publishing (both print and eBook), synchronized audio and text, and how organizations serving people with disabilities can work together with innovative publishers.

There are two main goals of the JTTF:

1. To analyze the National Information Standards Organization (NISO) Extensible Markup Language (XML) file format to determine its suitability for converting textbook content into braille and other accessible formats.
2. To promote and demonstrate to accessible book producers and braille transcribers the efficiency and benefits of using publishers’ files in ANSI/NISO XML format.

Stakeholders in this effort have expertise in Extensible Markup Language (XML), which is used for all modern IT systems. The Digital Audio-Based Information System (DAISY) Consortium and the National Information Standards Organization (NISO) both use the XML notation. The DAISY/NISO XML 3.0 Document Type Definition (DTD) is used to define markup for textbooks. The structure guidelines of DAISY clarifies the usage for braille applications and for Digital Talking Books (DTB). In addition, expertise is from braille software developers, publishers of textbooks and expert users of braille translation software with publishers’ electronic files.

Stakeholders include: American Foundation for the Blind; American Printing House for the Blind; Association of American Publishers (with Harcourt, Houghton Mifflin, McGraw Hill, Pearson, and Scholastic); Braille Authority of North America; Computer Application Specialities Company; Duxbury Systems, Inc.; National Braille Association; National Braille Press; National Library Service; Recording for the Blind & Dyslexic; Texas Education Agency's producers of alternate formats (Education Service Center, Region 20, Region IV Education Service Center and Visual Aid Volunteers); and TechAdapt.
A listserv was established and meetings were held in September 2000 and during the AAP School Division’s Annual Meeting on January 17, 2001 in Austin, Texas. The group meets quarterly to share the progress made with the various objectives.

For more information contact George Kerscher (RFB&D) at 406-549-4687 or at kerscher@montana.com.
The following information appears on web pages of the AFB Solutions Forum and is used with permission.

The national need for textbook transcribers to become familiar with publishers’ files became widely known through the work of the AFB Solutions Forum’s Joint Technology Task Force (JTTF). The AFB Textbooks and Instructional Materials Solutions Forum, in conjunction with AFB’s National Education Program and National Literacy Center, has taken a leadership role in offering new skills to current braille transcribers.

With the goal of achieving improved and more efficient braille textbook production from publishers’ files, a training opportunity has been created for braille transcribers who are knowledgeable about textbook production and computer software systems, but who are not experienced in working with publishers’ files. The end result will be a web-based, self-directed seminar, which will be available in the spring of 2003 on AFB’s web site (www.afb.org). The project is associated with two of the work groups of the AFB Solutions Forum: Electronic Files/Research and Development and the Training and Other Needs Work Groups.

Although a single, well-structured file format is not yet in place, there is promise from the Joint Technology Task Force for a universal file format called the American National Standards Institute/National Information Standards Organization/Extensible Markup Language (ANSI/NISO/XML) file format. The JTTF, comprised of publishers, braille production experts and technology specialists in the field of blindness, is analyzing the use of a universal set of standards in formatting publishers’ files, which will allow greater information accessibility to both the visually impaired community and the general user of “electronic books” or eBooks.

A key component of this braille textbook transcriber training is a manual. To build the contents of the manual, AFB provided workshops in three U.S. cities in 2002. The pilot session to develop the curriculum was in Houston, Texas at the Region IV, Education Service Center on February 1, 2002. The first hands-on opportunity to experience this training was on March 14, 2002 in conjunction with the California Transcribers and Educators of the Visually Handicapped (CTEVH) Conference held in San Diego, California. Another session was offered April 10, 2002 in conjunction with the National Braille Association (NBA) Conference held in Alexandria, Virginia. Additional training will be offered for the Association of Instructional Resource Centers for the Visually Handicapped (AIRC) in Louisville, Kentucky in October 2002.

The American Printing House for the Blind’s (APH) Accessible Textbook Initiative and Collaboration Project (ATIC) partnered with AFB to develop this national training manual. APH is providing staff expertise and is committed to offering the on-site
training in typical workshop settings in the future. We want to acknowledge the significant contribution of Betsy Burnham who is writing specific sections, while editing and formatting the manual’s contents.

The writing team which developed the state-of-the-art training curriculum includes the expertise of four textbook braille transcribers. Betsy Burnham, with APH; Susan Christensen, independent braille transcriber; Diane Spence with Region IV, Education Service Center in Houston, Texas; and Joanna Venneri, independent braille transcriber represent the experts who are writing the core materials with Mary Ann Siller, AFB’s National Program Associate in Education and Project Director of the AFB Solutions Forum.

The national manual and future web-based, self-paced learning project will offer critical skills to a valued profession, America’s braille textbook transcribers. For more information, contact Mary Ann Siller at siller@afb.net or go to www.afb.org/education.asp to locate the AFB Solutions Forum Training Work Group section.

**AFB TRAINING MANUAL FOR BRAILLE TEXTBOOK TRANSCRIBERS - TABLE OF CONTENTS**

I. **Welcome**  
Overview of AFB Solutions Forum and History of the Development of the Training Manual

II. **Value to Transcribers**  
What Are Publishers’ Electronic Files?  
Why Are Publishers’ Electronic Files Important and Necessary to Braille Transcribers?  
How Will Availability of Publishers’ Electronic Files Impact Braille Production?  
Proposed National Legislation

III. **Availability of Files**  
Overview  
Delivery Methods for Publishers’ Electronic Files

IV. **Other Computer Skills**  
Creating a Folder  
Copying Files into a Folder  
Working With E-mail Attachments  
AOL  
Eudora  
GroupWise Web Access  
Juno  
Outlook  
ZipItFast!  
Unzipping Files  
Zipping Files
V. File Types

VI. Using Microsoft Word
   AutoFormat
   Find and Replace
   Examples of Common Find/Replace

VII. Working with Files in Your Braille Translation Software
   Duxbury
      Installing an Alternate Keyboard
      Using Styles
      Creating Your Own Styles
      Creating Your Own Template
      Duxbury Transcriber Manual Handouts

   ED-IT PC
      Publishers’ Files and ED-IT PC
      Paste Special
      Insert File
      Print File Preparation
      Accented Letters
      Accents Shown as Characters
      Accents Shown as Codes
      Single Quotes
      Translating the Print Slash
      Plurals with Apostrophies (or not!)
      Translating Math Signs

   MegaDots
      Introduction
      Preferences
      Manipulating Files Before and After Importing
      Global Find and Replace
      Emphasis
      Page Numbers
      Headings
      Find and Replace

VIII. Appendix
   Check List Explanation
   Check List
   Check List (Blank)
   Code List
   Essential Reference Books
   Files Worksheet
   Other Software of Interest
   Syntax
   Understanding Microsoft Word Find and Replace Syntax
   Terminology
   AFB Textbooks and Instructional Materials Forum: What is ASCII
Appendix continued

Association of American Publishers
Publisher Contacts for Braille-related Materials and Questions
Contact List of Vendors
ATIC Project of APH
Equal Access to Textbooks and Education Materials
Instructional Materials Accessibility Act of 2002
AFB Textbooks and Instructional Materials Solutions Forum: Common
Acronyms Used When Speaking About Accessible Textbooks
Why Does It Take So Long?
INSTRUCTIONAL MATERIALS ACCESSIBILITY ACT (IMAA) - SUMMARY OF KEY AREAS

The following information appears on web pages of the AFB Solutions Forum and is used with permission.

Prepared by: AFB Textbooks and Instructional Materials Solutions Forum
Legislative and Policy-Making Work Group
www.afb.org/education.asp and www.afb.org/textbooks.asp

Mark Richert, AER and Mary Ann Siller, AFB

The purpose of the Act is to improve access to printed instructional materials used by elementary and secondary school students who are blind, as well as other students who have print disabilities. This will be achieved through the creation of a system for acquiring and distributing publishers’ electronic files of textbooks and other instructional materials, so that these materials can be made available in braille, synthesized speech, digital text, digital audio, or large print.

National Standard for Electronic Files and Advisory Committee

Under the bill, the Secretary of Education in conjunction with the National Institute of Standards and Technology (NIST) of the Department of Commerce will adopt a national electronic file format standard to be used by publishers in the preparation of structured and fully marked-up electronic files suitable for efficient conversion into specialized formats, such as braille, synthesized speech, digital text, digital audio books, or large print. This standard will be based upon the recommendations of an advisory committee comprised of representatives of all relevant players in the publishing and specialized format production process, consumer groups, and many others. This standard will preempt previous state file format requirements, but it will only take effect two years after the standard is published as the final rule. These standards will be required by the bill to be in conformance with existing and emerging technologies and publishing methods. The emerging technology is building upon the American National Standards Institute/National Information Standards Organization (ANSI/NISO) "tags" in Extensible Markup Language (XML). However, progress must continue to be made to incorporate the ANSI/NISO format with XML. Doing so will ensure the highest degree of structure possible for the files which publishers will be required to prepare. In addition, the bill will mandate that, after two years from the publication of the final standards, any contracts or other mechanisms used by states and local education agencies in the acquisition of instructional materials must require publishers to transmit a compliant file to the national repository (see Role of the National Instructional Materials Access Center).

Finally, the bill will call for the U.S. Department of Education to publish the proposed standards in the Federal Register six months from the date of appointing the Advisory
Committee. From the time the proposed standards appear in the Federal Register, the public will have one month to comment. The final rule will be given within two months from the end of the comment period.

The U.S. Department of Education will convene an advisory committee to help determine the specifications to be used by publishers in delivering electronic files. The Advisory Committee will be appointed three months from the date of enactment of the Act. It will consist of publishers of instructional materials, producers of adaptive technology and materials in specialized formats, representatives of blind consumer organizations, representatives of general and special education programs, developers of accessibility and publishing software and supporting technologies, representatives of information technology standards organizations, representatives of instructional materials resource centers with substantial experience in file format preparation with braille software conversion technology, and representatives of other agencies or organizations that the U.S. Department of Education determines to be appropriate.

**Transition Period**

The U.S. Department of Education will adopt the final standards identified by the Advisory Committee and publish those final standards in the Federal Register within one year of enactment of the Act. Three years from the date of enactment of the Act, the final standards will supercede any state or local laws or regulations calling upon publishers to provide files in different formats. This means that states will no longer be allowed to "require" publishers to produce on demand file formats other than the format standard published by the U.S. Department of Education. Prior to the publication of the standards, existing state requirements regarding file format will remain in effect. The new national file format standard will only take effect three years from the date of enactment of the Act. Basically, this means there will be two years from the final published rule of the standards for publishers to comply.

**Role of the National Instructional Materials Access Center**

Most jurisdictions, especially smaller jurisdictions and those which have no current legal requirements on publishers to provide electronic files, feel strongly that a national repository center is necessary as the only sure hope of prompt access to electronic data files. The value and necessity of a central clearinghouse entity to receive and maintain the publishers’ electronic files is overwhelming. Publishers certainly will not want to be required to respond to requests for files from numerous individual state and local agencies. Congress especially will not look favorably at providing funding for such a system which is duplicating efforts.

Funds will be made available to the U.S. Department of Education to provide funding for the National Instructional Materials Access Center. Through a competitive award, the U.S. Department of Education will enter into contract to operate the Center with a nonprofit organization, or consortium of organizations, with substantial experience in the production of specialized formats within two years of the date of enactment of the Act. The contract will be renewed on a biannual basis. The Center will act as a national clearinghouse (repository) for the acquisition and distribution of instructional materials produced in electronic format. Three years after enactment of the Act, publishers’ new copyright files will be deposited in the Center.
The bill will define the Center to be responsible for approving authorized entities, assessing the needs of the authorized entities, retrieving files from publishers, cataloging and storage of the files, and prompt and efficient distribution of the files to authorized entities, among other areas. The bill will be careful to define authorized entities in the same way the term is defined by the Chafee Amendment to the Copyright Act which eliminated the need for specialized format producers and others to obtain permission from copyright owners prior to the reproduction and distribution of their works. Under the amendment, an authorized entity is defined as a nonprofit organization or a governmental agency that has a primary mission to provide specialized services relating to training, education, or adaptive reading or information access needs of blind or other persons with disabilities. This definition is extremely broad and will guarantee the availability of publishers' standardized files to all parties with a primary mission to produce accessible materials.

**State/Local Procedures to Ensure Equal Access to Textbooks and Instructional Materials**

A provision in the Act describes how state and local education agencies receiving federal financial assistance under the Individuals with Disabilities Education Act (IDEA) will be responsible to develop and implement a statewide plan within two years of enactment of the Act. The statewide plan will ensure that printed instructional materials required for classroom use in elementary and secondary schools are made available in specialized formats to individuals with disabilities at the same time such materials are provided to individuals without such disabilities.

The statewide plan will be unique to each state. However, at a minimum the statewide plan shall designate the entity responsible for collecting and maintaining data of the students who are blind or others with print disabilities who require instructional materials in specialized formats; establish the methods and procedures by which these materials will be provided in the appropriate media/medium; identify the resources available for production of instructional materials in specialized formats; establish procedures that local education agencies and any other agency with responsibility for carrying out the education of children with disabilities will follow to ensure the timely delivery of instructional materials; provide assurances that contracts with publishers meet the requirements specified in the Act; and provide for periodic evaluation to determine if the instructional materials are being provided at the same time as students without disabilities receive their instructional materials.

As part of any instructional materials adoption process, procurement contract, or other practice or instrument used for the purchase of instructional materials, state and local education agencies will ensure that there will be a written contract with publishers. This contract will define that publishers will provide electronic files of such materials in the national electronic file format, along with a print copy of such materials, and these files will be sent to the national repository (see Role of the National Instructional Materials Access Center).

In addition, the contract will specify the files must correspond to the most recent pupil edition and be sent in thirty days. If such materials are altered prior to use in the classroom and after the contract was ratified, a complete record of the changes and corrections will be sent to the Center. In the contractual agreement, the state or local
educational agency may also request to directly obtain copies of the electronic files prepared and transmitted to the Center. This contractual agreement will take effect three years after the enactment of the Act.

As proposed, a jurisdiction's federal dollars will not be at risk simply because a particular student's book is not ready on the first day of class. However, the bill will, for the first time in our nation's history, require unequivocally that the federal government shall not offer federal financial sponsorship to states or agencies which do not work aggressively to ensure equal access to educational materials for blind or visually impaired children.

**Definition of Instructional Materials**

In the bill, the term “instructional materials” will mean written and published textbooks and related core materials (including those specific materials which shall be used by teachers for classroom instruction) required by a state or local education agency for use in elementary and secondary school instruction, including specifically requested teachers’ editions of such materials.

The bill's coverage is limited strictly to printed instructional materials in K-12. This definition will include math and science materials (there is no distinction between "literary" and "non-literary" materials in this definition).

Finally, nothing in this definition, or in the text of the bill, can be used to argue that states are barred from enacting requirements on publishers regarding access to multimedia instructional materials, such as CD-ROMs or other non-print materials.

**Grants for Capacity Building**

This area will provide for grants to state or local educational agencies or nonprofit organizations with a primary mission to provide specialized services relating to training, education, or adaptive reading or the information access needs of blind persons or other persons with print disabilities. The grants will strengthen the technical assistance and training capacity across the United States.

**Enforcement**

The Act provides that the rights, remedies and procedures available to children and parents under the Individuals with Disabilities Education Act (as amended) and the Rehabilitation Act of 1973 (as amended) will also be available under this Act to children and parents aggrieved by violations of this Act by any state or local educational agency. Also, this Act does not limit any right, remedy, or procedure otherwise available under federal law which provided greater or equal protection for the rights of blind or other persons with print disabilities.

**Relationship to Section 121 of the Copyright Act**

These provisions clarify that, for purposes of the IMAA, a publisher's provision of print instructional materials to a state or local educational agency in the national electronic file format, and reproduction or distribution of such materials in a "large print" format
by a government agency or nonprofit organization whose primary mission is to provide specialized services to blind persons or others with disabilities, will be considered noninfringing uses of such materials under the Chafee Amendment to the Copyright Act, 17 U.S.C. Section 121

**Use of Funds**

This provision requires that any funds made available under the IMAA must be used to supplement, rather than to supplant, any other funds available to carry out the requirements of the IMAA.

**Research and Reports**

This provision requires the Secretary to research the effect of the IMAA on the timely delivery of accessible instructional materials to the students who require them, and to report to the appropriate Congressional committees on the results of such research no later than three (3) years after enactment.

**Time Line**

Legislation signed into law

3 months from date of enactment: Appointment of Advisory Committee

6 months from date of appointing the Advisory Committee: Proposed standards published in the Federal Register

1 year from enactment of the Act: Final file format standards are established

2 years from date of enactment: Access Center is established

2 years from date of enactment: States must have a written statewide plan in place

3 years from date of enactment: Publishers must comply with NIST standards
INSTRUCTIONAL MATERIALS ACCESSIBILITY ACT (IMAA) - SECTION BY SECTION

The following information appears on web pages of the AFB Solutions Forum and is used with permission. For complete information about the IMAA go to www.afb.org/textbooks.asp.

[H.R.4582 and S.2246] 107th Congress
[H.R.490] 108th Congress

SECTION 2 - PURPOSE

The purpose of the Act is to improve access to printed instructional materials used by elementary and secondary school students who are blind, as well as other students who have print disabilities. This will be achieved through the creation of a system for acquiring and distributing publishers’ electronic files of textbooks and other instructional materials, so that these materials can be made available in braille, synthesized speech, digital text, digital audio, or large print. The transition for implementing this new system will occur over three (3) years.

SECTION 3 - NATIONAL ADVISORY COMMITTEE AND ELECTRONIC FILE STANDARDS

This provision would require the Secretary of Education to establish a National Instructional Materials Accessibility Advisory Committee within three (3) months of the date of enactment.

No later than twelve (12) months after the date of enactment, the Secretary, in consultation with the Advisory Committee and the National Institute of Standards and Technology, would be required to issue technical standards for a “national electronic file format” suitable for efficient conversion into specialized formats, such as braille, synthesized speech, digital text, digital audio books, or large print.

The national electronic file format would preempt electronic file format requirements, and publishers would be required to begin using the national electronic file format no later than two (2) years after the standards are published in the Federal Register as a final rule.

SECTION 4 - STATEWIDE PLAN AND CONTRACTS WITH PUBLISHERS

Within two (2) years of enactment, the IMAA would require each state educational agency receiving federal financial assistance under the Individuals with Disabilities Act (“IDEA”) to develop and implement a written statewide plan to ensure that printed instructional materials required for classroom use in elementary and secondary schools are made available in specialized formats to individuals who are blind or have other...
print disabilities at the same time such materials are provided to individuals without such disabilities.

In addition, each such state educational agency would be required, as part of any adoption process, procurement contract, or other practice or instrument used for the purchase of instructional materials, to enter into a written contract with the publisher of the materials requiring the publisher, in conjunction with its provision of the materials, to also provide such materials to a National Instructional Materials Access Center (“Center”) (see below) as electronic files in the prescribed national electronic file format. Such contracts, which would be entered into and take effect not later than three (3) years after enactment, must address the provision of both pupil and requested teacher editions of the materials in electronic files suitable for conversion into specialized formats.

The provisions regarding publisher obligations would preempt any inconsistent requirements of any state or local government regarding a publisher’s provision of print instructional materials in the form of electronic files for conversion into specialized formats, except that nothing in the IMAA would impair the right of any state or local educational agency to enter into a contract with the publisher for the purpose of obtaining such electronic files directly from the publisher, rather than obtaining them from the National Instructional Materials Access Center (see below) which would otherwise receive them from the publisher and make them available to the agency.

SECION 5 - NATIONAL INSTRUCTIONAL MATERIALS ACCESS CENTER

Not later than two (2) years after enactment, IMAA would require the Secretary to establish a “National Instructional Materials Access Center” to coordinate the acquisition and distribution of instructional materials provided by publishers in the prescribed national electronic file format. A contract to operate the Center, renewable on a biannual basis, would be competitively awarded by the Secretary to a nonprofit organization or consortium of such organizations.

SECTION 6 - CONVERSION CAPACITY-BUILDING GRANTS

These provisions authorize the Secretary to award grants to eligible entities to provide or improve their capacities to prepare or obtain instructional materials in specialized formats as provided under IMAA. They also authorize federal appropriations for this purpose.

SECTION 7 - ENFORCEMENT

These provisions do not create new enforcement mechanisms, but make the rights, remedies and procedures available to children and parents under the IDEA and of the Rehabilitation Act of 1973 also available to children and parents aggrieved by violations of the IMAA by any state or local educational agency, without limiting any right, remedy, or procedure otherwise available under federal law that “provides greater or equal protection for the rights of blind or other persons with print disabilities.”
SECTION 8 - RELATIONSHIP TO SECTION 121 OF THE COPYRIGHT ACT

These provisions clarify that, for purposes of the IMAA, a publisher’s provision of print instructional materials to a state or local educational agency in the national electronic file format, and reproduction or distribution of such materials in a “large print” format by a government agency or nonprofit organization whose primary mission is to provide specialized services to blind persons or others with disabilities, will be considered non-infringing uses of such materials under the Chafee Amendment to the Copyright Act, 17 U.S.C. Section 121.

SECTION 9 - USE OF FUNDS

This provision requires that any funds made available under the IMAA must be used to supplement, rather than to supplant, any other funds available to carry out the requirements of the IMAA.

SECTION 10 - RESEARCH AND REPORTS

This provision requires the Secretary to research the effect of the IMAA on the timely delivery of accessible instructional materials to the students who require them, and to report to the appropriate Congressional committees on the results of such research no later than three (3) years after enactment.

SECTION 11 - DEFINITIONS

These provisions define key terms as they are used in the IMAA, including “print disability,” “instructional materials,” “national electronic file format,” and “specialized format,” among others.

1. “Print disabilities” means individuals who are eligible or who may qualify in accordance with the Act entitled “An Act to provide books for the adult blind,” (2 U.S.C. 135a), to receive books and other publications produced in specialized formats.

2. “Instructional materials” means printed basal textbooks and related core materials that are written and published primarily for use in elementary and secondary school instruction and are required by a state or local educational agency for use in the classroom, including specifically-requested teachers’ editions of such materials.

3. “National electronic file format” means a well-organized, structured, and marked-up electronic file which is suitable for efficient conversion into specialized formats and which is in conformance with the technical standards to be issued pursuant to section 5 of this Act.

4. “Center” means the National Instructional Materials Access Center established by the Secretary under section 5.

5. “Secretary” means the Secretary of Education.
6. “Specialized format,” with respect to instructional materials, means braille, synthesized speech, digital text, digital audio, or large print.

7. “State educational agency” and “local educational agency” have the meanings given those terms in section 9101 of the Elementary and Secondary Education Act of 1965.

SECTION 12 - PROVISIONS

This provision establishes that the IMAA will take effect upon enactment, and apply only to instructional materials that are copyrighted and published after the date on which the technical standards for the national electronic files format take effect.
SUPPORTERS OF THE INSTRUCTIONAL MATERIALS ACCESSIBILITY ACT

The following information appears on web pages of the AFB Solutions Forum and is used with permission.

On Wednesday, June 27, 2001, representatives of the American Council of the Blind, American Foundation for the Blind, American Printing House for the Blind, Association of American Publishers, Association for Education and Rehabilitation of the Blind and Visually Impaired, National Federation of the Blind, Recording for the Blind & Dyslexic, Texas Education Agency, and other major stakeholders of the AFB Solutions Forum reached final agreement on both the text of legislation to take to Capitol Hill and to work collaboratively to achieve its enactment. This legislation will dramatically improve access to instructional materials required for classroom use in elementary and secondary schools.

Alternate Text Production Center of the California Community Colleges
American Council of the Blind (ACB)
American Foundation for the Blind, Inc. (AFB)
American Printing House for the Blind (APH)
Association for Education and Rehabilitation of the Blind and Visually Impaired (AER)
Association of American Publishers (AAP)
Association of Instructional Resource Centers for the Visually Handicapped (AIRC VH)
Association of State Education Consultants for the Visually Impaired (ASECVI)
Braille Authority of North America (BANA)
Braille Institute of America, Inc.
California Department of Education, Clearinghouse for Specialized Media and Technology
California Transcribers and Educators of the Visually Handicapped (CTEVH)
Center for Applied Special Technology, Inc. (CAST)
Computer Application Specialties
Council for Exceptional Children, Division on Visual Impairments (CEC-DVI)
Council of Schools for the Blind (COSB)
Digital Audio-Based Information System Consortium (DAISY)
Duxbury Systems, Inc.
Hadley School for the Blind (HSB)
Helen Keller Services for the Blind
Louisiana School for the Visually Impaired (LSVI)
National Association for Parents of Children with Visual Impairments, Inc. (NAPVI)
National Braille Authority
National Braille Press (NBP)
National Center for Accessible Media (NCAM) at WGBH
National Federation of the Blind (NFB)
State and national agencies who are politically unable to endorse federal legislation, but who are in favor of the IMAA:

Library of Congress National Library Service for the Blind and Physically Handicapped (NLS)
Texas Educational Agency (TEA)
The following information appeared in *Education Daily*.

By Ted Gotsch

**Vol. 35, No. 80  Monday, April 29, 2002**

Jessie Kirchner knows firsthand the difficulties blind students face while trying to get adaptive textbooks for their classes.

The Guilford, Conn. junior took most of her high school geometry course without the benefit of a braille textbook, and just this month received a blank tape instead of the audio version of a history reading assignment due.

Districts have been hampered by the months it takes to produce braille textbooks, as well as the cost, which can run upwards of $2,000. But that could change if a new bill sponsored by Sen. Christopher Dodd, D-Conn., and Rep. Thomas Petri, R-Wis., becomes law.

The “Instructional Materials Accessibility Act” introduced in Congress Wednesday, would require states to ensure that braille and electronic learning materials are made available to blind students in an equally timely manner as they are for their sighted peers.

And that, Jessie said, would make a real difference for the visually impaired. “I’m excited for all the kids... who this will help,” she said at a Capitol Hill press conference.

The legislation marks a cooperative effort between advocates for the blind, lawmakers and the publishing industry. It would create a national uniform electronic format so that school textbooks can more easily be converted into braille.

Publishers would have to submit an electronic file of all textbooks to a newly-created central depository, so that states, districts, publishers and other groups can more quickly acquire the materials. The federal government would provide $1 million a year to pay for depository’s administrative costs.

The measure would also provide $5 million a year in grants for the next five years to help districts cover braille text printing expenses. Besides the backing of Dodd and Petri—the vice chairman of the House’s education committee—the legislation is co-sponsored by three senators and 41 House members.
NEW BILL WOULD GIVE BLIND STUDENTS EQUAL ACCESS TO TEXTBOOKS

The following information appeared on the web pages of eSchool News.

From eSchool News staff and wire service reports
April 30, 2002

A bill introduced into both the House and the Senate April 24 promises to improve access to textbooks dramatically for students who are blind or have other disabilities that impair their use of printed material.

If the legislation is enacted, states and local school districts that receive federal funding would have two years to make sure visually impaired students can access all educational materials at the same time as their peers.

Educators would have help from textbook publishers, who would be required to submit electronic files of all textbooks according to a universal standard, making it easier for schools to convert instructional materials into accessible formats.

“Far too often, blind and visually impaired students must wait months while their local school districts convert their textbooks into braille — and at the same time school districts face exorbitant costs for these conversions,” said Sen. Christopher Dodd, D-Conn., who serves as chairman of the Senate Subcommittee on Children and Families.

A Connecticut high school student said she spent hours last week scanning her textbook so she could access it.

“A lot of our books are available in tape [format], and tapes are useful and everything, but... my history book that I needed this week was totally and completely blank,” said Jessie Kirchner, a junior at Guilford High School in Connecticut, a visually impaired student who spoke at a press conference announcing the legislation.

The bill, dubbed the Instructional Materials Accessibility Act of 2002 (H.R. 4582 and S. 2246), would create an efficient system for acquiring and distributing instructional materials in a variety of specialized formats, including braille, synthesized speech, digital text, digital audio, and large print.

To do this, one standard electronic format for converting school textbooks into braille for visually impaired students would be established.

“Twenty-six states presently require publishers to provide a copy of the textbook in electronic format,” Dodd said. However, there is no standard in practice to regulate this process, so schools have been getting textbooks in a variety of file formats.
In addition to adopting a standardized, national electronic file format, the bill would set aside $1 million to create a central depository or clearinghouse, called the National Instructional Materials Access Center for easier and faster access to these materials.

The bill “makes it easier for publishers to know where to send the files, and it makes it easy for schools to know where to go to get these files,” said Paul Schroeder, vice president for government relations at the American Foundation for the Blind (AFB).

Textbook publishers would have to provide schools with a written agreement that says they agree to submit an electronic format of the book within 30 days to the center.

“As more and more books go into the center, it will become an automatic process for any new book that gets published,” Schroeder said.


“We are very committed to our work to ensure that all students, including those who are blind or print disabled, have access to textbooks and materials that they need and can use,” said former Congresswoman Pat Schroeder, president and chief executive of AAP.

This national electronic file format and depository would have far-reaching benefits, said Carl R. Augusto, president and chief executive of AFB: “With the [Instructional Materials Accessibility Act], we are witnessing the start of something truly groundbreaking.”

In addition to the $1 million to develop the center, $5 million would be available for the first few years to help states pay for the technology needed to make use of the electronic files.

**Links:**

Instructional Materials Accessibility Act of 2002

American Foundation for the Blind
http://www.afb.org

Sen. Christopher Dodd, D-Conn.
http://dodd.senate.gov

Association of American Publishers
http://www.publishers.org
GET CAUGHT READING

The following information was prepared for the AFB Solutions Forum.

Patty Duke & Erik Weihenmayer celebrate literacy as they “Get Caught Reading” braille.

The American Foundation for the Blind (AFB) has partnered with the Association of American Publishers (AAP) to kick off the fourth year of the very successful “Get Caught Reading” national advertising campaign with a new cast of celebrities who “Get Caught Reading” braille.

Patty Duke, who won an Academy Award for her childhood portrayal of Helen Keller in *The Miracle Worker,* and Erik Weihenmayer, the blind adventurer and author who climbed to the summit of Mt. Everest in 2001, each volunteered to pose for this year’s campaign. Duke is pictured in a Spokane, WA library with Amanda Hughes, a sixth-grader who has been reading braille for a number of years. Weihenmayer is caught reading a braille book in his tent during a wintry expedition.

“Get Caught Reading” is a nationwide campaign to remind people of all ages how much fun it is to read. “Get Caught Reading” is supported by the Association of American Publishers (AAP) and the Magazine Publishers of America (MPA). Launched in 1999, “Get Caught Reading” is the brainchild of former Congresswoman Pat Schroeder, President and Chief Executive Officer of AAP, the industry association representing book publishers. More information about the national “Get Caught Reading” campaign can be found at www.publishers.org/.

In addition to Patty Duke and Erik Weihenmayer reading braille, this year’s ads also feature First Lady Laura Bush, New York Mayor Michael Bloomberg, Vernon Jordan, Drew Carey, and Clifford the Big Red Dog reading print versions of their favorite books. The “Get Caught Reading” campaign is ongoing and new celebrities are added all the time.

**The Duke and Weihenmayer posters are available for free by visiting AFB’s online bookstore at www.afb.org/store and clicking on “Free Stuff.”** Schools, bookstores, libraries, and book fairs throughout the United States will be displaying posters of these celebrity braille readers to show the public that reading is “cool.” This public service advertising is intended to communicate a love of books and pleasure of reading regardless of the medium—print or braille.

The American Foundation for the Blind—the organization to which Helen Keller devoted her life—is a national nonprofit whose mission is to eliminate the inequities faced by the ten million Americans who are blind or visually impaired. Headquartered in New York City, AFB maintains offices in Chicago, Dallas, and San Francisco, a National Literacy Center in Atlanta, a governmental relations office in Washington, D.C., and a Technology and Employment Center in Huntington, WV. For more information about the American Foundation for the Blind, visit www.afb.org.
The following information was prepared for the AFB Solutions Forum.

Computer Application Specialties Company


Modern textbooks contain many visual elements in addition to the text, such as tables, charts, and pictures, along with footnotes and marginal notes. The sighted reader can visually move from place to place on the page to access the material. The braille transcriber must arrange the braille on the braille page in such a way so that the tactile reader will be alerted to events on the print page and be able to distinguish among the various visual elements and to have access to material in charts and tables. Procedures and practices for producing braille have been standardized over the years and are contained in recognized national standards. Creating the layout of each braille page to be a tactile equivalent of the visual elements in the print page is also part of the “translation” from print to braille and requires a knowledgeable transcriber.

Braille2000 can be thought of as braille word processing software. Braille2000 is Windows-compatible software that creates braille files that can be embossed (printed) as hard copy 3-dimensional tactile dots to be read by braille readers. The process to format and code the text and proof the work requires a certified braille transcriber, a professional who is knowledgeable in the braille code and experienced in braille textbook layout. Braille files are then saved to disk or sent in e-mail as any text file and sent to a braille production agency, where the pages are embossed and the book is produced.

DIRECT ENTRY
A braille textbook may be created by direct keyboard entry from the print book. This is the equivalent of literally typing a textbook. The transcriber copies the textbook by typing in the braille. Decisions of translation, (the correct use of braille contractions) and appropriate layout of the print visual elements are made by the transcriber as the work progresses. All the advantages of word processing, such as error correction, revisions, cut and paste, etc. apply before the braille is committed to hard copy dots on braille paper.

DIRECT TRANSLATION
Braille2000 can directly translate print text into correctly contracted braille either from pasting text copied to the clipboard or insertion of a print plain text or rich text file. An entire chapter or large section of a book can be instantly translated into braille, with layout and other editing performed in the braille file. The print text file can also be
edited with formatting cues before it is translated into braille. This results in more rapid braille production and favorably impacts the timely delivery of braille textbooks to students.

At this time, foreign languages and math cannot be translated in this way, but this capability is being developed in Braille2000 for the near future. At the present time, math and foreign languages are handled by a combination of direct entry and direct translation where applicable.

**PUBLISHERS’ FILES**
At present, translation from publishers’ files requires that such files be extracted into rich text format. Support for XML markup files is being developed, enabling Braille2000 to “read” the embedded formatting directives in such files to produce a braille file requiring less subsequent editing and transcriber intervention.

**Vendor**

Computer Application Specialties Company  
P.O. Box 22219  
Lincoln NE 68542-2219  
402-423-4782 (Fax: 402-423-5154)  
E-mail: Info@c-a-s.com  
www.BRL2000.com

**Former products:**

ED-IT (braille editing for the Apple II, the very first personal computer braille editing tool, 1978)  
ED-IT PC (braille editing and translation for Windows, the first WYSIWYG braille editing tool for Windows, 1992)
The following information was prepared for the AFB Solutions Forum.

Duxbury Systems, Inc. has nearly 27 years of experience with making it possible to produce braille more efficiently. The recent collaboration with the American Foundation for the Blind and many other stakeholders will revolutionize the future for generations of blind individuals. The project will open doors of education to all. The only limitations on a blind individual will be their own intellect, interests, determination, and ambition.

Duxbury Systems is a company born in July of 1975. They are celebrating over 26 years of bringing the world braille software, now with more than 35 languages. The sole purpose of the company was to bring computerized transcription to braille in order to facilitate the production of braille textbooks and other educational facilities.

For a more detailed discussion of the Early History of Braille Translators and Embossers please see the information at: http://www.duxburysystems.com/bthist.asp.

Duxbury Systems itself was founded as a partnership called “Gildea, Simpson and Sullivan” in July 1975 in the town of Duxbury, Massachusetts. The company promptly began to work on a Translator product (based on the DOTSYS algorithms) and to seek customers. It was a Data General Nova 800 that was responsible for bringing the original “portable” Duxbury Braille Translator to life. Like its predecessor DOTSYS, the original Duxbury Translator was capable of translating not only contracted English (American usage) but also Latin, Italian, French, German and Spanish braille in the “grade 1” form used in American English context. In March 1976, Duxbury Systems incorporated as a regular “for-profit” Massachusetts Corporation with our present name. (Of course, being “for-profit” does not guarantee the fact of a profit, which is a whole separate subject.) The first installation of the Duxbury Translator took place at the Canadian National Institute for the Blind in Toronto, Canada, in July 1976 on a Data General Eclipse.

The Duxbury Translator was the first to work with a second contracted language (Spanish, 1976); since that time Arabic, French, Swahili, and a number of others, many of them “firsts” for the language involved, have been implemented. Most of these languages were developed because of the braille authorities coming to Joe Sullivan and Duxbury Systems for their expertise and willingness to not only tackle these problems but to complete a very high quality solution.

Duxbury was also among the earliest braille translators to be implemented on a microcomputer in the late 1970’s (on North Star DOS, CP/M, and Oasis, all predecessors to the MS-DOS that now runs on PC’s). It may have, in fact, been the very first with any commercial presence, but there were also others experimenting with this at about the same time. Although Duxbury Systems, Inc. may not have had the first product on MS-DOS (1985), the company had the first on Macintosh (1989) and Windows (1991).
In 1985, with the sponsorship of the Canadian National Institute for the Blind (CNIB), tables were developed for the Nemeth Braille Code for Mathematics and Science Notation. Since that time, Duxbury has also implemented braille math translation for the British BAUK math braille code, the French braille math code, and even the proposed UEBC technical braille provisions.

The importation of LaTeX and TeX mathematical files has revolutionized the availability of mathematical and technical material to braille readers. Before these developments only highly trained (and all too rare) Math Braille Transcribers could create such technical materials, essentially six-keying in material as if they were brailling by hand.

In 1999 Duxbury Systems acquired MegaDots. MegaDots was the second most popular braille production software used in North America. Both the Duxbury Braille Translator and MegaDots have continued to evolve, becoming the most stable and widely accepted software to be utilized around the world for transcribing material.

Importing LaTeX and TeX mathematical files, bringing in braille clip-art files and accepting HTML and XML files are just some of the continuing advances in braille production to come out of Duxbury Systems, Inc.

In fact, the current generation of products is so advanced that it is used by braille experts and novices alike for creating quality braille. The challenges ahead will include the deployment of new technologies and the next evolution of internal mechanisms to facilitate the ability of Duxbury Systems to ensure that efficient braille production can take place wherever braille is needed.

Custom work has been done for several big braille publishers to facilitate quick quality transcription of monthly publications. This resulted in record turnaround time for braille publications and it continues to generate cost and time savings.

Duxbury Systems currently offers a number of “off-the-shelf” products for braille transcription and production. These are constantly being developed and improved so you should be sure you have the latest products.

The Duxbury Braille Translator is available for Windows 95, 98, 2000, Me, NT, and XP. It is also available for the Macintosh. Custom UNIX and other implementations are also available.

MegaDots is still an extremely valuable tool for braille production transcribers and publishers. Although a DOS product, much work has gone into MegaDots 2.2 ensuring that it works well in all versions of Windows from XP Pro on down. It is designed for North American braille transcribers and includes many features for automating tasks.

Both products handle XML, the DAISY/NISO, MS WORD, and many other formats. They are used extensively by professionals who transcribe publisher files.
The future will have Duxbury Systems bringing out an entire new line of braille production and transcription products combining the best of over 25 years of braille expertise with the best that the future has to offer.

Duxbury Systems, Inc.
270 Littleton Road, #6
Westford, MA 01886 USA
General E-mail: info@duxsys.com
http://www.DuxburySystems.com
Phone: 978-692-3000
Fax: 978-692-7912